OncoMed Pharmaceuticals Inc
Form 10-K
March 07, 2019

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, 2018

OR

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

Commission File Number: 001-35993

OncoMed Pharmaceuticals, Inc.

(Exact name of registrant as specified in its charter)

| | |
|---|---|
| Delaware | 38-3572512 |
| (State or other jurisdiction of incorporation or organization) | (I.R.S. Employer Identification No.) |
| 800 Chesapeake Drive<br>Redwood City, California | 94063 |
| (Address of principal executive offices) | (Zip Code) |

(650) 995-8200

(Registrant's telephone number, including area code)

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

| Title of each class | Name of each exchange on which registered |
|---|---|
| Common stock, par value $0.001 per share | The Nasdaq Global Select Market |

Securities registered pursuant to Section 12(g) of the Act: None

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 Securities Exchange 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 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 if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K is not contained herein, and will not be contained, to the best of registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K.

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

| | |
|---|---|
| Large accelerated filer | Accelerated filer |
| Non-accelerated filer | Smaller reporting company |
| Emerging growth company | |

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

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

The number of shares outstanding of the registrant's common stock as of March 5, 2019 was 38,690,089. The aggregate market value of the voting stock held by non-affiliates of the registrant as of June 30, 2018, was $74,821,990. There is no non-voting stock outstanding.

DOCUMENTS INCORPORATED BY REFERENCE:

This Form 10-K does not incorporate any document by reference.

OncoMed Pharmaceuticals, Inc.

Annual Report on Form 10-K

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PART I

Forward-Looking Statements and Market Data

This Annual Report on Form 10-K contains forward-looking statements that involve risks and uncertainties. All statements other than statements of historical facts contained in this Annual Report on Form 10-K are forward-looking statements. In some cases, you can identify forward-looking statements by terminology such as “may,” “could,” “will,” “would,” “should,” “expect,” “plan,” “anticipate,” “believe,” “estimate,” “intend,” “predict,” “seek,” “contemplate,” “potential” the negative of these terms or other comparable terminology. These forward-looking statements include, but are not limited to, statements about:

- the initiation, timing, progress and results of our preclinical studies and clinical trials, and our research and development programs;
- our ability to advance drug candidates into, and successfully complete, clinical trials;
- our receipt of future milestone payments and/or royalties, and the expected timing of such payments;
- our collaborators’ exercise of their license options;
- the structure, timing, and completion of the proposed business combination with Mereo BioPharma Group plc, Mereo US Holdings Inc., a Delaware corporation and a wholly-owned subsidiary of Mereo (“HoldCo”), and Mereo MergerCo One Inc.;
- our continued listing on The Nasdaq Global Select Market until the closing of the Merger;
- our continued compliance with the listing requirements of The Nasdaq Stock Market;
- HoldCo’s anticipated listing of American Depositary Shares on The Nasdaq Stock Market in connection with the closing of the Merger;
- the commercialization of our therapeutic candidates;
- the implementation of our business model, strategic plans for our business, drug candidates and technology;
- the scope of protection we are able to establish and maintain for intellectual property rights covering our drug candidates and technology;
- estimates of our expenses, future revenues, capital requirements and our needs for additional financing;
- the timing or likelihood of regulatory filings, including Investigational New Drug applications, and approvals;
- our ability to maintain and establish collaborations or obtain additional government grant funding;
- our financial performance; and
- developments relating to our competitors and our industry.

These statements relate to future events or to our future financial performance and involve known and unknown risks, uncertainties and other factors that may cause our actual results, performance or achievements to be materially different from any future results, performance or achievements expressed or implied by these forward-looking statements. Factors that may cause actual results to differ materially from current expectations include, among other things, those listed under “Risk Factors” and elsewhere in this Annual Report on Form 10-K.

Any forward-looking statement in this Annual Report on Form 10-K reflects our current views with respect to future events and is subject to these and other risks, uncertainties and assumptions relating to our operations, results of operations, industry and future growth. Given these uncertainties, you should not place undue reliance on these forward-looking statements. Except as required by law, we assume no obligation to update or revise these forward-looking statements for any reason, even if new information becomes available in the future.

This Annual Report on Form 10-K also contains estimates, projections and other information concerning our industry, our business, and the markets for certain drugs, including data regarding the estimated size of those

markets, their projected growth rates and the incidence of certain medical conditions. Information that is based on estimates, forecasts, projections or similar methodologies is inherently subject to uncertainties and actual events or circumstances may differ materially from events and circumstances reflected in this information. Unless otherwise expressly stated, we obtained this industry, business, market and other data from reports, research surveys, studies and similar data prepared by third parties, industry, medical and general publications, government data and similar sources. In some cases, we do not expressly refer to the sources from which this data is derived. In that regard, when we refer to one or more sources of this type of data in any paragraph, you should assume that other data of this type appearing in the same paragraph is derived from the same sources, unless otherwise expressly stated or the context otherwise requires.

Unless the context requires otherwise, in this Annual Report on Form 10-K the terms “OncoMed,” “we,” “us” and “our” refer to OncoMed Pharmaceuticals, Inc.

## ITEM 1. BUSINESS

OncoMed is a clinical-stage biopharmaceutical company focused on developing novel therapeutics that address the fundamental biology driving cancer’s growth, resistance, recurrence and metastasis. We have two internally discovered anti-cancer therapeutic candidates currently in active clinical development. The following summarizes the status of our therapeutic candidates, each of which will be described and discussed in further detail below under “Our Therapeutic Candidates.”

- Navicixizumab (Anti-DLL4/VEGF Bispecific, OMP-305B83). Navicixizumab is our bispecific monoclonal antibody that targets and inhibits both Delta-like ligand 4, or DLL4, and vascular endothelial growth factor, or VEGF. We have completed both a Phase Ia single-agent clinical trial of navicixizumab in patients with advanced solid tumors and a Phase Ib clinical trial of navicixizumab plus FOLFIRI or FOLFOX in patients with second-line metastatic colorectal cancer. We are currently conducting a Phase Ib clinical trial to assess navicixizumab in combination with a standard chemotherapy regimen of paclitaxel in patients with platinum-resistant ovarian cancer. Enrollment in the Phase Ib clinical trial in patients with platinum-resistant ovarian cancer has recently been completed. We have worldwide rights to the navicixizumab program.
- Etigilimab (Anti-TIGIT, OMP-313M32). T-cell immunoreceptor with immunoglobulin and ITIM domains, or TIGIT, is an inhibitory receptor that is thought to potentially stop T-cells from attacking certain tumor cells. We are currently conducting a Phase Ia/b clinical trial of etigilimab. Etigilimab was tested as a single agent in patients with advanced or metastatic solid tumors in the now-complete Phase Ia portion of the Phase Ia/b trial, and in combination with nivolumab (anti-PD1) in the ongoing Phase Ib portion of the clinical trial. Enrollment in the Phase Ia/b clinical trial has been completed. The etigilimab program is part of our collaboration with Celgene, which is discussed below under “Key Collaboration and License Agreements—Strategic Alliance with Celgene.” Celgene has the option to obtain an exclusive license to develop and commercialize etigilimab. If Celgene exercises its option on etigilimab, we would be eligible for a $35.0 million opt-in payment, potential future milestones and royalties, and Celgene would then lead and fully fund further development and commercialization of etigilimab.

Data for these two therapeutic candidates are being gathered to inform the possible advancement of these therapeutic candidates into later stage clinical trials independently or with existing or potential partners, with the goal of ultimately obtaining regulatory approvals and improving patient outcomes.

Potential Business Combination with Mereo BioPharma

On December 5, 2018, we entered into an Agreement and Plan of Merger and Reorganization (the "Merger Agreement") with Mereo BioPharma Group plc, a public limited company incorporated under the laws of England and Wales ("Mereo"), Mereo US Holdings Inc., a Delaware corporation and a wholly-owned subsidiary of Mereo ("HoldCo"), and Mereo MergerCo One Inc., a Delaware corporation and an indirect wholly-owned subsidiary of Mereo ("Merger Sub"), pursuant to which, among other matters, and subject to the satisfaction or waiver of the conditions set forth in the Merger Agreement, Merger Sub will merge with and into OncoMed, with OncoMed

surviving the merger as a wholly owned subsidiary of HoldCo, and an indirect wholly-owned subsidiary of Mereo (the "Merger"). The respective boards of directors of OncoMed and Mereo have each unanimously approved the Merger Agreement.

Merger Consideration

Subject to the terms and conditions of the Merger Agreement, at the effective time of the Merger (the "Effective Time"), each outstanding share of common stock, par value $0.001 per share, of OncoMed ("OncoMed Common Stock") will be converted into the right to receive (i) a number of American Depositary Shares (the "Mereo Depositary Shares"), each representing a number of ordinary shares, with a nominal value of £0.003 per ordinary share, of Mereo (each, a "Mereo Ordinary Share"), determined by reference to the exchange ratio described below and (ii) one contingent value right (a "CVR"), representing the right to receive contingent payments upon the achievement by certain product candidates of OncoMed of certain performance milestones as described below.

Under the exchange ratio formula set forth in the Merger Agreement, as of immediately following the Effective Time, former security holders of OncoMed are expected to own approximately 25% of the then-outstanding Mereo Ordinary Shares (or approximately 21% of the outstanding Mereo Ordinary Shares on a fully-diluted basis) and existing Mereo security holders are expected to own approximately 75% of the outstanding Mereo Ordinary Shares (or approximately 79% of the outstanding Mereo Ordinary Shares on a fully-diluted basis), subject to adjustments for net cash held by OncoMed at the time of closing of the Merger, as described further in the Merger Agreement.

No fractional Mereo Depositary Shares or CVRs shall be issued in connection with the Merger. Any fractional Mereo Depositary Shares or CVRs shall be rounded down to the nearest whole Mereo Depositary Share or CVR, as applicable, with no cash being paid to compensate for such rounding. Application will be made to list the Mereo Depositary Shares on The Nasdaq Stock Market ("Nasdaq").

Conditions to the Merger

The consummation of the Merger is subject to customary closing conditions, including (i) the absence of any temporary restraining order, preliminary or permanent injunction or any other order preventing the consummation of the Merger and any law that makes illegal the consummation of the Merger, (ii) the U.S. Securities and Exchange Commission (the "SEC") having declared effective the Form F-4 Registration Statement of Mereo which will contain the proxy statement of OncoMed in connection with the Merger (the "Registration Statement"), (iii) the adoption of the Merger Agreement by the affirmative vote of the holders of a majority of the outstanding shares of OncoMed Common Stock entitled to vote thereon, (iv) Mereo having obtained all required shareholder approvals in connection with the issuance of Mereo Depositary Shares and the allotment and issuance of the Mereo Ordinary Shares underlying the Mereo Depositary Shares to be issued in the Merger and the grant of the CVRs to the stockholders of OncoMed pursuant to the Merger Agreement, (v) the approval for listing on the Nasdaq, subject to official notice of issuance, of the Mereo Depositary Shares to be issued in the Merger and the approval for admission to trading on the Alternative Investment Market operated by London Stock Exchange plc of the Mereo Ordinary Shares underlying the Mereo Depositary Shares to be issued in the Merger pursuant to the Merger Agreement, and the satisfaction of any other requirements of London Stock Exchange plc, (vi) subject to certain materiality exceptions, the accuracy of certain representations and warranties of each of OncoMed and Mereo contained in the Merger Agreement and the compliance by each party with the covenants contained in the Merger Agreement, and (vii) the absence of a material adverse effect with respect to each of OncoMed and Mereo. The parties expect the Merger will be completed in the second quarter of 2019.

Certain Other Terms of the Merger Agreement

OncoMed, Mereo and Merger Sub each have made certain representations, warranties and covenants in the Merger Agreement, including, among other things, covenants by OncoMed and Mereo to conduct their businesses in the ordinary course during the period between the execution of the Merger Agreement and consummation of the

Merger, to refrain from taking certain actions specified in the Merger Agreement and to use commercially reasonable efforts to cause to be taken all actions necessary to consummate the Merger.

Neither OncoMed nor Mereo is permitted to solicit, initiate or knowingly encourage, induce or facilitate, any alternative transaction proposals from third parties or to engage in discussions or negotiations with third parties regarding any alternative transaction proposals. Notwithstanding this limitation, prior to OncoMed's stockholders or Mereo's shareholders, as applicable, approving the transaction, each party may under certain circumstances provide information to and participate in discussions or negotiations with third parties with respect to an alternative transaction proposal that its board of directors has determined in good faith constitutes or is reasonably likely to lead to a superior proposal. Each party's board of directors may change its recommendation to its stockholders or shareholders, as applicable, (subject to the other party's right to terminate the Merger Agreement following such change in recommendation) in response to a superior proposal if the board of directors determines in good faith that the failure to take such action would reasonably be expected to be inconsistent with the directors' duties under applicable law.

The Merger Agreement provides for certain termination rights for each of OncoMed and Mereo. Upon termination of the Merger Agreement under specified circumstances, either party may be required to pay the other party a termination fee of $1,721,193, and in some circumstances reimburse the other party's expenses up to a maximum of $750,000, in each case, subject to any adjustment for value added tax.

At the Effective Time, the Board of Directors of Mereo is expected to be expanded to consist of ten members to accommodate the appointment of current OncoMed directors Michael Wyzga and Dr. Deepa Pakianathan as independent non-executive directors. The existing Mereo directors are expected continue to serve in their current positions.

Support Agreements

Simultaneously with the execution and delivery of the Merger Agreement, certain of our officers and directors who are stockholders of OncoMed, in their respective capacities as stockholders of OncoMed (together with certain of their respective affiliates), entered into support agreements with Mereo (the "OncoMed Support Agreements"), pursuant to which such individuals have agreed, among other things, to (i) vote their respective shares of OncoMed Common Stock in favor of the adoption of the Merger Agreement, against any alternative proposal and against any action or agreement that would reasonably be expected to frustrate the purposes, prevent, delay or otherwise adversely affect the consummation of, the transactions contemplated by the Merger Agreement and (ii) grant an irrevocable proxy to Mereo to vote such individual's shares in the manner contemplated in clause (i) of this paragraph. The persons signing the OncoMed Support Agreements currently beneficially own an aggregate of 11% of the outstanding OncoMed Common Stock.

Simultaneously with the execution and delivery of the Merger Agreement, each of the officers and directors of Mereo holding Mereo stock or options, in their respective capacities as shareholders of Mereo (together with certain of their respective affiliates, collectively, the "Mereo D&Os"), Novartis Pharma AG and certain funds under the management of Invesco Asset Management Limited have entered into support agreements with the OncoMed (the "Mereo Support Agreements"), pursuant to which such individuals and entities have agreed, among other things, to (i) vote their respective shares of Mereo Ordinary Shares in favor of the approval of the issuance of Mereo Depositary Shares and the allotment and issuance of the Mereo Ordinary Shares underlying the Mereo Depositary Shares to be issued in the Merger and the grant of the CVRs pursuant to the Merger Agreement, against any alternative proposal and against any action or agreement that would reasonably be expected to frustrate the purposes, prevent, delay or otherwise adversely affect the consummation of, the transactions contemplated by the Merger Agreement and (ii) solely with respect to the

Mereo D&Os and the Mereo Support Agreement entered into by Novartis Pharma AG, execute any forms of an irrevocable proxy required to appoint OncoMed as such individual's proxy to vote such individual's shares in the manner contemplated in (i) of this paragraph. The individuals and entities signing the Mereo Support Agreements currently hold legal title to an aggregate of approximately 52% of the outstanding Mereo Ordinary Shares.

Contingent Value Rights Agreement

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At the Effective Time, Mereo and Computershare Inc., as rights agent, will enter into a Contingent Value Rights Agreement (the "CVR Agreement"). Pursuant to the CVR Agreement, OncoMed's stockholders will receive one CVR for each outstanding share of OncoMed Common Stock immediately prior to the Effective Time. Each CVR will represent the right to receive payments related to OncoMed's etigilimab (anti-TIGIT, OMP-313M32) and navicixizumab (anti-DLL4/VEGF, OMP-305B83) therapeutic candidates, whereby CVR holders will be entitled to receive (i) upon the exercise by Celgene Corporation or certain affiliates thereof (together, "Celgene") of the exclusive option granted by OncoMed to Celgene in relation to etigilimab pursuant to OncoMed's collaboration agreement with Celgene, which is discussed below under "Key Collaboration and License Agreements—Strategic Alliance with Celgene" (the "Option Exercise"), and actual receipt by OncoMed of the cash payment payable by Celgene pursuant to such Option Exercise, a number of Mereo Depositary Shares equal to (x) the cash payment received by Mereo upon the Option Exercise, net of any tax and other reasonable expenses, divided by (y) the volume-weighted average price per Mereo Depositary Share for the ten (10) trading day period immediately following the date of the announcement by Mereo of such cash payment, and (ii) certain cash payments related to navicixizumab if, within 18 months of the closing of the Merger, Mereo or any of its subsidiaries enters into a definitive agreement with one or more third parties regarding such products and, within five years of the closing of the Merger, Mereo or any of its subsidiaries receives certain eligible cash milestone payments. In order to be eligible for the CVR, an OncoMed stockholder must be a holder of record at the close of business on the last business day immediately prior to the Effective Time.

The CVR will not be transferable, except in limited circumstances, and will not be registered with the SEC. The Mereo Depositary Shares issuable pursuant to the CVR Agreement will be registered with the SEC under the Registration Statement on Form F-4 referred to in "Merger Agreement—Conditions to the Merger" above.

Strategy

We are focused on developing novel therapeutic candidates directed to fundamental biologic pathways and targets thought to drive cancer's growth, resistance, recurrence and metastasis. The inability of the immune system to shut down tumor growth, through a series of tumor-associated resistance mechanisms, enables the growth and recurrence of cancers. We have discovered and advanced therapeutic candidates specifically targeting key pathways that drive the growth of cancer, including cancer stem cells, or CSCs, as well as immuno-oncology therapeutic candidates that aim to bolster immune system recognition of cancer cells and/or suppress immune system evasion mechanisms. Key elements of our strategy to achieve this goal are:

- Advance our current therapeutic candidates in clinical trials to determine their utility as treatments for cancer. Our Phase I clinical trials with navicixizumab and etigilimab are designed to establish the maximum tolerated dose and safety profile, identify a therapeutic index, and look for initial indications of efficacy and biomarker effects of our drugs alone or as part of a combination regimen.
- Collaborate with our partner Celgene to advance our partnered program forward in clinical development. We are working closely with our partner to advance our partnered program, etigilimab, in development. Under our collaboration, Celgene has an option during a certain time period through the end of a specified Phase I trial to obtain an exclusive license to etigilimab. In the event that this option is not exercised at the end of the relevant option period, we will retain worldwide rights to the etigilimab program.
- Use collaborations with pharmaceutical and biopharmaceutical companies to provide funding, create value and leverage partners' expertise to bring medicines to patients. To facilitate the capital-efficient development and commercialization of our unpartnered programs such as navicixizumab, we routinely engage in partnering discussions with a range of pharmaceutical and biopharmaceutical companies.

Our therapeutic candidate navicixizumab targets DLL4 on the Notch pathway in addition to VEGF. Through clinical and preclinical studies, we observed that navicixizumab has a multi-pronged mechanism of action, including anti-CSC, anti-angiogenesis and immuno-oncology properties. We have conducted preclinical studies of anti-DLL4 plus anti-VEGF in combination with anti-PD-1 inhibitors and observed synergistic anti-tumor responses and

heightened immune cell memory responses that are greater than can be achieved with any of the agents when used alone.

Our immuno-oncology therapeutic candidate, etigilimab, targets TIGIT. TIGIT blocks T-cells from attacking tumor cells, and shares some properties with the inhibitory protein PD-1. Our anti-TIGIT therapeutic candidate is intended to activate the immune system through multiple mechanisms and enable substantial anti-tumor activity.

Our Therapeutic Candidates

Navicixizumab (anti-DLL4/VEGF bispecific, OMP-305B83)

We utilized our proprietary bispecific antibody technology to generate a monoclonal antibody, navicixizumab (anti-DLL4/VEGF bispecific, OMP-305B83), that targets both DLL4 and VEGF. VEGF is the target for bevacizumab (Avastin®), which is currently approved and used to treat a number of solid tumors including colorectal, NSCLC, breast, renal cell, brain, cervical, and ovarian cancers and had worldwide revenues of $7.4 billion in 2015. DLL4 is a ligand which is responsible in part for tumor growth and angiogenesis. Navicixizumab is designed to inhibit the function of both DLL4 and VEGF and thereby has the potential to induce anti-tumor activity while mitigating certain toxicities. Preclinical data of dual DLL4 and VEGF inhibition in xenograft tumor models have demonstrated superior anti-tumor activity compared to either anti-DLL4 or anti-VEGF alone and anti-tumor activity was observed in multiple tumor types including colon, ovarian, breast and pancreatic. We have also observed that navicixizumab induced a down-regulation of vasculature-related genes and decreased vasculature density. An improved cardiac safety profile was also observed in cynomolgus monkeys compared to anti-DLL4 alone.

In 2018, together with our clinical collaborators, we published the results of the Phase Ia clinical trial of single-agent navicixizumab (Jimeno, A., Moore, K.N., Gordon, M. et al. Invest New Drugs (2018)). The most commonly enrolled tumor types in the trial were ovarian (12), colorectal (11) and cancers of the breast, pancreas, uterus and endometrium (four patients of each). Four patients (three ovarian cancer patients and one uterine carcinosarcoma patient) had a partial response, and 17 patients had stable disease. There were 19 patients that had a reduction in the size of their target lesions, including seven patients with ovarian cancer. Six of these seven ovarian cancer patients had received prior bevacizumab. Four patients remained on study for >300 days and two of these patients were on study for >500 days. The most common drug related adverse events of any grade were hypertension (58%), headache (29%), fatigue (26%), and pulmonary hypertension (18%). Infusion reactions associated with anti-drug antibodies impacting drug exposure occurred in 11% of patients.

A Phase 1b trial of navcixizumab plus FOLFIRI or FOLFOX in patients with second-line metastatic colorectal cancer has been completed. We are currently conducting a Phase Ib clinical trial to assess the safety, preliminary efficacy, immunogenicity and pharmacokinetics of navicixizumab in combination with standard-of-care chemotherapy paclitaxel in ovarian cancer. The patients enrolled in the Phase Ib multicenter, open-label, dose-escalation and expansion trial in ovarian cancer are patients with platinum-resistant ovarian cancer (including fallopian tube or primary peritoneal cancers) who have previously received bevacizumab and/or have failed greater than two prior therapies. Enrollment in the Phase Ib clinical trial in ovarian cancer has been completed.

We presented interim results through August 13, 2018 from the ongoing Phase 1b trial investigating navicixizumab in combination with paclitaxel in patients with platinum-resistant ovarian cancer in October 2018 at the European Society for Medical Oncology meeting (“ESMO 2018”). The patients had received a median of four prior therapies, all of whom had received prior paclitaxel and 69% had received prior bevacizumab. Twenty-two of the 26 patients (85%) treated with the novel regimen experienced clinical benefit. Notably, 11 of the 26 patients (42%) achieved a partial response. The RECIST response rate in the bevacizumab naïve and bevacizumab pretreated patients was 57% and 33%, respectively. The overall median progression-free survival was 5.4 months (95% CI: 3.5-8.0 months). The median PFS for the subset of bevacizumab pretreated patients was 3.7 months. Historical response rates for patients with heavily pretreated platinum-resistant ovarian cancer treated with chemotherapy are typically 15% or less.

Interim cancer antigen 125, or CA-125, data from the Phase Ib trial was also presented at ESMO 2018. CA-125 is a widely utilized tumor marker for ovarian cancer that is used along with radiographic assessments to determine the efficacy outcome to treatment. Of the 23 patients evaluable for a Gynecologic Cancer Intergroup

(GCIG) CA-125 response outcome, 14 (61%) had a response. Specifically, the GCIG CA-125 response rates in the bevacizumab naïve and bevacizumab pretreated patients were 100% and 47%, respectively.

The interim Phase Ib data presented at ESMO 2018 indicated that the most common related adverse events of any grade related to navicixizumab were hypertension (53%), fatigue (32%), diarrhea (24%) and headache (18%). Other related rare adverse events of special interest were one Grade 2 pulmonary hypertension, one Grade 1 related heart failure, one Grade 4 related gastrointestinal perforation and one Grade 4 thrombocytopenia. Three patients (12%) experienced infusion reactions that were associated with anti-drug antibodies which impacted drug exposure.

Navicixizumab was previously a part of our strategic collaboration with Celgene Corporation, or Celgene, which is discussed below under “Key Collaboration and License Agreements—Strategic Alliance with Celgene.” In September 2018, Celgene informed us of its decision not to exercise its option to license navicixizumab due to strategic product portfolio considerations. Celgene terminated the collaboration agreement with respect to navicixizumab, effective January 23, 2019. As a result, we have worldwide rights to the navicixizumab program.

Etigilimab (Anti-TIGIT; OMP-313M32)

TIGIT (T-cell immunoreceptor with Ig and ITIM domains) is an inhibitory receptor similar to the inhibitory protein PD-1, and via interactions with its ligands may block T-cells from attacking tumor cells. Our anti-TIGIT therapeutic candidate, etigilimab (OMP-313M32), is intended to activate the immune system, through multiple mechanisms, and enable anti-tumor activity. Etigilimab recently completed the single-agent Phase Ia portion of a Phase Ia/b clinical trial, which enrolled patients with advanced or metastatic solid tumors, and is currently in the Phase Ib portion of the clinical trial, which combines etigilimab with anti-PD1 (nivolumab). Enrollment in the Phase Ia/b clinical trial has been completed.

We presented initial interim results through October 3, 2018 from the Phase 1a dose escalation portion of the Phase 1a/b trial of etigilimab in November 2018 at the Society for Immunotherapy of Cancer meeting. The interim results that were presented included data from 18 patients with a variety of late stage metastatic cancers including colorectal, endometrial, pancreatic, among others, who were treated with etigilimab at doses ranging from 0.3 to 20 mg/kg every other week. There were no dose-limiting toxicities through the 20 mg/kg every other week dose. In this "all comers" difficult-to-treat patient population, stable disease was observed in 7 (38.9%) patients with prolonged disease control seen in some patients with the longest durations of stable disease being 205 and 225 days. Of the remaining 11 patients in the study, ten patients had progressive disease, and one patient did not meet criteria to be evaluated for efficacy. The most frequent treatment-related adverse events were rash (27.8%), fatigue (16.7%), nausea (16.7%), pruritus (16.7%), and cough (11.1%). Immune-related adverse events, signaling immune activation included rash (27.8%), pruritus (16.7%), autoimmune hepatitis (5.6%) and stomatitis (5.6%). Grade 3 or higher treatment-related AEs included rash (16.7%), abdominal pain, embolism, hypertension, and pulmonary embolism (11.1% each). A biomarker analysis was also presented at the meeting which demonstrated a significant reduction of peripheral T regulatory cells (Tregs), most significant at doses ≥ 10 mg/kg, and signals of immune activation. These interim results are consistent with preclinical studies with a surrogate anti-TIGIT antibody and suggest select immune cell depletion and activation of T cell signaling in patients treated with the drug.

In preclinical studies with anti-TIGIT antibodies, we have observed immune activation and robust anti-tumor activity — both as a single agent and in combination with other cancer immunotherapeutics including anti-PD1. At the 2017 American Association of Cancer Research (AACR) meeting, we presented preclinical data demonstrating the capacity of an anti-TIGIT antibody to induce long-term immune memory and durable anti-tumor response. Also, at the 2018 AACR meeting we presented data that showed that anti-TIGIT treatment reduced the abundance of regulatory T-cells (Tregs) within tumors in animal models, and mechanistic studies demonstrated an important contribution of effector function for anti-tumor efficacy in animal models.

Etigilimab is part of our collaboration with Celgene, and Celgene has an option to obtain an exclusive license to etigilimab. If Celgene exercises its option to obtain a license to etigilimab, Celgene would then lead and fully fund further development and commercialization, and we would be entitled to receive a $35.0 million opt-in payment, along with potential future milestones and royalties. Additional details related to our collaboration with Celgene are described below under “Key Collaboration and License Agreements—Strategic Alliance with Celgene.”

Wnt Pathway Small Molecule Inhibitors

As part of our Bayer collaboration, we and Bayer jointly initiated discovery efforts to identify small molecule inhibitors of the Wnt pathway. We developed assay technologies and transferred those to Bayer. Bayer utilized its extensive medicinal chemistry assets and capabilities to discover small molecule drug candidates that modulate Wnt signaling, and we employed our internal lead validation technologies to evaluate candidate compounds as a basis for advancing them into development. OncoMed participates in a Joint Steering Committee, but is currently conducting no other activities related to the Wnt pathway small molecule program.

Programs Discontinued in 2018-2019

During the course of 2018 and early 2019, we decided to discontinue development of certain therapeutic product candidates. The discontinued programs are as follows:

- GITRL-Fc (OMP-336B11). Glucocorticoid-induced tumor necrosis factor receptor-related protein, or GITR, and its ligand, GITRL, are members of the tumor necrosis factor, or TNF, family of receptors and ligands. TNF ligands are trimeric proteins and their binding to receptors leads to activation of intracellular signaling. Our GITR ligand therapeutic candidate, GITRL-Fc, is engineered using a novel single-gene, linkerless trimer technology that is designed to enable effective activation of GITR. Activation of GITR enhances T-cell modulated immune responses, which may be a potential target for stimulating immune system activity against tumor cells. GITRL-Fc is currently in a Phase Ia clinical trial in patients with advanced or metastatic solid tumors, although enrollment in the clinical trial has ended and OncoMed does not plan to advance GITRL-Fc beyond Phase Ia.
- Rosmantuzumab (anti-RSPO3, OMP-131R10). Rosmantuzumab is a monoclonal antibody targeting the RSPO-LGR cancer stem cell, or CSC, pathway, and it was a part of our strategic collaboration with Celgene, which is discussed below under “Key Collaboration and License Agreements—Strategic Alliance with Celgene.” Rosmantuzumab was recently studied in a Phase Ia/b clinical trial, but the trial failed to provide compelling evidence of clinical benefit. In October 2018, Celgene notified us of its decision not to exercise its option to license rosmantuzumab and terminated our collaboration agreement with respect to rosmantuzumab, effective February 12, 2019. We retain worldwide rights to the rosmantuzumab program.

Key Collaboration and License Agreements

In the normal course of our business, we enter into a variety of collaboration, partnership and license arrangements with third parties, certain of which are discussed below.

Strategic Alliance with Celgene

In December 2013, we entered into a collaboration agreement with Celgene pursuant to which we and Celgene were to collaborate on research and development programs directed to the discovery and development of novel biologic therapeutics, and, if Celgene exercised its option to do so, the discovery, development and commercialization of novel small molecule therapeutics.

Our etigilimab program is the last remaining biologic therapeutic program that is currently active under our collaboration agreement with Celgene. Celgene has an option to obtain an exclusive license to develop further and commercialize biologic therapeutics in the etigilimab program, which may be exercised during time periods specified in the collaboration agreement through the earlier of completion of a certain clinical trial or the twelfth anniversary of the date of the collaboration agreement. Pursuant to the agreement, we lead the development of etigilimab prior to Celgene’s exercise of its option for the etigilimab program. We are responsible for funding all research and development activities for therapeutics in the etigilimab program prior to Celgene’s exercise of the option for the program. Upon option exercise by Celgene, we will be required to enter into an agreed form of a license agreement

with Celgene, pursuant to which Celgene retains all rights to develop further and commercialize biologic therapeutic products in the etigilimab program on a worldwide basis, with certain support for development from us.

We are eligible to receive a $35.0 million opt-in payment upon Celgene's exercise of the option for the etigilimab program. The collaboration also includes milestone payments for achievement of specified development, regulatory and commercial milestones, paid on a per-product and per-program basis. The option exercise payments and payments for achievement of development, regulatory and commercial milestones under the agreement may total up to $440.0 million, for products in the etigilimab program, including the $35.0 million opt-in payment. We previously received a $2.5 million milestone payment for the etigilimab program. Accordingly, the future potential milestone payments for products in the etigilimab program under the collaboration total up to $437.5 million, including the $35.0 million opt-in payment. For the etigilimab program, if the option is exercised and the program is successfully commercialized by Celgene, we are eligible to receive tiered royalties equal to a percentage of net product sales worldwide in the high-single digits to the mid-teens. We are not eligible to receive any further research or development milestone payments for etigilimab prior to Celgene's decision regarding option exercise with respect to etigilimab.

Our collaboration agreement with Celgene will terminate upon the expiration of all of Celgene's payment obligations under the license agreement entered into with respect to the etigilimab program following Celgene's exercise of an option for such program, or if Celgene's option on the etigilimab program expires without Celgene exercising its option. The collaboration agreement may be terminated by either party for the insolvency of, or an uncured material breach of the collaboration agreement by, the other party. In addition, Celgene may terminate the collaboration agreement in its entirety or with respect to the etigilimab program, for any reason, upon 120 days' prior written notice to us and upon 60 days' prior written notice in the event that Celgene reasonably believes that such termination is necessary in order to comply with any antitrust laws. We may also terminate the collaboration agreement with respect to the etigilimab program in the event that Celgene challenges the licensed patents with respect to such program.

If Celgene does not exercise its option with respect to the etigilimab program before the option for that program expires, we will retain worldwide rights to such program. In addition, under certain termination circumstances, we would also have worldwide rights to the etigilimab program.

Our collaboration agreement with Celgene previously included our demcizumab, navicixizumab, and rosmantuzumab biologic therapeutic programs. Celgene, however, terminated the collaboration agreement with respect to both demcizumab and navicixizumab, effective January 23, 2019, and terminated the collaboration agreement with respect to rosmantuzumab, effective February 12, 2019. Prior to such terminations, Celgene had options to obtain an exclusive license to develop further and commercialize biologic therapeutics in these programs under the agreement. As a result of these terminations, we now have worldwide rights to each of these programs, including navicixizumab. Under certain circumstances, we may owe Celgene single-digit percentage royalties on therapeutic products in these programs if we elect to continue to commercialize them and they are successfully commercialized, subject to a cap.

Celgene previously had the right to designate up to two additional biologic therapeutic programs targeting the RSPO-LGR signaling pathway or an undisclosed pathway for inclusion in the collaboration, but this right expired on the fourth anniversary of the date of the collaboration agreement. Celgene also had an additional option, which expired unexercised on the fourth anniversary of the date of the collaboration agreement, that would have permitted Celgene to discover, develop and commercialize small molecule therapeutics directed to targets in an undisclosed pathway under the collaboration.

In December 2013, we sold 1,470,588 shares of our common stock to Celgene at a price of $15.13 per share, which resulted in gross proceeds to us of $22.2 million. We agreed with Celgene that, after we have qualified for the use of Form S-3 and upon the written request of Celgene, we would prepare and file with the Securities and Exchange Commission a registration statement on Form S-3 for purposes of registering the resale of the shares specified in Celgene's written request. We also agreed, among other things, to indemnify Celgene under the registration statement from certain liabilities and to pay all fees and expenses (excluding any legal fees of the selling holder(s) above

$10,000 per registration statement and any underwriting discounts and selling commissions) incident to our obligations to register the resale of Celgene's shares of our common stock.

Strategic Alliance with Bayer

In June 2010, we entered into a strategic alliance with Bayer to discover, develop and commercialize novel anti-CSC biologic and small molecule therapeutics targeting the Wnt signaling pathway. Under this collaboration, Bayer could have exercised its option to obtain an exclusive license to develop and commercialize biologic therapeutics in one or more defined biologic therapeutic classes. However, effective June 16, 2017, Bayer terminated all biologic therapeutic programs under this collaboration. Under this collaboration, we and Bayer also agreed to jointly conduct research to discover potential new small molecule therapeutics targeting the Wnt pathway, and we granted Bayer a non-exclusive license to our Wnt pathway assay technology for the research and development of such small molecule therapeutics. Bayer may, within a specified time period, elect to advance such small molecule therapeutics into development, and obtain an exclusive license to commercialize such therapeutics. Bayer leads discovery, development and commercialization of such small molecule therapeutics. Bayer is obligated to make payments to us upon achievement of research, development, regulatory and commercial milestones for small molecule therapeutics that could total up to $112.0 million per program, in addition to single-digit percentage royalties on net product sales.

Our agreement with Bayer includes several committees, including a Joint Steering Committee and a Joint Development Sub-Committee, among others, that meet periodically to discuss our activities in the collaboration. Decisions are generally made jointly through these committees, however Bayer generally has final decision-making authority with respect to development of small molecule projects.

Our agreement with Bayer and their payment obligations thereunder will expire on a product by product and country by country basis on the last to occur of (i) the expiry of certain patent rights covering the product in such country, (ii) the expiration of any regulatory exclusivity period in such country, or (iii) ten years from first commercial sale of such product in such country. Our agreement will also expire if Bayer does not elect to advance the small molecule therapeutics program into development within the time period specified in the agreement. Either party may terminate the agreement for any material breach by the other party that the breaching party fails to cure. Bayer may terminate the agreement for any reason or no reason upon prior notice to us. Either party may terminate the agreement upon bankruptcy or insolvency of the other party, and we may terminate the agreement if Bayer challenges the licensed patents.

Strategic Alliance with GSK

On December 7, 2007, the Company entered into a Collaboration and Option Agreement with GSK. The agreement was formed to discover, develop and market novel antibody therapeutics to target CSCs. The agreement gave GSK the option to obtain an exclusive license for certain product candidates targeting the Notch signaling pathway. Effective October 28, 2017, GSK terminated the agreement in its entirety.

The University of Michigan

In January 2001, Cancer Stem Cell Genomics, Inc. entered into a license agreement with the Regents of the University of Michigan, or the University of Michigan. In 2004, Cancer Stem Cell Genomics, Inc. merged with and into us, and we assumed this license agreement with the University of Michigan. Under the agreement and in exchange for certain additional consideration, the University of Michigan has granted to us an exclusive, royalty-bearing, worldwide license under certain patent rights, and a nonexclusive, worldwide license under certain technologies, to make, have made, import, use, market, offer for sale or sell products and to practice processes for any use, including human therapeutic or diagnostic use, that are covered by the licensed patents. Technologies covered by the licensed patents include certain enriched CSC compositions, CSC markers, diagnostic methods, as well as certain therapeutic methods

using certain anti-CSC antibodies. Additional details regarding certain patent rights exclusively licensed to us under the agreement are described in more detail below under “Intellectual Property.” The University of Michigan reserved certain rights to the licensed patents for noncommercial research and education purposes.

We are required to pay to the University of Michigan an annual license maintenance fee and reimburse the University of Michigan for expenses associated with the prosecution and maintenance of the licensed patents, both of which are credited towards future royalty payments. We are also required to pay to the University of Michigan percentage royalties in the low single digits based on net sales by us or our sublicensees of products or processes covered by the licensed patents until expiry of the patents. With respect to one family of licensed patent applications that does not relate to any of our lead therapeutic programs, we are also required to pay a tiered, single-digit percentage of any sublicense revenues, including any upfront or milestone payments, received from any sublicensees under such family of patents. Once the University of Michigan has received $10.0 million in royalties, we may, at our option, convert the license to a fully paid-up license provided we transfer to the University of Michigan shares of our non-voting capital stock equal to 0.25% of the fully diluted number of shares outstanding at the time of our election. We are required to use commercially reasonable efforts to develop and commercialize products and processes within certain time periods.

If not terminated earlier, this agreement terminates upon the expiration of all patent rights licensed under this agreement. Either party may terminate the agreement for any material breach by the other party that the breaching party fails to cure. We may terminate the agreement at any time upon expiration of a defined notice period.

Lonza Sales AG

In August 2012, we entered into a multi-product license agreement with Lonza Sales AG, or Lonza. This agreement relates to the process development and manufacturing of our biologics portfolio with Lonza. Under the multi-product license agreement, we receive licenses to utilize Lonza's glutamine synthetase gene expression system and related technologies for commercial production of our product candidates. Under this license agreement, we paid an upfront payment of $488,000 and are obligated to pay Lonza payments up to £200,000 (approximately $254,000) per licensed product on achievement of specified milestones, and royalties up to the very low single digits on sales of licensed products. The multi-product license agreement shall remain in force on a product by product and country by country basis until expiration of our obligation to make payments to Lonza with respect to such product in such country. The agreement can otherwise be terminated by us for any reason or no reason upon advance written notice to Lonza, or by either us or Lonza upon the other party's material breach of the agreement, or if the other party ceases to carry on business. Lonza may also terminate the licenses granted under the agreement if we challenge any of the Lonza patent rights.

Intellectual Property

Our commercial success depends in part on our ability to obtain and maintain proprietary protection for our product candidates, novel biological discoveries, antibody technologies, biomarkers, screening technologies and other know-how, to operate without infringing on the proprietary rights of others and to prevent others from infringing our proprietary rights. Our policy is to seek to protect our proprietary position by, among other methods, filing U.S., international and foreign patent applications related to our proprietary technology, inventions and improvements that are important to the development and implementation of our business. We also rely on trade secrets, know-how and continuing technological innovation to develop and maintain our proprietary position.

As a normal course of business, we pursue both composition-of-matter patents and method-of-use patents for our product candidates. We also seek patent protection with respect to novel biological discoveries, including new targets and applications, as well as to biomarkers and novel antibody technologies.

In addition to the patents and patent applications owned solely by us, our patent portfolio also includes patents and patent applications licensed from the University of Michigan. As of December 31, 2018, we had an exclusive, worldwide license from the University of Michigan to over 40 issued U.S. and foreign patents. A few of the patents in the portfolio licensed from the University of Michigan are jointly owned by us.

The patent portfolios for navicixizumab and etigilimab as of December 31, 2018, are summarized below.

- Navicixizumab (Anti-DLL4/VEGF bispecific, OMP-305B83). Our navicixizumab portfolio includes a core patent family that is solely owned by us and covers both the composition of matter and methods of use of navicixizumab. As of December 31, 2018, this family includes four issued U.S. patents and two

pending U.S. patent applications, as well as corresponding patents or patent applications in certain foreign jurisdictions. Patents that have issued or will issue in this core family are generally expected to expire in 2032.

Our portfolio also includes several other issued U.S. and foreign patents that relate to navicixizumab, certain methods of its use, and/or related biomarkers, which expire between 2021 and 2033. An issued U.S. patent exclusively licensed by us from the University of Michigan that broadly covers the use of anti-DLL4 antibodies for the treatment of cancer expires in 2022.

Additional U.S. and foreign patent applications solely owned by us that relate to navicixizumab, certain methods of its use, and/or related biomarkers are also pending and, to the extent they issue, are expected to expire between 2027 and 2036.

- Etigilimab (Anti-TIGIT, OMP-313M32). A core patent family in our etigilimab portfolio is solely owned by us and covers both the composition of matter and methods of use of etigilimab. This family includes an issued U.S. composition-of-matter patent, which expires in 2037, pending patent applications in the U.S. and certain foreign jurisdictions, and a foreign patent. To the extent that patent applications in this core patent family issue as patents, they are generally expected to expire in 2036.

Also included in our etigilimab portfolio is a PCT application that relates to certain uses of our etigilimab therapeutic candidate. To the extent that this application is used to establish U.S. and/or foreign patent applications that issue as patents, the patents are generally expected to expire in 2037.

The term of individual patents depends upon the legal term for patents in the countries in which they are obtained. In most countries, including the United States, the patent term is 20 years from the earliest filing date of a non-provisional patent application. In the United States, a patent's term may be lengthened by patent term adjustment, which compensates a patentee for administrative delays by the U.S. Patent and Trademark Office, or the USPTO, in examining and granting a patent, or may be shortened if a patent is terminally disclaimed over an earlier filed patent. The term of a patent that covers a drug or biological product may also be eligible for patent term extension when FDA approval is granted, provided statutory and regulatory requirements are met. Under the Biologics Price Competition and Innovation Act of 2009, or BPCIA, products approved as a biological product under a biologics license application, or BLA, in the United States may qualify for a 12-year period of non-patent exclusivity. See "Government Regulation—Biologics License Applications" below for additional information on such exclusivity. In the future, if and when our product candidates receive approval by the FDA or foreign regulatory authorities, we expect to apply for patent term extensions on issued patents covering those products, depending upon the length of the clinical trials for each drug and other factors, including those involved in the filing of a BLA.

As with other biotechnology and pharmaceutical companies, our ability to maintain and solidify our proprietary position for our product candidates and technologies will depend on our success in obtaining effective claims and enforcing those claims once granted. However, patent applications that we may file or license from third parties may not result in the issuance of patents. We also cannot predict the breadth of claims that may be allowed or enforced in our patents. The issued patents that we own or license, or may receive in the future, may be challenged, invalidated or circumvented. For example, we cannot be certain of the priority of inventions covered by pending third-party patent applications. If third parties have prepared and filed patent applications in the United States that also claim technology or therapeutics to which we have rights, we may have to participate in interference proceedings in the USPTO to determine priority of invention, which could result in substantial costs to us, even if the eventual outcome is favorable to us. We may also need to participate in legal proceedings before courts in the U.S. or foreign countries, inter partes or post-grant review proceedings before the USPTO, or opposition proceedings before the EPO regarding patents in our portfolio. In addition, because of the extensive time required for clinical development and regulatory review of a product candidate we may develop, it is possible that, before any of our product candidates can be commercialized, any related patent may expire or remain in force for only a short period following commercialization, thereby reducing any advantage of any such patent.

Our commercial success, like the commercial success of other companies in our industry, will depend in part on not infringing upon the proprietary rights of third parties. It is uncertain whether the issuance of any third-party patent would require us to alter our development or commercial strategies, or our product candidates or processes, obtain licenses or cease certain activities. We or our collaborators may not have rights under some patents that may

cover the composition of matter, manufacture or use of product candidates that we seek to develop and commercialize, drug targets to which our product candidates bind, or technologies that we use in our research and development activities. As a result, our ability to develop and commercialize our product candidates may depend on our ability to obtain licenses or other rights under such patents. The third parties who own or control such patents may be unwilling to grant those licenses or other rights to us or our collaborators under terms that are commercially viable or at all. We may become involved in legal proceedings before courts in the U.S. or foreign countries or other proceedings, such as opposition proceedings before the EPO or inter partes review, post-grant review, or interference proceedings before the USPTO, challenging the validity or enforceability of such patents owned by third parties, but such proceedings may not be resolved in our favor. Third parties who own or control such patents could bring claims based on patent infringement against us or our collaborators and seek monetary damages and to enjoin further clinical testing, manufacturing and marketing of the affected product candidates or products. The biotechnology and pharmaceutical industries are characterized by extensive litigation regarding patents and other intellectual property rights. If a third party commences a patent infringement action against us, or our collaborators, it could consume significant financial and management resources, regardless of the merit of the claims or the outcome of the litigation. If we do not settle and are not successful in defending against any such patent infringement action, we could be required to pay substantial damages or we, or our collaborators, could be forced to stop or delay research, development, manufacturing or sales of the product or product candidate that is claimed by the third party's patent. For more information related to third party rights, see "Risk Factors – Risks related to our Intellectual Property".

In addition to patents, we rely upon unpatented trade secrets and know-how and continuing technological innovation to develop and maintain our competitive position. We seek to protect our proprietary information, in part, using confidentiality agreements with our collaborators, employees and consultants, and invention assignment agreements with our employees. We also have agreements requiring assignment of inventions with selected consultants and collaborators. The confidentiality agreements are designed to protect our proprietary information and, in the case of agreements or clauses requiring invention assignment, to grant us ownership of technologies that are developed through a relationship with a third party.

Competition

We compete in the pharmaceutical, biotechnology and other related markets that address solid tumor cancers and hematologic cancers. We face significant competition from many pharmaceutical and biotechnology companies that are also researching and selling products designed to address these markets. Many of our competitors have materially greater financial, manufacturing, marketing, legal, research and drug development resources than we do. Large pharmaceutical companies in particular have extensive expertise in preclinical and clinical testing and in obtaining regulatory approvals for drugs. In addition, academic institutions, government agencies, and other public and private organizations conducting research may seek patent protection with respect to potentially competitive products or technologies. These organizations may also establish exclusive collaborative or licensing relationships with our competitors.

It is possible that our competitors will develop and market drugs or other treatments that are less expensive and more effective than our product candidates, or that will render our product candidates obsolete. It is also possible that our competitors will commercialize competing drugs or treatments before we or our current or future partners can launch any products developed from our product candidates. If approved for marketing by the FDA or other regulatory agencies worldwide, our product candidates would compete against existing cancer treatments such as Avastin®, Erbitux®, Yervoy™, Keytruda®, Opdivo®, chemotherapies, and potentially against other novel drug candidates or treatments that are currently in development. There have been several additional monoclonal antibodies in development for cancer, such as Abbvie's ABT-165, an anti-DLL4/VEGF dual variable domain immunoglobulin, and ABL Bio's ABL001, an anti-DLL4/VEGF antibody, both of which are reportedly being studied in clinical trials. In the immuno-oncology field, there are several approved therapeutic agents against other immuno-oncology targets and

there are several companies reportedly advancing antibody programs modulating TIGIT in early stage research and development, including Genentech (Roche), Merck, Bristol-Myers Squibb or BMS, and Arcus Biosciences.

Established pharmaceutical and biotechnology companies that are known to be involved in oncology research and currently sell or are developing drugs in our markets of interest include Amgen, AbbVie, Astellas, AstraZeneca,

Bayer, BMS, Celgene, Genentech (Roche), GSK, Johnson & Johnson, Lilly, Merck, Merck Serono, Novartis, Pfizer, Regeneron, Sanofi, Teva and others. There are also biotechnology companies of various sizes that are developing therapies against immuno-oncology targets, and others also compete with us in recruiting and retaining qualified scientific and management personnel, and in acquiring technologies complementary to, or necessary for, our programs.

Manufacturing

Our current product candidates are manufactured using specialized biopharmaceutical process techniques. We generally conduct mammalian cell line development and process development in house, and then transfer the production cell line and process to our contract manufacturers for bulk protein production. Our contract manufacturers to date have included Lonza and Bayer. If Celgene exercises its option for the further development of the etigilimab program under its collaboration agreement, it would assume manufacturing responsibility for the applicable product candidates. We rely on contract manufacturing organizations to produce other product candidates in accordance with the FDA's current good manufacturing practices, or cGMP, regulations for use in our clinical trials. However, we currently rely on a single source supplier for our requirements of the bulk drug substance of each of our product candidates. The manufacture of drug and biologic products is subject to extensive cGMP regulations, which impose various procedural and documentation requirements and govern all areas of recordkeeping, production processes and controls, personnel and quality control. We expect to rely on contract manufacturers for the manufacture of clinical and commercial supplies of our compounds other than those product candidates for which Celgene has exercised its option.

We purchase quantities of our product candidates from our contract manufacturers pursuant to purchase orders that we place from time to time. If we were unable to obtain sufficient quantities of product candidates or receive raw materials in a timely manner, we could be required to delay our ongoing clinical trials and seek alternative manufacturers, which would be costly and time-consuming. We may consider adding secondary sources for manufacturing in the future.

Government Regulation

The FDA and comparable regulatory authorities in state and local jurisdictions and in other countries impose substantial and burdensome requirements on the clinical development, manufacture, marketing and distribution of our product candidates. These agencies and other federal, state and local entities regulate research and development activities and the testing, manufacture, quality control, safety, effectiveness, labeling, storage, record keeping, approval, advertising and promotion, and export and import of our product candidates.

In the United States, the FDA regulates drugs, medical devices and biologic products under the Federal Food, Drug, and Cosmetic Act, or FFDCA, its implementing regulations and other laws, including, in the case of biologics, the Public Health Service Act. Our product candidates are subject to regulation by the FDA as biologics. Biologics require the submission of a Biologics License Application, or BLA, and approval by the FDA before being marketed in the United States. None of our product candidates has been approved by the FDA for marketing in the United States, and we currently have no BLAs pending. If we fail to comply with applicable FDA or other requirements at any time during the product development process, clinical testing, the approval process or after approval, we may become subject to administrative or judicial sanctions. These sanctions could include the FDA's refusal to approve pending applications, license suspension or revocation, withdrawal of an approval, warning letters, product recalls, product seizures, total or partial suspension of production or distribution, injunctions, fines, civil penalties or criminal prosecution. Any FDA enforcement action could have a material adverse effect on us. The process required by the FDA before our biologic product candidates may be marketed in the United States generally involves the following:

- completion of extensive preclinical laboratory tests, preclinical animal studies and formulation studies all performed in accordance with the FDA's good laboratory practice, or GLP, regulations;
- submission to the FDA of an IND application which must become effective before human clinical trials in the United States may begin;

- performance of adequate and well-controlled human clinical trials all performed in accordance with the FDA's good clinical practice, or GCP, regulations, to establish the safety and efficacy of the drug candidate for each proposed indication;
- submission to the FDA of a BLA;
- satisfactory completion of an FDA inspection of the manufacturing facility or facilities at which the product is produced to assess compliance with cGMP regulations; and
- FDA review and approval of the BLA prior to any commercial marketing, sale or shipment of the product.

The testing and approval process requires substantial time, effort and financial resources, and we cannot be certain that any approvals for our drug candidates will be granted on a timely basis, if at all.

Once a product candidate is identified for development, it enters the preclinical testing stage. Preclinical studies include laboratory evaluations of drug chemistry, formulation and stability, as well as studies to evaluate toxicity in animals. The results of the preclinical studies, together with manufacturing information and analytical data, are submitted to the FDA as part of an IND application. The IND automatically becomes effective 30 days after receipt by the FDA, unless the FDA, within the 30-day time period, raises concerns or questions about the conduct of the clinical trial, including concerns that human research subjects will be exposed to unreasonable health risks. In such a case, the IND sponsor and the FDA must resolve any outstanding concerns before the clinical trial can begin. Submission of an IND may result in the FDA not allowing the clinical trials to commence or not allowing the clinical trials to commence on the terms originally specified in the IND. A separate submission to an existing IND must also be made for each successive clinical trial conducted during drug development, and the FDA must grant permission, either explicitly or implicitly by not objecting, before each clinical trial can begin.

Clinical trials involve the administration of the product candidate to human subjects under the supervision of qualified investigators. Clinical trials are conducted under protocols detailing, among other things, the objectives of the clinical trial, the parameters to be used in monitoring safety and the effectiveness criteria to be used. Each protocol must be submitted to the FDA as part of the IND. An independent institutional review board, or IRB, for each medical center proposing to conduct a clinical trial must also review and approve a plan for any clinical trial before it can begin at that center and the IRB must monitor the clinical trial until it is completed. The FDA, the IRB, or the sponsor may suspend or discontinue a clinical trial at any time on various grounds, including a finding that the subjects are being exposed to an unacceptable health risk. Clinical testing also must satisfy extensive GCP requirements, including the requirements for informed consent.

All clinical research performed in the United States in support of a BLA must be authorized in advance by the FDA under the IND regulations and procedures described above. However, a sponsor who wishes to conduct a clinical trial outside the United States may, but need not, obtain FDA authorization to conduct the clinical trial under an IND. If a foreign clinical trial is not conducted under an IND, the sponsor may submit data from the clinical trial to the FDA in support of a BLA so long as the clinical trial is conducted in compliance with GCP and the FDA is able to validate the data from the study through an onsite inspection if the FDA deems it necessary. We currently conduct trials only in the United States. However, we have previously conducted trials in many countries and regions including the United States, Canada, Europe, the United Kingdom, Australia, and New Zealand, and we may include clinical trial centers in these and other territories in any other clinical trials that we may initiate for our therapeutic candidates in the future, including later-stage clinical development programs for our therapeutic candidates that we develop independently, prior to submitting a BLA to the FDA, or comparable applications to the European Medicines Agency, or EMA, and other relevant regulatory agencies in global markets. We have designed our clinical trials to comply with FDA regulatory requirements for the use of foreign clinical data in support of a BLA, and we intend to utilize data from our current clinical trials in support of our future U.S. and worldwide development and potential commercialization.

Clinical Trials

For purposes of BLA submission and approval, clinical trials are typically conducted in three sequential phases, which may overlap or be combined.

- Phase I clinical trials are initially conducted in a limited population of subjects to test the product candidate for safety, dose tolerance, absorption, metabolism, distribution and excretion in healthy humans or, on occasion, in patients with severe problems or life-threatening diseases to gain an early indication of its effectiveness.
- Phase II clinical trials are generally conducted in a limited patient population to: evaluate preliminarily the efficacy of the product candidate for specific targeted indications in patients with the disease or condition under study; evaluate dosage tolerance and appropriate dosage; and identify possible adverse effects and safety risks.
- Phase III clinical trials are commonly definitive efficacy studies of the experimental medication. Phase III trials are typically conducted when Phase II clinical trials demonstrate that a dose range of the product candidate is effective and has an acceptable safety profile. Phase III clinical trials are generally undertaken with large numbers of patients, such as groups of several hundred to several thousand, to provide substantial evidence of clinical efficacy and to further test for safety in an expanded patient population at multiple, geographically-dispersed clinical trial sites.

In some cases, the FDA may condition approval of a BLA on the sponsor's agreement to conduct additional clinical trials to further assess the biologic's safety and effectiveness after BLA approval. Such post-approval clinical trials are typically referred to as Phase IV clinical trials.

Concurrent with clinical trials, companies usually complete additional animal trials and must also develop additional information about the chemistry and physical characteristics of the biologic and finalize a process for manufacturing the biologic in commercial quantities in accordance with cGMP requirements. The manufacturing process must be capable of consistently producing quality batches of the product candidate and, among other things, the manufacturer must develop methods for testing the identity, strength, quality and purity of the final biologic product. Additionally, appropriate packaging must be selected and tested and stability studies must be conducted to demonstrate that the product candidate does not undergo unacceptable deterioration over its shelf life.

Biologics License Applications

The results of preclinical studies and of the clinical trials, together with other detailed information, including extensive manufacturing information and information on the composition of the biologic, are submitted to the FDA in the form of a BLA requesting approval to market the biologic for one or more specified indications. The FDA reviews a BLA to determine, among other things, whether a biologic is safe and effective for its intended use.

Once a BLA has been accepted for filing, by law the FDA has 180 days to review the application and respond to the applicant. However, the review process is often significantly extended by FDA requests for additional information or clarification. Under the Prescription Drug User Fee Act, the FDA has a goal of responding to 90% of standard original BLA submissions within ten months of the filing date, but this timeframe is often extended. The FDA may refer the application to an advisory committee for review, evaluation and recommendation as to whether the application should be approved. The FDA is not bound by the recommendation of an advisory committee, but it generally follows such recommendations. The FDA may deny approval of a BLA if the applicable statutory and regulatory criteria are not satisfied, or it may require additional clinical data or an additional Phase III clinical trial. Even if such data are submitted, the FDA may ultimately decide that the BLA does not satisfy the criteria for approval. Data from clinical trials are not always conclusive and the FDA may interpret data differently than we interpret data. Once the FDA approves a BLA, or supplement thereto, the FDA may withdraw the approval if ongoing regulatory requirements are not met or if safety problems are identified after the biologic reaches the market. Where a withdrawal may not be appropriate, the FDA still may seize existing inventory of such biologic or require a recall of any biologic already on the market. In addition, the FDA may require testing, including Phase IV clinical trials and surveillance programs to

monitor the effect of approved biologics which have been commercialized. The FDA has the authority to prevent or limit further marketing of a biologic based on the results of these post-marketing programs.

A sponsor may also seek approval of its product candidates under programs designed to accelerate FDA review and approval of BLAs. For instance, a sponsor may seek FDA designation of a product candidate as a "fast track" product. Fast track products are those products intended for the treatment of a serious or life-threatening disease or condition and which demonstrate the potential to address unmet medical needs for such diseases or conditions. If fast track designation is obtained, the FDA may initiate review of sections of a BLA before the application is complete. This "rolling review" is available if the applicant provides and the FDA approves a schedule for the remaining information. In some cases, a fast track product may be approved on the basis of either a surrogate endpoint that is reasonably likely to predict clinical benefit, or on a clinical endpoint that can be measured earlier than irreversible morbidity or mortality, that is reasonably likely to predict an effect on irreversible morbidity or mortality or other clinical benefit, taking into account the severity, rarity, or prevalence of the condition and the availability or lack of alternative treatments, under the FDA's accelerated approval program. Approvals of this kind typically include requirements for appropriate post-approval Phase IV clinical trials to validate the surrogate endpoint or otherwise confirm the effect of the clinical endpoint.

In addition, the Food and Drug Administration Safety and Innovation Act, or FDASIA, which was enacted and signed into law in 2012, established a category of drugs referred to as "breakthrough therapies." A sponsor may seek FDA designation of a drug candidate as a "breakthrough therapy" if the drug is intended, alone or in combination with one or more other drugs, to treat a serious or life-threatening disease or condition and preliminary clinical evidence indicates that the drug may demonstrate substantial improvement over existing therapies on one or more clinically significant endpoints, such as substantial treatment effects observed early in clinical development. Breakthrough therapy designation provides all of the features of fast track designation in addition to intensive guidance on an efficient drug development program beginning as early as Phase I, and FDA organizational commitment to expedited development, including involvement of senior managers and experienced review staff in a cross-disciplinary review, where appropriate. Product candidates may also be eligible for "priority review," or review within a six month timeframe from the date a complete BLA is accepted for filing, if a sponsor shows that its product candidate, if approved, would provide a significant improvement in safety and effectiveness compared to available therapies. When appropriate, we intend to seek fast track designation for our product candidates. We cannot predict whether any of our product candidates will obtain a fast track and/or accelerated approval designation, or the ultimate impact, if any, of the fast track designation on the timing or likelihood of FDA approval of any of our proposed biologics.

Biologics may be marketed only for the FDA approved indications and in accordance with the provisions of the approved labeling. Further, if there are any modifications to the biologic, including changes in indications, labeling, or manufacturing processes or facilities, the applicant may be required to submit and obtain FDA approval of a new BLA or BLA supplement, which may require us to develop additional data or conduct additional preclinical studies and clinical trials.

Before approving an application, the FDA will inspect the facility or the facilities at which the biologic product is manufactured, and will not approve the product unless cGMP compliance is satisfactory. The FDA may also inspect the sites at which the clinical trials were conducted to assess their compliance, and will not approve the biologic unless compliance with GCP requirements is satisfactory.

The testing and approval processes require substantial time, effort and financial resources, and each may take several years to complete. The FDA may not grant approval on a timely basis, or at all. Even if we believe a clinical trial has demonstrated safety and efficacy of one of our product candidates for the treatment of a disease, the results may not be satisfactory to the FDA. Preclinical and clinical data may be interpreted by the FDA in different ways, which could delay, limit or prevent regulatory approval. We may encounter difficulties or unanticipated costs in our efforts to secure necessary governmental approvals which could delay or preclude us from marketing our product candidates. The FDA may limit the indications for use or place other conditions on any approvals that could restrict the commercial application of the products. After approval, certain changes to the approved biologic, such as adding new

indications, manufacturing changes or additional labeling claims, are subject to further FDA review and approval. Depending on the nature of the change proposed, a BLA supplement must be filed and approved before the change may be implemented.

We believe that any of our products approved as a biological product under a BLA should qualify for a 12-year period of non-patent exclusivity currently permitted by the Biologics Price Competition and Innovation Act of 2009, or BPCIA. Specifically, the BPCIA established an abbreviated pathway for the approval of biosimilar

biologics, including the possible designation of a biosimilar as “interchangeable,” based on their similarity to existing brand products. Under the BPCIA, an application for a biosimilar product cannot be submitted to the FDA until four years following the date that the reference product was first licensed by the FDA, and the approval of a biosimilar product may not be made effective by the FDA until 12 years from the date on which the reference product was first licensed. The BPCIA also created certain exclusivity periods for biosimilars approved as interchangeable products. There is a risk that the U.S. Congress could amend the BPCIA to significantly shorten this 12-year exclusivity period or that the FDA will not consider our product candidates to be reference products for competing products, potentially creating the opportunity for competition sooner than anticipated. Moreover, the extent to which a biosimilar, once approved, will be substituted for any one of our reference products in a way that is similar to traditional generic substitution for non-biological products is not yet clear, and will depend on a number of marketplace and regulatory factors that are still developing. The BPCIA is complex and is still being interpreted and implemented by the FDA. As a result, its ultimate impact, implementation and meaning are subject to uncertainty. While it is uncertain when any such processes may be fully adopted by the FDA, any such processes that operate to limit the scope or length of exclusivity afforded by the BPCIA could have a material adverse effect on the future commercial prospects for our biological products. In addition, foreign regulatory authorities may also provide for exclusivity periods for approved biological products. For example, biological products in Europe may be eligible for a 10-year period of exclusivity.

Other Regulatory Requirements

Any biologics manufactured or distributed by us or our collaborators pursuant to FDA approvals would be subject to continuing regulation by the FDA, including recordkeeping requirements and reporting of adverse experiences associated with the product. Manufacturers and their subcontractors are required to register their establishments with the FDA and certain state agencies, and are subject to periodic unannounced inspections by the FDA and certain state agencies for compliance with ongoing regulatory requirements, including cGMPs, which impose certain procedural and documentation requirements upon us and our third-party manufacturers. Failure to comply with the statutory and regulatory requirements can subject a manufacturer to possible legal or regulatory action, such as warning letters, suspension of manufacturing, seizure of product, injunctive action or possible civil penalties. We cannot be certain that we or our present or future third-party manufacturers or suppliers will be able to comply with the cGMP regulations and other ongoing FDA regulatory requirements. If we or our present or future third-party manufacturers or suppliers are not able to comply with these requirements, the FDA may halt our clinical trials, require us to recall a drug from distribution or withdraw approval of the BLA for that product.

The FDA closely regulates the post-approval marketing and promotion of biologics, including standards and regulations for direct-to-consumer advertising, off-label promotion, industry-sponsored scientific and educational activities, and promotional activities involving the Internet. A company can make only those claims relating to safety and efficacy that are approved by the FDA. Failure to comply with these requirements can result in adverse publicity, warning letters, corrective advertising, and potential civil and criminal penalties. Physicians may prescribe legally available biologics for uses that are not described in the product’s labeling and that differ from those tested by us and approved by the FDA. Such off-label uses are common across medical specialties. Physicians may believe that such off-label uses are the best treatment for many patients in varied circumstances. The FDA does not regulate the behavior of physicians in their choice of treatments. The FDA does, however, impose stringent restrictions on manufacturers’ communications regarding off-label use.

Orphan Drug Designation and Exclusivity

Under the Orphan Drug Act, the FDA may grant orphan designation to a drug or biologic intended to treat a rare disease or condition, which is generally a disease or condition that affects fewer than 200,000 individuals in the United States, or more than 200,000 individuals in the United States and for which there is no reasonable expectation that the cost of developing and making available in the United States a drug or biologic for this type of disease or

condition will be recovered from sales in the United States for that drug or biologic. Orphan drug designation must be requested before submitting a BLA. After the FDA grants orphan drug designation, the generic identity of the therapeutic agent and its potential orphan use are disclosed publicly by the FDA. The orphan drug designation does not convey any advantage in, or shorten the duration of, the regulatory review or approval process.

If a product that has orphan drug designation subsequently receives the first FDA approval for the disease for which it has such designation, the product is entitled to orphan product exclusivity, which means that the FDA may not approve any other applications, including a full BLA, to market the same biologic for the same indication for seven years, except in limited circumstances, such as a showing of clinical superiority to the product with orphan drug exclusivity. Orphan drug exclusivity does not prevent FDA from approving a different drug or biologic for the same disease or condition, or the same drug or biologic for a different disease or condition. Among the other benefits of orphan drug designation are tax credits for certain research and a waiver of the BLA application user fee.

A designated orphan drug may not receive orphan drug exclusivity if it is approved for a use that is broader than the indication for which it received orphan designation. In addition, exclusive marketing rights in the United States may be lost if the FDA later determines that the request for designation was materially defective or if the manufacturer is unable to assure sufficient quantities of the product to meet the needs of patients with the rare disease or condition.

Regulation of Diagnostic Tests

In the United States, the FFDCA and its implementing regulations, and other federal and state statutes and regulations govern, among other things, medical device design and development, preclinical and clinical testing, premarket clearance or approval, registration and listing, manufacturing, labeling, storage, advertising and promotion, sales and distribution, export and import, and post-market surveillance. Diagnostic tests are classified as medical devices under the FFDCA. Unless an exemption or FDA exercise of enforcement discretion applies, diagnostic tests generally require marketing clearance or approval from the FDA prior to commercialization. The two primary types of FDA marketing authorization applicable to a medical device are premarket notification, also called 510(k) clearance, and approval of a premarket, or PMA approval.

To obtain 510(k) clearance for a medical device, or for certain modifications to devices that have received 510(k) clearance, a manufacturer must submit a premarket notification demonstrating that the proposed device is substantially equivalent to a previously cleared 510(k) device or to a preamendment device that was in commercial distribution before May 28, 1976, or a predicate device, for which the FDA has not yet called for the submission of a PMA. In making a determination that the device is substantially equivalent to a predicate device, the FDA compares the proposed device to the predicate device or predicate devices and assesses whether the subject device is comparable to the predicate device or predicate devices with respect to intended use, technology, design and other features which could affect safety and effectiveness. If the FDA determines that the subject device is substantially equivalent to the predicate device or predicate devices, the subject device may be cleared for marketing. The 510(k) premarket notification pathway generally takes from three to twelve months from the date the application is completed, but can take significantly longer.

PMA applications must be supported by valid scientific evidence, which typically requires extensive data, including technical, preclinical, clinical and manufacturing data, to demonstrate to the FDA’s satisfaction the safety and effectiveness of the device. For diagnostic tests, a PMA application typically includes data regarding analytical and clinical validation studies. As part of its review of the PMA, the FDA will conduct a pre-approval inspection of the manufacturing facility or facilities to ensure compliance with the Quality System Regulation, or QSR, which requires manufacturers to follow design, testing, control, documentation and other quality assurance procedures. The FDA’s review of an initial PMA application is required by statute to take between six to ten months, although the process typically takes longer, and may require several years to complete. If the FDA evaluations of both the PMA application and the manufacturing facilities are favorable, the FDA will either issue an approval letter or an approvable letter, which usually contains a number of conditions that must be met in order to secure the final approval of the PMA. If the FDA’s evaluation of the PMA or manufacturing facilities is not favorable, the FDA will deny the approval of the PMA or issue a not approvable letter. A not approvable letter will outline the deficiencies in the application and, where practical, will identify what is necessary to make the PMA approvable. Once granted, PMA approval may be

withdrawn by the FDA if compliance with post-approval requirements, conditions of approval or other regulatory standards is not maintained or problems are identified following initial marketing.

On July 31, 2014, the FDA issued a final guidance document addressing the development and approval process for “In Vitro Companion Diagnostic Devices.” According to the guidance document, for novel therapeutic products that depend on the use of a diagnostic test and where the diagnostic device could be essential for the safe

and effective use of the corresponding therapeutic product, the premarket application for the companion diagnostic device should be developed and approved or cleared contemporaneously with the therapeutic, although the FDA recognizes that there may be cases when contemporaneous development may not be possible. However, in cases where a drug cannot be used safely or effectively without the companion diagnostic, the FDA's guidance indicates it will generally not approve the drug without the approval or clearance of the diagnostic device. The FDA also issued a draft guidance in July 2016 setting forth the principles for co-development of an in vitro companion diagnostic device with a therapeutic product. The draft guidance describes principles to guide the development and contemporaneous marketing authorization for the therapeutic product and its corresponding in vitro companion diagnostic.

Healthcare Reform

In March 2010, the U.S. Congress passed and President Obama signed into law the Patient Protection and Affordable Care Act, as amended by the Health Care and Education Reconciliation Act, collectively known as the Affordable Care Act. The Affordable Care Act substantially changes the way healthcare is financed by both governmental and private insurers, and significantly impacts the pharmaceutical industry. The Affordable Care Act contains a number of provisions, including those governing enrollment in federal healthcare programs, reimbursement changes and fraud and abuse measures, which have impacted existing government healthcare programs and have resulted in the development of new programs, including Medicare payment for performance initiatives and improvements to the physician quality reporting system and feedback program. Additionally, the Affordable Care Act:

- increases the minimum level of Medicaid rebates payable by manufacturers of brand-name drugs from 15.1% to 23.1%;
- extends the rebate program to individuals enrolled in Medicaid managed care organizations;
- addresses a new methodology by which rebates owed by manufacturers under the Medicaid Drug Rebate Program are calculated for drugs that are inhaled, infused, instilled, implanted or injected;
- expands the eligibility criteria for Medicaid programs by, among other things, allowing states to offer Medicaid coverage to additional individuals and by adding new mandatory eligibility categories for certain individuals with income at or below 133% of the federal poverty level, thereby potentially increasing a manufacturer's Medicaid rebate liability;
- expands access to commercial health insurance coverage through new state-based health insurance marketplaces, or exchanges;
- requires manufacturers to participate in a coverage gap discount program, under which they must agree to offer 50% point-of-sale discounts, which, through subsequent legislative amendments, were increased to 70%, off negotiated prices of applicable brand drugs to eligible beneficiaries during their coverage gap period, as a condition for the manufacturer's outpatient drugs to be covered under Medicare Part D;
- imposes a non-deductible annual fee on pharmaceutical manufacturers or importers who sell "branded prescription drugs" to specified federal government programs; and
- establishes a Center for Medicare Innovation at the Centers for Medicare & Medicaid Services, or CMS, to test innovative payment and service delivery models to lower Medicare and Medicaid spending.

Since its enactment, there have been judicial and Congressional challenges to certain aspects of the Affordable Care Act. We expect that the current presidential administration and U.S. Congress will likely continue to seek to modify, repeal, or otherwise invalidate all or certain provisions of, the Affordable Care Act. For example, the Tax Cuts and Jobs Act (the "Tax Act") was enacted, which, among other things, removes penalties for not complying with the Affordable Care Act's individual mandate to carry health insurance. On December 14, 2018, a U.S. District Court Judge in the Northern District of Texas, ruled that the individual mandate is a critical and inseverable feature of the Affordable Care Act, and therefore, because it was repealed as part of the Tax Act, the remaining provisions of the Affordable Care Act are invalid as well. While the Trump Administration and the Centers for Medicare & Medicaid Services have both stated that the ruling will have no immediate effect, it is unclear how this decision, subsequent appeals, if any, will impact the law. As a result, there is still uncertainty with respect to the impact President Trump's

administration and the U.S. Congress may have, if any, and any changes will likely take time to

unfold, and could have an impact on coverage and reimbursement for healthcare items and services covered by plans that were authorized by the Affordable Care Act.

In addition, other legislative changes have been proposed and adopted in the United States since the Affordable Care Act was enacted. These changes include aggregate reductions to Medicare payments to providers of 2 percent per fiscal year, which went into effect on April 1, 2013, and, due to subsequent legislative amendments, will remain in effect through 2027 unless additional Congressional action is taken, and the American Taxpayer Relief Act, which, among other things, further reduced Medicare payments to several types of providers, including hospitals, imaging centers and cancer treatment centers, and increased the statute of limitations period for the government to recover overpayments to providers from three to five years.

Moreover, payment methodologies, including payment for companion diagnostics, may be subject to changes in healthcare legislation and regulatory initiatives. For example, the CMS has begun bundling the Medicare payments for certain laboratory tests ordered while a patient received services in a hospital outpatient setting and, in 2018, the CMS began paying for clinical laboratory services based on a weighted average of reported prices that private payors, Medicare Advantage plans, and Medicaid Managed Care plans pay for laboratory services. In addition, recently, there has been heightened governmental scrutiny over the manner in which manufacturers set prices for their marketed products, which has resulted in several Congressional inquiries and proposed and enacted legislation designed to, among other things, bring more transparency to product pricing, review the relationship between pricing and manufacturer patient programs, and reform government program reimbursement methodologies for drug products. For example, the 21st Century Cures Act changed the reimbursement methodology for infusion drugs and biologics furnished through durable medical equipment in an attempt to remedy over- and underpayment of certain products. Individual states in the United States have also become increasingly active in implementing regulations designed to control pharmaceutical product pricing, including price or patient reimbursement constraints, discounts, restrictions on certain product access and marketing cost disclosure and transparency measures, and, in some cases, designed to encourage importation from other countries and bulk purchasing. These new laws and the regulations and policies implementing them, as well as other healthcare reform measures that may be adopted in the future, may have a material adverse effect on our industry generally and on our ability to successfully develop and commercialize our products.

Third-Party Payor Coverage and Reimbursement

Although none of our drug candidates has been commercialized for any indication, if they are approved for marketing, commercial success of our drug candidates will depend, in part, upon the availability of coverage and reimbursement from third-party payors at the federal, state and private levels. Government payor programs, including Medicare and Medicaid, private health care insurance companies and managed-care plans have attempted to control costs by limiting coverage and the amount of reimbursement for particular procedures or drug treatments. The U.S. Congress and state legislatures from time to time propose and adopt initiatives aimed at cost-containment. Ongoing federal and state government initiatives directed at lowering the total cost of health care will likely continue to focus on health care reform, the cost of prescription pharmaceuticals and on the reform of the Medicare and Medicaid payment systems. Examples of how limits on drug coverage and reimbursement in the United States may cause reduced payments for drugs in the future include:

- changing Medicare reimbursement methodologies;
- fluctuating decisions on which drugs to include in formularies;
- revising drug rebate calculations under the Medicaid program; and
- reforming drug importation laws.

Some third-party payors also require pre-approval of coverage for new or innovative devices or drug therapies before they will reimburse health care providers who use such therapies. While we cannot predict whether any proposed

cost-containment measures will be adopted or otherwise implemented in the future, the announcement or adoption of these proposals could have a material adverse effect on our ability to obtain adequate prices for our drug candidates and operate profitably.

Other Healthcare Laws and Regulations

We are also subject to healthcare regulation and enforcement by the federal government and the states and foreign governments in which we conduct our business. The laws that may affect our ability to operate include:

- the federal Anti-Kickback Statute, which prohibits, among other things, persons from knowingly and willfully soliciting, receiving, offering or paying remuneration, directly or indirectly, in exchange for or to induce either the referral of an individual for, or the purchase, order or recommendation of, any good or service for which payment may be made under federal healthcare programs such as the Medicare and Medicaid programs. A person or entity does not need to have actual knowledge of the statute or specific intent to violate it in order to have committed a violation. In addition, the government may assert that a claim including items or services resulting from a violation of the federal Anti-Kickback Statute constitutes a false or fraudulent claim for purposes of the federal False Claims Act;
- federal false claims laws which prohibit, among other things, individuals or entities from knowingly presenting, or causing to be presented, claims for payment from Medicare, Medicaid, or other third-party payors that are false or fraudulent;
- federal criminal laws that prohibit executing a scheme to defraud any healthcare benefit program or making false statements relating to healthcare matters. Similar to the federal Anti-Kickback Statute, a person or entity does not need to have actual knowledge of the statute or specific intent to violate it in order to have committed a violation;
- the federal Health Insurance Portability and Accountability Act of 1996, as amended by the Health Information Technology for Economic and Clinical Health Act, which governs the conduct of certain electronic healthcare transactions and protects the security and privacy of protected health information;
- state law equivalents of each of the above federal laws, such as anti-kickback and false claims laws which may apply to items or services reimbursed by any third-party payor, including commercial insurers; and
- similar healthcare laws and regulations in the European Union and other jurisdictions, including reporting requirements detailing interactions with and payments to healthcare providers and requirements regarding the collection, distribution, use, security, and storage of personally identifiable information and other data relating to individuals (including the EU General Data Protection Regulation 2016/679, or GDPR.

In addition, there has been a recent trend of increased federal and state regulation of payments made to physicians and other healthcare providers. The Affordable Care Act, among other things, imposes new reporting requirements on certain drug manufacturers for payments and “transfers of value” made by them to physicians and teaching hospitals, as well as ownership and investment interests held by physicians and their immediate family members. Failure to submit required information may result in civil monetary penalties for all payments, transfers of value or ownership or investment interests that are not timely, accurately and completely reported in an annual submission. Drug manufacturers are required to submit reports to the government by the 90$^{th}$ day of each calendar year. Certain states also mandate implementation of commercial compliance programs and compliance with the pharmaceutical industry’s voluntary compliance guidelines and the relevant compliance guidance promulgated by the federal government, impose restrictions on drug manufacturer marketing practices and/or require the tracking and reporting of pricing and marketing information as well as gifts, compensation and other remuneration to physicians and other healthcare professionals and entities.

The shifting commercial compliance environment and the need to build and maintain robust and expandable systems to comply with different compliance and/or reporting requirements in multiple jurisdictions increase the possibility that a healthcare company may violate one or more of the requirements. If our operations are found to be in violation of any of the laws described above or any other governmental laws and regulations that apply to us, we may be subject to penalties, including civil and criminal penalties, damages, fines, a corporate integrity agreement or other agreement to resolve allegations of non-compliance, the curtailment or restructuring of our operations, the exclusion from participation in federal and state healthcare programs and imprisonment, any of which could adversely affect our ability to operate our business and impact our financial results.

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International Regulation

In addition to regulations in the United States, we will be subject to a variety of foreign regulations governing clinical trials and commercial sales and distribution of our future drugs. Whether or not we obtain FDA approval for a drug, we must obtain approval of a drug by the comparable regulatory authorities of foreign countries before we can commence clinical trials or marketing of the drug in those countries. The approval process varies from country to country, and the time may be longer or shorter than that required for FDA approval. The requirements governing the conduct of clinical trials, product licensing, pricing and reimbursement vary greatly from country to country.

Under European Union regulatory systems, marketing authorizations may be submitted either under a centralized or mutual recognition procedure. The centralized procedure provides for the grant of a single marketing authorization that is valid for all European Union member states. The mutual recognition procedure provides for mutual recognition of national approval decisions. Under this procedure, the holder of a national marketing authorization may submit an application to the remaining member states. Within 90 days of receiving the applications and assessment report, each member state must decide whether to recognize approval.

In addition to regulations in Europe and the United States, we will be subject to a variety of foreign regulations governing clinical trials and commercial distribution of our future drugs.

Employees

As of December 31, 2018, we had 22 employees. We have no collective bargaining agreements with our employees, and we have not experienced any work stoppages. We believe that our relations with our employees are good.

Research and Development

Our research and development costs were $34.4 million, $59.8 million and $109.7 million for the years ended December 31, 2018, 2017, and 2016, respectively. See “Item 7. Management’s Discussion and Analysis of Financial Condition and Results of Operations” for additional detail regarding our research and development activities, which are funded in part through payments received from our prior and current collaborators, GSK, Bayer and Celgene.

Customer Concentration and Geographic Information

All or a significant portion of our revenues for the years ended December 31, 2018, 2017, and 2016 were derived from GSK, Bayer, and Celgene. GSK and Bayer are located outside of the United States, in the United Kingdom and Germany, respectively. See Notes 2 and 10 to our Financial Statements included in Part II, Item 8 of this Annual Report on Form 10-K for additional information.

All of our revenues for the years ended December 31, 2018, 2017, and 2016 were earned in the United States. All of our long-lived assets are located in the United States.

About OncoMed

We were incorporated in Delaware and commenced operations in 2004. Our principal offices are located at 800 Chesapeake Drive, Redwood City, California 94063, and our telephone number is (650) 995-8200. Our website address is www.oncomed.com. The information contained in, or that can be accessed through, our website is not part of this Annual Report on Form 10-K.

Financial Information about Segments

We operate only in one business segment. See Note 1 to our Financial Statements included in Part II, Item 8 of this Annual Report on Form 10-K. For financial information regarding our business, see “Item 7 Management’s Discussion and Analysis of Financial Condition and Results of Operations” and our financial statements and related notes.

Available Information

We file electronically with the Securities and Exchange Commission, or SEC, our annual reports on Form 10-K, quarterly reports on Form 10-Q and current reports on Form 8-K pursuant to Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended. We make available on our website at www.oncomed.com, free of charge, copies of these reports, as soon as reasonably practicable after we electronically file such material with, or furnish it to, the SEC. The SEC maintains a website that contains reports, proxy and information statements, and other information regarding issuers that file electronically with the SEC. The address of that website is www.sec.gov. The information in or accessible through the SEC and our website are not incorporated into, and are not considered part of, this filing. Further, our references to the URLs for these websites are intended to be inactive textual references only.

Item 1A. RISK FACTORS

The following section includes the most significant factors that may adversely affect our business and operations. You should carefully consider the risks and uncertainties described below and all information contained in this Annual Report on Form 10-K before deciding to invest in our common stock. If any of the following risks actually occur, our business, financial condition, results of operations and growth prospects may be materially and adversely affected. In that event, the trading price of our common stock could decline, and you could lose all or part of your investment.

Risk Factors Related to the Merger

The Merger is subject to a number of conditions, some of which are outside of the parties' control, and, if these conditions are not satisfied, the Merger Agreement may be terminated and the Merger may not be completed.

The Merger Agreement contains a number of conditions that must be fulfilled to complete the Merger. These conditions include, among other customary conditions, (i) the approval and adoption of the Merger Agreement by OncoMed's stockholders and, if necessary, Mereo's shareholders, (ii) the absence of any temporary restraining order, preliminary or permanent injunction or any other order preventing the consummation of the Merger and any law that makes illegal the consummation of the Merger, (iii) the SEC having declared effective the Registration Statement and the registration statement on Form F-6 to be filed with the SEC, (iv) Mereo having obtained all required shareholder approvals in connection with the issuance of Mereo ADSs and the allotment and issuance of the Mereo Shares underlying the Mereo ADSs to be issued in the Merger and the grant of the CVRs to the stockholders of OncoMed pursuant to the Merger Agreement, (v) the approval for listing on Nasdaq, subject to official notice of issuance, of the Mereo ADSs to be issued in the Merger and the approval for admission to trading on AIM of the Mereo Shares underlying the Mereo ADSs to be issued in the Merger pursuant to the Merger Agreement, and the satisfaction of any other requirements of London Stock Exchange plc, (vi) subject to certain materiality exceptions, the accuracy of certain representations and warranties of each of OncoMed and Mereo contained in the Merger Agreement and the compliance by each party with the covenants contained in the Merger Agreement, and (vii) the absence of a material adverse effect with respect to each of OncoMed and Mereo.

The required satisfaction of the foregoing conditions could delay the completion of the Merger for a significant period of time or prevent it from occurring. Any delay in completing the Merger could cause Mereo and its subsidiaries following the Merger, including OncoMed (collectively referred to in this Annual Report on Form 10-K as the "Combined Company") not to realize some or all of the benefits that the parties expect the Combined Company to

achieve. Further, there can be no assurance that the conditions to the closing of the Merger will be satisfied or waived or that the Merger will be completed.

In addition, if the Merger is not completed by September 4, 2019 (subject to potential extensions), either Mereo or OncoMed may choose to terminate the Merger Agreement. Mereo or OncoMed may also elect to terminate the Merger Agreement in certain other circumstances, and the parties can mutually decide to terminate the Merger Agreement at any time prior to the closing of the Merger, before or after shareholder approval, as applicable. See “The Merger Agreement—Termination Events” in the Registration Statement for a more detailed description of these circumstances.

Failure to complete the Merger could negatively affect the share prices and the future business and financial results of either or both of Mereo and OncoMed.

If the Merger is not completed, the ongoing businesses of either or both of Mereo and OncoMed may be adversely affected. Additionally, if the Merger is not completed and the Merger Agreement is terminated, in certain circumstances either party may be required to pay the other a termination fee of $1,721,193 (subject to any adjustments for VAT). Additionally, in certain circumstances, Mereo or OncoMed, as the case may be, must reimburse the other party for reasonable out-of-pocket fees and expenses incurred in connection with the Merger up to $750,000 (subject to any adjustments for VAT). See “The Merger Agreement—Termination Events” and “The Merger Agreement—Termination Fees” in the Registration Statement for a more detailed description of these circumstances. In addition, Mereo and OncoMed have incurred and will continue to incur significant transaction expenses in connection with the Merger regardless of whether the Merger is completed. Furthermore, Mereo or OncoMed may experience negative reactions from the financial markets, including negative impacts on their stock prices, or negative reactions from their suppliers or other business partners, should the Merger not be completed.

The foregoing risks, or other risks arising in connection with the failure to consummate the Merger, including the diversion of management attention from conducting the business of the respective companies and pursuing other opportunities during the pendency of the Merger, may have a material adverse effect on the businesses, operations, financial results and share and stock prices of Mereo and OncoMed. Either or both of Mereo or OncoMed could also be subject to litigation related to any failure to consummate the Merger or any related action that could be brought to enforce a party’s obligations under the Merger Agreement.

Because the portion of the Merger Consideration payable in Mereo ADSs is subject to adjustment for the net cash held by OncoMed at the time of the closing of the Merger, and will be unaffected by any changes in exchange rates or in the market value of Mereo Shares or OncoMed common stock before the completion of the Merger, OncoMed stockholders cannot be sure of the market value of the Mereo ADSs they will receive.

Under the exchange ratio formula set forth in the Merger Agreement, as of immediately following the Effective Time, former OncoMed stockholders are expected to own approximately 25% of the outstanding equity interests in the Combined Company on an undiluted basis, subject to adjustment for the net cash held by OncoMed at the time of the closing of the Merger. The final Exchange Ratio will be determined pursuant to a formula described in more detail in the Merger Agreement and in the Registration Statement. In particular, if OncoMed’s net cash at the time of the closing of the Merger is less than $36.5 million, the Exchange Ratio will be reduced by an amount that is greater than the amount that would otherwise reflect the difference between the target closing net cash and actual closing net cash on a dollar-for-dollar basis. Because the number of Mereo ADSs to be exchanged for each share of OncoMed common stock will be adjusted based on the net cash held by OncoMed at the time of the closing of the Merger and will be unaffected by any increase or decrease in exchange rates or in the share price of Mereo Shares between now and the closing of the Merger, the notional value of the Merger Consideration and the exact number of Mereo ADSs that will be issued to OncoMed stockholders as of the date of the OncoMed Special Meeting and as of the closing date of the Merger cannot be determined with precision in advance of the Effective Time.

The number of Mereo ADSs that will be issued to OncoMed stockholders as a result of the Merger will not be adjusted in the event of any increase or decrease in currency exchange rates or in the share price of either Mereo Shares or OncoMed common stock between the date of execution of the Merger Agreement and the completion of the Merger, and the parties do not have a right to terminate the Merger Agreement based upon changes in currency exchange rates or in the market price of Mereo Shares or OncoMed common stock.

The dollar value of the Mereo ADSs that OncoMed stockholders will receive upon completion of the Merger will depend upon the net cash held by OncoMed and the market value of Mereo Shares at the time of completion of the

Merger. In addition, Mereo ADSs will be denominated in U.S. dollars and will each represent five Mereo Shares, which are denominated in pence. Both the market price of Mereo Shares and the U.S. dollar-pound sterling exchange rate fluctuate continuously. Accordingly, each may be different from the closing price and exchange rate on each of the last full trading day preceding public announcement that Mereo and OncoMed entered into the Merger Agreement, the last full trading day prior to the date of the Registration Statement or the dates of the Mereo and OncoMed stockholder meetings. Moreover, completion of the Merger will occur, if at all, sometime after the requisite shareholder approvals have been obtained. The market value of Mereo Shares and the U.S. dollar-pound

sterling exchange rate have varied since Mereo and OncoMed entered into the Merger Agreement and will continue to vary in the future due to changes in the business, operations and prospects of Mereo and OncoMed, market assessments of the Merger, third-party acquisition proposals and regulatory considerations, in the case of the share price, and market and economic considerations and other factors both within and beyond the control of Mereo and OncoMed, in the case of both the share price and the exchange rate.

Litigation against Mereo and OncoMed, or the members of the OncoMed Board, could prevent or delay the completion of the Merger or result in the payment of damages following completion of the Merger.

It is a condition to the Merger that no temporary restraining order, preliminary or permanent injunction or other order preventing the consummation of the Merger Agreement or the transactions contemplated thereby shall have been issued by any court of competent jurisdiction or other governmental authority of competent jurisdiction and remain in effect. Neither OncoMed nor Mereo is aware of any lawsuit or proceeding specific to the Merger having been filed to date. If such a lawsuit or other proceeding is commenced and if in any such litigation or proceeding a plaintiff is successful in obtaining a restraining order or injunction prohibiting the consummation of the Merger Agreement or the transactions contemplated thereby, then the closing of the Merger may be delayed or may never occur. Even if the Merger is permitted to occur, the parties may be required to pay damages, fees or expenses in respect of claims related to the Merger or the transactions contemplated thereby.

Some of the directors and executive officers of OncoMed have interests in the Merger that may be different from, or in addition to, the interests of OncoMed stockholders generally.

OncoMed's directors and executive officers may have interests in the Merger that are different from, or in addition to or may be deemed to conflict with, the interests of OncoMed stockholders generally. These interests include, but are not limited to, the continued employment of certain members of OncoMed's management team, the continued positions of certain OncoMed directors as directors of the Combined Company, potential payments to certain executive officers pursuant to change in control and severance agreements, accelerated vesting of stock options pursuant to the terms of the Merger Agreement, accelerated vesting of restricted stock units pursuant to the terms of the Merger Agreement, a performance bonus of $50,000 that may be earned by Dr. Lewicki in connection with the Merger, and other rights held by these directors and executive officers. In particular, it is anticipated that certain individuals currently associated with OncoMed's navicixizumab products will, for a period of 18 months following the closing of the Merger, be permitted to solicit third party interest with respect to the navicixizumab products and to recommend, by written notice to the chief executive officer of Mereo, that Mereo enter into discussions with one or more such third parties that have expressed interest with respect to the navicixizumab program.

Uncertainty about the Merger may adversely affect the relationships of Mereo and OncoMed with their respective suppliers and employees, whether or not the Merger is completed.

In response to the announcement of the Merger, existing or prospective suppliers of Mereo or OncoMed may:

- delay, defer or cease providing goods or services to Mereo, OncoMed or the Combined Company;
- delay or defer other decisions concerning Mereo, OncoMed or the Combined Company, or refuse to extend credit to Mereo, OncoMed or the Combined Company; or
- otherwise seek to change the terms on which they do business with Mereo, OncoMed or the Combined Company.

Any such delays or changes to terms could seriously harm the business of each company or, if the Merger is completed, the Combined Company. These disruptions could also have an adverse effect on the ability of Mereo to achieve the milestones specified in the CVR Agreement.

In addition, as a result of the Merger, current and prospective employees could experience uncertainty about their future with Mereo, OncoMed or the Combined Company. These uncertainties may impair the Combined Company's ability to retain, recruit or motivate key management, technical and other personnel.

The Merger Agreement contains provisions that limit each party's ability to pursue alternatives to the Merger, could discourage a potential competing acquiror of either Mereo or OncoMed from making an alternative transaction proposal and, in specified circumstances, could require either party to pay a termination fee to the other party.

The Merger Agreement provides that Mereo and OncoMed shall not, and requires each of Mereo and OncoMed to refrain from authorizing, directing or permitting its representatives to, solicit, participate in negotiations with respect to or approve or recommend any third-party proposal for an alternative transaction, subject to exceptions set forth in the Merger Agreement relating to the receipt of certain unsolicited offers. If the Merger Agreement is terminated by either party after the other party's board of directors has changed its recommendation regarding the Merger or due to the other party's material breach of its non-solicitation obligations, then the terminating party may be required to pay a termination fee of $1,721,193.

These provisions could discourage a potential third-party acquiror or merger partner that might have an interest in acquiring all or a significant portion of Mereo or OncoMed or pursuing an alternative transaction from considering or proposing such a transaction, even if it were prepared to pay consideration with a higher per share cash or market value than the consideration in the Merger, or might result in a potential third-party acquiror or merger partner proposing to pay a lower price to Mereo shareholders or OncoMed stockholders than it might otherwise have proposed to pay because of the added expense of the termination fee that may become payable in certain circumstances.

If the Merger Agreement is terminated and either Mereo or OncoMed determines to seek another business combination, Mereo or OncoMed, as applicable, may not be able to negotiate a transaction with another party on terms comparable to, or better than, the terms of the Merger.

Any delay in completing the Merger may significantly reduce the benefits expected to be obtained from the Merger.

The Merger is subject to a number of conditions that are beyond the control of Mereo and OncoMed and that may prevent, delay or otherwise materially adversely affect completion of the Merger. Mereo and OncoMed cannot predict whether and when these conditions will be satisfied.

Any delay in completing the Merger may significantly reduce the benefits that Mereo and OncoMed expect to achieve if they successfully complete the Merger within the expected timeframe. In particular, any delay is likely to reduce the net cash held by OncoMed at the time of the closing of the Merger, which, under the net cash adjustment mechanism in the exchange ratio formula set forth in the Merger Agreement, will reduce the number of Mereo ADSs payable by Mereo to holders of OncoMed common stock as Share Consideration.

Until the completion of the Merger or the termination of the Merger Agreement in accordance with its terms, in consideration of the agreements made by the parties in the Merger Agreement, Mereo and OncoMed are each prohibited from entering into certain transactions and taking certain actions that might otherwise be beneficial to Mereo or OncoMed and their respective shareholders.

Until the Merger is completed, the Merger Agreement restricts Mereo and OncoMed from taking specified actions without the consent of the other party, and requires each of Mereo and OncoMed to operate in the ordinary course of business consistent with past practices. These restrictions may prevent Mereo and OncoMed from making appropriate changes to their respective businesses or pursuing attractive business opportunities that may arise prior to the

completion of the Merger.

After the Merger, OncoMed stockholders will have a significantly lower ownership and voting interest in the Combined Company than they currently have in OncoMed, and will exercise less influence over management.

Under the exchange ratio formula set forth in the Merger Agreement, as of immediately following the Effective Time, former OncoMed stockholders are expected to own approximately 25% of the outstanding equity interests in the Combined Company on an undiluted basis, subject to adjustment for the net cash held by OncoMed at the time of the closing of the Merger. In addition, the number of Mereo Shares to be allotted and issued by Mereo (and the corresponding number of Mereo ADSs to be issued to holders of OncoMed common stock) as Share Consideration or pursuant to the CVR Agreement will not, in the aggregate, exceed 66.67% of the Mereo Shares issued and outstanding immediately prior to the Effective Time (approximately 40% of the share capital of the Combined Company). Consequently, OncoMed stockholders will have less influence over the management and policies of the Combined Company than they currently have over OncoMed. In addition, only two directors serving on the existing OncoMed Board will continue as directors of the Combined Company immediately following the closing of the Merger.

The opinion of OncoMed's financial advisor does not reflect changes in circumstances that may occur between the original signing of the Merger Agreement and the completion of the Merger.

Consistent with market practices, the OncoMed Board has not obtained an updated opinion from its financial advisor as of the date of this Annual Report on Form 10-K and does not expect to receive an updated, revised or reaffirmed opinion prior to the completion of the Merger. Changes in the operations and prospects of OncoMed, general market and economic conditions and other factors that may be beyond the control of OncoMed, and on which OncoMed's financial advisor's opinion was based, may significantly alter the value of OncoMed or the price of shares or OncoMed's common stock by the time the Merger is completed. The opinion does not speak as of the time the Merger will be completed or as of any date other than the date of such opinion. Because OncoMed's financial advisor will not be updating its opinion, the opinion will not address the fairness of the Merger Consideration from a financial point of view at the time the Merger is completed.

OncoMed stockholders have appraisal rights under Delaware law.

Under Delaware law, OncoMed stockholders who do not vote in favor of adoption of the Merger Agreement and otherwise properly perfect their rights will be entitled to "appraisal rights" in connection with the Merger, which generally entitle stockholders to receive in lieu of the Merger Consideration a cash payment of an amount determined by the Court of Chancery equal to be the fair value of their OncoMed common stock as of the Effective Time. The appraised value would be determined by the Court of Chancery and could be less than, the same as or more than the Merger Consideration. Under Delaware law, stockholders are generally entitled to statutory interest on an appraisal award at a rate equal to 5% above the Federal Reserve discount rate compounded quarterly from the closing date of the Merger until the award is actually paid. Stockholders who have properly demanded appraisal rights must file a petition for appraisal with the Court of Chancery within 120 days after the effective date of the Merger. Should a material number of OncoMed's stockholders exercise appraisal rights and should the Court determine that the fair value of such shares of OncoMed common stock is materially greater than the Merger Consideration, it could have a material adverse effect on the financial condition and results of operation of the Combined Company.

The Merger is expected to be a taxable transaction for U.S. federal income tax purposes.

The exchange of OncoMed common stock for Merger Consideration in the Merger is expected to be a taxable transaction for U.S. federal income tax purposes. However, no opinion of counsel or ruling from the IRS with respect to the tax treatment of the Merger has or will be sought, and there can be no assurance that the IRS will not assert a contrary position. Assuming the Merger will be a taxable transaction for U.S. federal income tax purposes, the amount of gain or loss a holder of OncoMed common stock recognizes, and the timing and potentially the character of a

portion of such gain or loss, depends in part on the U.S. federal income tax treatment of the CVRs, with respect to which there is substantial uncertainty.

The U.S. federal income tax treatment of the CVRs is unclear.

There is no legal authority directly addressing the U.S. federal income tax treatment of the CVRs or the treatment of payments (including Mereo ADSs) that may be received pursuant to the CVRs. Accordingly, the amount, timing and character of any gain, income or loss with respect to the CVRs are uncertain. In addition, there is no legal authority directly addressing the U.S. federal income tax treatment of the expiration of any rights to receive a payment of cash or Mereo ADSs with respect to the CVRs. Any change in the value of the CVRs will affect the amount of any gain or loss recognized with respect to the receipt of the CVRs.

Risk Factors Related to the CVRs

You may not receive any payment on the CVRs.

Your right to receive any future payment on the CVRs will be contingent upon the achievement by Mereo and its subsidiaries of certain milestones within agreed time periods, as specified in the CVR Agreement. If the milestones specified in the CVR Agreement are not achieved for any reason within the time periods specified in such agreement, no payment will be made under the CVRs and the CVRs will expire valueless. Additionally, Bristol-Myers Squibb Company ("Bristol-Myers Squibb") and Celgene announced on January 3, 2019 that they have entered into a definitive merger agreement under which Bristol-Myers Squibb will acquire Celgene in a cash and stock transaction. We believe it is possible that such transaction may limit the likelihood that Celgene will exercise the exclusive option granted by OncoMed to Celgene in relation to OncoMed's etigilimab product pursuant to the Master Research and Collaboration Agreement by and between Celgene and OncoMed, dated December 2, 2013 due to the uncertainty of Celgene's business operations pending consummation of its proposed merger with Bristol-Myers Squibb and the uncertainty of the attractiveness of OncoMed's etigilimab product to Bristol-Myers Squibb. Accordingly, the value, if any, of the CVRs is speculative, and the CVRs may ultimately have no value.

You will not be able to determine the amount of stock or cash to be received under the CVRs until the achievement of certain agreed upon milestones, which makes it difficult to value the CVRs.

If any payment is made on the CVRs, it will not be made until the achievement of certain agreed upon milestones. As such, you will not know the value, if any, of your CVRs until certain sales milestones occur, or until the CVRs expire.

The CVRs are nontransferable.

The CVRs are nontransferable, meaning that they may not be sold, assigned, transferred, pledged, encumbered or in any other manner transferred or disposed of either in whole or in part, other than in certain limited circumstances. The CVRs will not be registered as securities and they will not be listed or traded on any stock exchange in the United States or elsewhere. Therefore, the CVRs are not liquid and you will not be permitted to sell or transfer them, except for in certain limited circumstances.

Mereo and its subsidiaries are required to use "diligent efforts" to achieve the CVR milestones, which allows for consideration of a variety of factors to determine the efforts Mereo and its subsidiaries are required to take accordingly, under certain circumstances, Mereo and its subsidiaries may not be required to take certain actions to achieve the CVR milestones, or may allocate resources to other projects, which would have an adverse effect on the value, if any, of the CVRs.

Mereo has agreed to use "diligent efforts," as defined in the CVR Agreement, to achieve each of the CVR milestones in the applicable agreed time period. However, under the CVR Agreement, the definition of "diligent efforts" allows for the consideration of a variety of factors in determining the efforts Mereo is required to use to achieve the relevant

milestones, including issues of safety and efficacy, market potential, anticipated pricing and reimbursement rates, costs, labeling, pricing reimbursement, the competitiveness of alternative products, the patent and other proprietary position of the relevant product, and the likelihood of regulatory approval for the relevant product given the relevant regulatory structure involved. The CVR Agreement does not require Mereo to take all

possible actions to achieve each milestone. As a result, factors and events may come to pass that result in Mereo permissibly devoting less effort to the achievement of each milestone than OncoMed would have devoted had OncoMed remained a stand-alone company.

The CVR Agreement expressly states that Mereo will have no obligation or liability to (i) fund or otherwise support or incur any cost or expense relating to the relevant products (except, in each case, in respect of clinical trials commenced prior to the Effective Time) in excess of the commitments provided for the applicable budget for each product set forth as schedules to the CVR Agreement, (ii) enroll any additional subjects in any currently ongoing trial of the relevant products or (iii) commit to any additional development activities of the relevant products not provided for in the applicable budget.

Any payments in respect of the CVRs will rank at parity with Mereo's other unsecured and unsubordinated indebtedness.

The CVRs will rank equal in right of payment to all existing and future unsecured unsubordinated indebtedness of Mereo. The CVRs, however, will be effectively subordinated in right of payment to all of Mereo's secured obligations to the extent of the collateral securing such obligations. Additionally, the CVRs will be effectively subordinated to all existing and future indebtedness, claims of holders of capital stock and other liabilities, including trade payables, of Mereo's subsidiaries.

Risk Factors Related to the Combined Company

The Combined Company may not fully realize the anticipated benefits of the Merger or realize such benefits within the timing anticipated.

Mereo and OncoMed entered into the Merger Agreement because each company believes that the Merger will be beneficial to each of Mereo, the Mereo shareholders, OncoMed and the OncoMed stockholders. The Combined Company may not be able to achieve the anticipated long-term strategic benefits of the Merger within the timing anticipated or at all. For example, the benefits from the Merger will be partially offset by the costs incurred in completing the transaction. In addition, if the net cash held by OncoMed at the closing of the Merger is lower than each party currently anticipates, the cash position of the Combined Company will be weaker than expected. Any delays and challenges that may be encountered in completing the Merger or in the post-Merger process of consolidation could have an adverse effect on the business and results of operations of the Combined Company, and may affect the value of the Mereo ADSs and Mereo Shares after the completion of the Merger.

The Combined Company will incur significant transaction-related costs in connection with the Merger.

Mereo and OncoMed expect to incur significant costs associated with the Merger. The amount of these costs may not be determined as of the Effective Time and may be material to the financial position and results of operations of the Combined Company. Mereo expects that the substantial majority of expenses resulting from the Merger will be comprised of transaction costs related to the Merger and employee-related costs. Mereo and OncoMed will also incur fees and costs related to integration and systems consolidation. The elimination of duplicative costs may not offset incremental transaction-related and other integration costs in the near term.

The Combined Company's goodwill or other intangible assets may become impaired, which could result in material non-cash charges to its results of operations.

The Combined Company will have a substantial amount of goodwill and other intangible assets resulting from the Merger. At least annually, or whenever events or changes in circumstances indicate a potential impairment in the

carrying value as defined by IFRS, the Combined Company will evaluate this goodwill for impairment based on the recoverable value, being the higher of fair value less costs to sell and value in use, of the cash generating units to which goodwill has been allocated. Estimated fair values could change if there are changes in the Combined Company's capital structure, cost of debt, interest rates, capital expenditure levels, operating cash flows or market

capitalization. Impairments of goodwill or other intangible assets could require material non-cash charges to the Combined Company's results of operations.

Future results of the Combined Company may differ materially from the unaudited pro forma financial information included in the Registration Statement.

The Combined Company's future results may be materially different from those shown in the unaudited pro forma financial information presented in the Registration Statement that show only a combination of Mereo's and OncoMed's historical results. Mereo expects to incur significant costs associated with completing the Merger and combining the operations of the two companies, and the exact magnitude of these costs is not yet known. Furthermore, these costs may decrease capital that could be used by Mereo for future income-earning investments.

The financial analyses and forecasts considered by Mereo, OncoMed and their respective financial advisors may not be realized.

While the financial projections utilized by Mereo, OncoMed and their respective advisors in connection with the Merger were prepared in good faith based on information available at the time of preparation, no assurances can be made regarding future events or that the assumptions made in preparing such projections will accurately reflect future conditions. In preparing such projections, the management of Mereo and OncoMed made assumptions regarding, among other things, future economic, competitive, regulatory and financial market conditions and future business decisions that may not be realized and that are inherently subject to significant uncertainties and contingencies, including, among others, risks and uncertainties described or incorporated by reference in this section and the section entitled "Cautionary Statement Regarding Forward-Looking Statements," all of which are difficult to predict and many of which are beyond the control of Mereo and OncoMed and will be beyond the control of the Combined Company. There can be no assurance that the underlying assumptions or projected results will be realized, and actual results will likely differ, and may differ materially, from such projections, which could result in a material adverse effect on the Combined Company's business, financial condition, results of operations and prospects.

After the Merger, Mereo will be a "foreign private issuer" under the rules and regulations of the SEC and, as a result, will be exempt from a number of rules under the Exchange Act and will be permitted to file less information with the SEC than a company incorporated in the United States.

Following completion of the Merger, Mereo will continue to be incorporated as a public limited company in England and Wales and will be deemed to be a "foreign private issuer" under the rules and regulations of the SEC. As a foreign private issuer, Mereo will be exempt from certain rules under the Exchange Act that would otherwise apply if Mereo were a company incorporated in the United States, including:

- the requirement to file periodic reports and financial statements with the SEC as frequently or as promptly as United States companies with securities registered under the Exchange Act;
- the requirement to file financial statements prepared in accordance with U.S. GAAP;
- the proxy rules, which impose certain disclosure and procedural requirements for proxy solicitations; and
- the requirement to comply with Regulation FD, which imposes certain restrictions on the selective disclosure of material information.

In addition, Mereo's officers, directors and principal shareholders will be exempt from the reporting and "short-swing" profit recovery provisions of Section 16 of the Exchange Act and the related rules with respect to their purchases and sales of Mereo ADS and Mereo Shares. Accordingly, after the completion of the Merger, if you hold Mereo ADSs, you may receive less information about the Combined Company than you currently receive about

OncoMed and be afforded less protection under the United States federal securities laws than you are entitled to currently.

As a foreign private issuer, Mereo will not be required to comply with some of the corporate governance standards of Nasdaq applicable to companies incorporated in the United States.

Following completion of the Merger, the Mereo Board will be required to meet certain corporate governance standards under Nasdaq Listing Rules, including the requirement to maintain an audit committee comprised of three or more directors satisfying the independence standards of Nasdaq applicable to audit committee members. While foreign private issuers are not required to comply with most of the other corporate governance rules of Nasdaq, Mereo believes it currently complies with, and intends to continue to comply with, the majority of such requirements, including the requirements to maintain a majority of independent directors and nominating and compensation committees of its board of directors comprised solely of independent directors. Mereo will be required to continue to follow the AIM rules and Corporate Governance Code published by the Quoted Companies Alliance. As a result, holders of Mereo ADSs may not be afforded the benefits of the corporate governance standards of Nasdaq to the same extent applicable to companies incorporated in the United States.

Additional reporting requirements may apply if Mereo loses its status as a foreign private issuer.

If Mereo loses its status as a foreign private issuer at some future time, then it will no longer be exempt from such rules and, among other things, will be required to file periodic reports and financial statements as if it were a company incorporated in the United States. The costs incurred in fulfilling these additional regulatory requirements could be substantial.

Although Mereo’s reporting obligations as a foreign private issuer will be fewer than those of a public company incorporated in the United States, Mereo’s costs of complying with its SEC reporting requirements will be significant, and its management will be required to devote substantial time to complying with SEC regulations.

Mereo is not currently subject to SEC rules. However, following the completion of the Merger, Mereo will be a foreign private issuer and subject to certain SEC reporting requirements. As such, and particularly after Mereo no longer qualifies as an emerging growth company, Mereo expects to incur significant legal, accounting, and other expenses that it did not incur previously, including costs associated with its SEC reporting requirements under the Exchange Act and compliance with the requirements of Section 404 of the Sarbanes-Oxley Act of 2002 (“Section 404”). Mereo’s senior management and other personnel will need to devote a substantial amount of time to these compliance initiatives. Moreover, these rules and regulations will increase Mereo’s legal and financial compliance costs and will make some activities more time-consuming and costly. For example, Mereo expects that these rules and regulations may make it more expensive for Mereo to obtain director and officer liability insurance, which in turn could make it more difficult for Mereo to attract and retain qualified senior management personnel or members for the Mereo Board. In addition, these rules and regulations are often subject to varying interpretations, in many cases due to their lack of specificity, and, as a result, their application in practice may evolve over time as new guidance is provided by regulatory and governing bodies. This could result in continuing uncertainty regarding compliance matters and higher costs necessitated by ongoing revisions to disclosure and governance practices.

Failure to establish and maintain effective internal controls could have a material adverse effect on Mereo’s business and stock price.

Pursuant to Section 404, Mereo will be required to furnish a report by its senior management on its internal control over financial reporting. However, while Mereo remains an emerging growth company, it will not be required to include an attestation report on internal control over financial reporting issued by its independent registered public

accounting firm. To prepare for eventual compliance with Section 404, once Mereo no longer qualifies as an emerging growth company, Mereo will be engaged in a process to document and evaluate its internal control over financial reporting, which is both costly and challenging. In this regard, Mereo will need to continue to dedicate internal resources, potentially engage outside consultants and adopt a detailed work plan to assess and

document the adequacy of internal control over financial reporting, continue steps to improve control processes as appropriate, validate through testing that controls are functioning as documented, and implement a continuous reporting and improvement process for internal control over financial reporting. Despite Mereo's efforts, there is a risk that it will not be able to conclude, within the prescribed timeframe or at all, that its internal control over financial reporting is effective as required by Section 404. If Mereo identifies one or more material weaknesses, it could result in an adverse reaction in the financial markets due to a loss of confidence in the reliability of Mereo's financial statements.

Future acquisitions may result in unanticipated accounting charges or may otherwise adversely affect the Combined Company's results of operations and result in difficulties in integrating purchased assets, products or technologies, or be dilutive to existing stockholders.

A key element of the Combined Company's business strategy will include expansion through the acquisition of assets, products or technologies that complement its existing product candidates in the field of rare and specialty diseases. The Combined Company will continually evaluate and explore strategic opportunities as they arise, including strategic partnerships or co-development agreements and the purchase or sale of assets, including tangible and intangible assets such as intellectual property.

Acquisitions may require significant capital, typically entail many risks and could result in difficulties in assimilating and integrating the purchased assets, products or technologies. The Combined Company may experience unanticipated costs and expenditures, changing relationships with suppliers and strategic partners, difficulties developing product development plans, or contractual, intellectual property or employment issues. These challenges could disrupt the Combined Company's ongoing business, distract its management and employees, harm its reputation and increase its expenses. These challenges would be even greater if the Combined Company acquired a business or entered into a business combination transaction.

Acquisitions may require large one-time charges and can result in increased debt or contingent liabilities, adverse tax consequences, additional share-based compensation expense and the recording and later amortization of amounts related to certain purchased intangible assets, any of which could adversely affect the Combined Company's results of operations. Any of these charges could cause the value of Mereo Shares to decline.

Acquisitions or asset purchases made entirely or partially for cash may reduce the Combined Company's cash reserves. The Combined Company may seek to obtain additional cash to fund an acquisition by selling equity or debt securities. Any issuance of equity or convertible debt securities may be dilutive to holders of Mereo ADSs or Mereo Shares.

The Combined Company may not be able to find suitable acquisition opportunities that are available at attractive valuations, if at all. Even if it does find suitable acquisition opportunities, it may not be able to consummate the acquisitions on commercially acceptable terms, and any decline in the price of Mereo ADSs or Mereo Shares may make it significantly more difficult and expensive to initiate or consummate additional acquisitions.

The Combined Company's consolidated financial statements will be prepared in accordance with IFRS. OncoMed prepares its consolidated financial statements in accordance with U.S. GAAP. The conversion of OncoMed's historical consolidated financial statements into IFRS and the preparation of the Combined Company's future consolidated financial statements in accordance with IFRS could result in material changes in the reported results of operations, financial position and cash flows of the OncoMed business compared with amounts that it had previously reported (or would have reported in the future) as a stand-alone business in accordance with U.S. GAAP.

The Combined Company's consolidated financial statements will be prepared in accordance with IFRS. OncoMed prepares its consolidated financial statements in accordance with U.S. GAAP. Significant differences exist between

IFRS and U.S. GAAP that may be relevant to OncoMed. Furthermore, significant adjustments may be made to the carrying amounts of the assets and liabilities of OncoMed at the date of completion of the Merger in accordance with business combination accounting under IFRS. Such adjustments may include the recognition of

identifiable intangible assets, the remeasurement of property, plant and equipment, the recognition of certain contingent liabilities, deferred revenues and related income tax effects. Accordingly, the conversion of OncoMed's historical consolidated financial statements into IFRS and the preparation of the Combined Company's future consolidated financial statements in accordance with IFRS could result in material changes in the reported results of operations, financial position and cash flows of the OncoMed business compared with amounts that it previously reported (or would have reported in the future) as a stand-alone business in accordance with U.S. GAAP.

Following the Merger, the executive officers, board of directors and certain of Mereo's existing shareholders will continue to own a majority or a significant portion of the Combined Company and, as a result, will continue to have control or significant influence over the Combined Company and your interests may conflict with the interests of these shareholders.

After giving effect to the Merger, Mereo's executive officers, board of directors and significant shareholders and their respective affiliates, in the aggregate, will own approximately 11.3% of Mereo's outstanding ordinary shares (including ordinary shares in the form of Mereo ADSs). Depending on the level of attendance at Mereo's general meetings of shareholders, these shareholders either alone or voting together as a group may be in a position to control or significantly influence the outcome of decisions taken at any such general meeting. Any shareholder or group of shareholders controlling more than 50% of the share capital present and voting at Mereo's general meetings of shareholders may control any shareholder resolution requiring a simple majority, including the appointment of board members, certain decisions relating to Mereo's capital structure and the approval of certain significant corporate transactions. Any shareholder or group of shareholders controlling more than 75% of the share capital present and voting at Mereo's general meetings of shareholders may control any shareholder resolution amending Mereo's articles of association. These shareholders may have interests that differ from yours and may vote in a way with which you disagree and which may be adverse to your interests. Among other consequences, this concentration of ownership may have the effect of delaying or preventing a change in control and might therefore negatively affect the market price of the Mereo ADSs and Mereo Shares.

Risk Factors Related to the Mereo ADSs

There will be no public market for Mereo ADSs prior to the Merger, and an active trading market may not develop.

While the existing Mereo Shares have been traded on AIM since 2016, there will be no public market for Mereo ADSs or Mereo Shares in the United States prior to the completion of the Merger. Although Mereo expects that the Mereo ADSs will be approved for listing on Nasdaq, Mereo cannot predict the extent to which investor interest in the Mereo ADSs will lead to the development of an active trading market or how liquid that market might become. An active public market for Mereo ADSs may not develop or be sustained after the completion of the Merger. If an active public market does not develop or is not sustained, it may be difficult for you to sell your Mereo ADSs at a price that is attractive to you, or at all.

The market price for Mereo ADSs and the underlying Mereo Shares may be volatile and may decline regardless of Mereo's operating performance, and the value of your investment could materially decline.

Investors who hold Mereo ADSs may not be able to resell those Mereo ADSs at or above the value of such Mereo ADSs at the Effective Time. The trading price of Mereo ADSs may fluctuate, and the trading price of Mereo Shares on AIM is likely to continue to fluctuate, substantially.

The market price of Mereo ADSs and Mereo Shares may fluctuate significantly in response to numerous factors, many of which are beyond Mereo's control, including:

- positive or negative results from, or delays in, testing or clinical trials conducted by Mereo or its competitors;

- delays in entering into strategic relationships with respect to development or commercialization of Mereo's product candidates or entry into strategic relationships on terms that are not deemed to be favorable to Mereo;
- technological innovations or commercial product introductions by Mereo or competitors;
- changes in government regulations;
- developments concerning proprietary rights, including patents and litigation matters;
- public concern relating to the commercial value or safety of Mereo's product candidates;
- financing or other corporate transactions;
- publication of research reports or comments by securities or industry analysts, and variances in Mereo's periodic results of operations from securities analysts' estimates;
- general market conditions in the biopharmaceutical and pharmaceutical industries or in the economy as a whole;
- the loss of any of Mereo's key scientific or senior management personnel;
- sales of the Mereo ADSs or Mereo Shares by Mereo, its senior management and board members, holders of Mereo ADSs or Mereo's other security holders in the future;
- actions by institutional shareholders;
- speculation in the press or the investment community; or
- other events and factors, many of which are beyond Mereo's control.

These and other market and industry factors may cause the market price and demand for the Mereo ADSs to fluctuate substantially, regardless of Mereo's actual operating performance, which may limit or prevent investors from readily selling Mereo ADSs or Mereo Shares and may otherwise negatively affect the liquidity of Mereo ADSs and Mereo Shares.

In addition, the stock market in general, and emerging companies in particular, have experienced significant price and volume fluctuations that often have been unrelated to the operating performance of the companies affected by these fluctuations. These broad market fluctuations may adversely affect the trading price of Mereo ADSs and Mereo Shares, regardless of Mereo's operating performance. In the past in the United States, when the market price of a security has been volatile, holders of that security have often instituted securities class action litigation against the issuer of such securities. If any of the holders of Mereo ADSs or Mereo Shares were to bring such a lawsuit against Mereo, Mereo could incur substantial costs defending the lawsuit and the attention of Mereo's senior management would be diverted from the operation of Mereo's business. Any adverse determination in litigation could also subject Mereo to significant liabilities.

Future sales of Mereo Shares or Mereo ADSs could depress the market price of Mereo ADSs.

If holders of Mereo Shares or Mereo ADSs sell, or indicate an intent to sell, substantial amounts of Mereo Shares or Mereo ADSs in the public markets, the trading price of Mereo ADSs or Mereo Shares could decline significantly. These sales might also make it more difficult for Mereo to sell equity or equity-related securities at a time and price that it otherwise would deem appropriate.

The dual listing of Mereo Shares and Mereo ADSs is costly to maintain and may adversely affect the liquidity and value of Mereo Shares and Mereo ADSs.

Following the Merger and after Mereo ADSs are listed for trading on Nasdaq, Mereo Shares will continue to trade on AIM. Maintaining a dual listing will generate additional costs, including significant legal, accounting, investor relations, and other expenses that Mereo did not previously incur, in addition to the costs associated with the additional reporting requirements described in the Registration Statement. Mereo cannot predict the effect of this dual listing on the value of the Mereo ADSs and Mereo Shares. However, the dual listing of Mereo ADSs and Mereo Shares may dilute the liquidity of these securities in one or both markets and may adversely affect the development of an active trading market for the Mereo ADSs. The price of the Mereo ADSs could also be adversely affected by trading in Mereo Shares on AIM.

Fluctuations in the exchange rate between the U.S. dollar and the pound sterling may increase the risk of holding Mereo ADSs.

The share price of Mereo Shares is quoted on AIM in pence sterling, while the Mereo ADSs will trade on Nasdaq in U.S. dollars. Fluctuations in the exchange rate between the U.S. dollar and the pound sterling may result in differences between the value of the Mereo ADSs and the value of Mereo Shares, which may result in heavy trading by investors seeking to exploit such differences. In addition, as a result of fluctuations in the exchange rate between the U.S. dollar and the pound sterling, the U.S. dollar equivalent of the proceeds that a holder of the Mereo ADSs would receive upon the sale in the United Kingdom of any Mereo Shares withdrawn from the depositary, and the U.S. dollar equivalent of any cash dividends paid in pound sterling on Mereo Shares represented by the Mereo ADSs, could also decline.

The depositary for Mereo ADSs is entitled to charge holders fees for various services, including annual service fees.

The depositary for Mereo ADSs is entitled to charge holders fees for various services including for the issuance of Mereo ADSs upon deposit of Mereo Shares, cancellation of Mereo ADSs, distributions of cash dividends or other cash distributions, distributions of Mereo ADSs pursuant to share dividends or other free share distributions, distributions of securities other than Mereo ADSs and annual service fees. In the case of Mereo ADSs issued by the depositary into The Depository Trust Company (“DTC”), the fees will be charged by the DTC participant to the account of the applicable beneficial owner in accordance with the procedures and practices of the DTC participant as in effect at the time. The depositary for Mereo ADSs will not generally be responsible for any United Kingdom stamp duty or stamp duty reserve tax arising upon the issuance or transfer of Mereo ADSs.

If securities or industry analysts do not publish research or publish inaccurate research or unfavorable research about Mereo’s business, the price and trading volume of Mereo Shares and Mereo ADSs could decline.

The trading market for Mereo Shares and Mereo ADSs will depend in part on the research and reports that securities or industry analysts publish about Mereo or its business. If one or more of the analysts who covers Mereo downgrades the Mereo Shares or Mereo ADSs or publishes incorrect or unfavorable research about its business, the price of the Mereo Shares and/or Mereo ADSs would likely decline. If one or more of these analysts ceases coverage of Mereo or fails to publish reports on it regularly, or downgrades the Mereo Shares or Mereo ADSs, demand for Mereo ADSs or Mereo Shares could decrease, which could cause the price of Mereo ADSs and/or Mereo Shares and/or trading volume to decline.

You may be subject to limitations on the transfer of Mereo ADSs and the withdrawal of the underlying Mereo Shares.

Mereo ADSs are transferable on the books of the depositary. However, the depositary may close its books at any time or from time to time when the depositary, in good faith, determines such action is necessary or advisable pursuant to

the deposit agreement. The depositary may refuse to deliver, transfer or register transfers of Mereo

ADSs generally when Mereo's books or the books of the depositary are closed, or at any time if Mereo or the depositary thinks it is necessary or advisable to do so because of any requirement of law, government or governmental body, or under any provision of the deposit agreement, or for any other reason, subject to your right to cancel your Mereo ADSs and withdraw the underlying Mereo Shares. Temporary delays in the cancellation of your Mereo ADSs and withdrawal of the underlying Mereo Shares may arise because the depositary has closed its transfer books or Mereo has closed its transfer books, the transfer of Mereo Shares is blocked to permit voting at a shareholders' meeting or because Mereo is paying a dividend on the Mereo Shares.

In addition, you may not be able to cancel your Mereo ADSs and withdraw the underlying Mereo Shares when you owe money for fees, taxes and similar charges and when it is necessary to prohibit withdrawals in order to comply with any laws or governmental regulations that apply to the Mereo ADSs or to the withdrawal of the Mereo Shares or other deposited securities.

Mereo ADS holders may not be entitled to a jury trial with respect to claims arising under the deposit agreement, which could result in less favorable results to the plaintiff(s) in any such action.

The deposit agreement governing the Mereo ADSs provides that holders and beneficial owners of ADSs irrevocably waive the right to a trial by jury in any legal proceeding arising out of or relating to the deposit agreement or the ADSs, including claims under U.S. federal securities laws, against Mereo or the depositary to the fullest extent permitted by applicable law. If this jury trial waiver provision is prohibited by applicable law, an action could nevertheless proceed under the terms of the deposit agreement with a jury trial. Although Mereo is not aware of a specific federal decision that addresses the enforceability of a jury trial waiver in the context of U.S. federal securities laws, it is Mereo's understanding that jury trial waivers are generally enforceable. Moreover, insofar as the deposit agreement is governed by the laws of the State of New York, New York laws similarly recognize the validity of jury trial waivers in appropriate circumstances. In determining whether to enforce a jury trial waiver provision, New York courts and federal courts will consider whether the visibility of the jury trial waiver provision within the agreement is sufficiently prominent such that a party has knowingly waived any right to trial by jury. Mereo believes that this is the case with respect to the deposit agreement and the Mereo ADSs.

In addition, New York courts will not enforce a jury trial waiver provision in order to bar a viable setoff or counterclaim sounding in fraud or one which is based upon a creditor's negligence in failing to liquidate collateral upon a guarantor's demand, or in the case of an intentional tort claim (as opposed to a contract dispute). No condition, stipulation or provision of the deposit agreement or Mereo ADSs serves as a waiver by any holder or beneficial owner of Mereo ADSs or by Mereo or the depositary of compliance with any provision of U.S. federal securities laws and the rules and regulations promulgated thereunder.

If any holder or beneficial owner of Mereo ADSs brings a claim against Mereo or the depositary in connection with matters arising under the deposit agreement or the Mereo ADSs, including claims under U.S. federal securities laws, such holder or beneficial owner may not be entitled to a jury trial with respect to such claims, which may have the effect of limiting and discouraging lawsuits against Mereo or the depositary. If a lawsuit is brought against Mereo or the depositary under the deposit agreement, it may be heard only by a judge or justice of the applicable trial court, which would be conducted according to different civil procedures and may result in different results than a trial by jury would have had, including results that could be less favorable to the plaintiff(s) in any such action, depending on, among other things, the nature of the claims, the judge or justice hearing such claims, and the venue of the hearing.

The rights of OncoMed's stockholders who become holders of Mereo ADSs in the Merger will not be the same as the rights of holders of Mereo Shares or OncoMed common stock.

OncoMed is a corporation organized under the laws of the State of Delaware. The rights of holders of OncoMed common stock are governed by the DGCL, the certificate of incorporation and bylaws of OncoMed and the listing rules of Nasdaq. Mereo is a public limited company organized under the laws of England and Wales. Upon completion of the Merger, the former holders of OncoMed common stock will receive Mereo ADSs, which represent a beneficial ownership interest in Mereo Shares. The rights of holders of Mereo ADSs will be governed by English law, Mereo's constitutional documents, the AIM rules, United Kingdom and EEA capital markets laws and

regulations and the deposit agreement pursuant to which the Mereo ADSs will be issued. There are differences between the rights presently enjoyed by holders of OncoMed common stock and the rights to which the holders of Mereo ADSs will be entitled following the Merger. In addition, the corporate governance practices of Mereo differ in various respects from the corporate governance practices with which OncoMed stockholders may be familiar as a result of their ownership of OncoMed common stock. In some cases, the holders of Mereo ADSs to be issued in the Merger may not be entitled to important rights to which they would have been entitled as holders of OncoMed common stock. However, because of aspects of English law, Mereo's constitutional documents and the terms of the deposit agreement, the rights of holders of Mereo ADSs will not be identical to and, in some respects, may be less favorable than, the rights of holders of Mereo Shares.

You may not receive distributions on Mereo Shares represented by Mereo ADSs or any value for them if it is unlawful or impractical to make them available to holders of Mereo ADSs.

Mereo expects that the depositary for Mereo ADSs will agree to pay to you or distribute the cash dividends or other distributions it or the custodian receives on Mereo Shares or other deposited securities after deducting its fees and expenses. You will receive these distributions in proportion to the number of Mereo Shares your Mereo ADSs represent. However, in accordance with the limitations that Mereo expects will be set forth in the deposit agreement, it may be unlawful or impractical to make a distribution available to holders of Mereo ADSs. Mereo has no obligation to take any other action to permit the distribution of Mereo ADSs, Mereo Shares, rights or anything else to holders of Mereo ADSs. This means that you may not receive the distributions Mereo makes on the Mereo Shares or any value from them if it is unlawful or impractical to make them available to you. These restrictions may have a material adverse effect on the value of Mereo ADSs.

It may be difficult for you to bring any action or enforce any judgment obtained in the United States against Mereo or members of the Mereo Board, which may limit the remedies otherwise available to you.

Mereo is incorporated as a public limited company in England and Wales, and the majority of Mereo's assets are located outside the United States. In addition, the majority of the members of the Mereo Board are nationals and residents of countries, including the United Kingdom, outside of the United States. Most or all of the assets of these individuals are located outside the United States. As a result, it may be difficult or impossible for you to bring an action against Mereo or against these individuals in the United States if you believe your rights have been infringed under the securities laws or otherwise. In addition, a United Kingdom court may prevent you from enforcing a judgment of a U.S. court against Mereo or these individuals based on the securities laws of the United States or any state thereof. A United Kingdom court may not allow you to bring an action against Mereo or its directors based on the securities laws of the United States or any state thereof.

Shareholders in countries other than the United Kingdom will suffer dilution if they are unable to participate in future preemptive equity offerings.

Under English law, shareholders usually have preemptive rights to subscribe on a pro rata basis in the issuance of new shares for cash. The exercise of preemptive rights by certain shareholders not resident in the United Kingdom may be restricted by applicable law or practice in the United Kingdom and overseas jurisdictions. In particular, the exercise of preemptive rights by U.S. shareholders would be prohibited unless that rights offering is registered under the Securities Act or an exemption from the registration requirements of the Securities Act applies. Furthermore, under the deposit agreement for the Mereo ADSs, the depositary generally will not offer those rights to holders of Mereo ADSs unless both the rights and the underlying securities to be distributed to holders of Mereo ADSs are either registered under the Securities Act, or exempt from registration under the Securities Act with respect to all holders of Mereo ADSs. If no exemption applies and the Combined Company determines not to register the rights offering, shareholders in the United States may not be able or permitted to exercise their preemptive rights. Mereo is also

permitted under English law to disapply preemptive rights (subject to the approval of its shareholders by special resolution) and thereby exclude certain shareholders, such as overseas shareholders, from participating in a rights offering (usually to avoid a breach of local securities laws).

Holders of Mereo ADSs may not have the same voting rights as holders of Mereo Shares and may not receive voting materials in time to be able to exercise their right to vote.

Except as described in the Registration Statement and as provided in the deposit agreement, holders of Mereo ADSs will not be able to exercise voting rights attaching to Mereo Shares underlying the Mereo ADSs issued pursuant to the Merger on an individual basis. Each holder of Mereo ADSs will appoint the depositary or its nominee as the holder's representative to exercise, pursuant to the instructions of the holder, the voting rights attaching to the Mereo Shares underlying the Mereo ADSs issued pursuant to the Merger. Holders of Mereo ADSs may not receive voting materials in time to instruct the depositary to vote, and it is possible that they, or persons who hold their Mereo ADSs through brokers, dealers or other third parties, will not have the opportunity to exercise a right to vote.

Because Mereo does not anticipate paying any cash dividends on Mereo ADSs or Mereo Shares in the foreseeable future, capital appreciation, if any, will be your sole source of gains and you may never receive a return on your investment.

Under English law, a company's accumulated realized profits must exceed its accumulated realized losses on a non-consolidated basis before dividends can be paid. Therefore, Mereo must have distributable profits before issuing a dividend. Mereo has not paid dividends in the past on its ordinary shares. Further, Mereo intends to retain future earnings, if any, for use in its business and does not anticipate paying any cash dividends in the foreseeable future. In addition, Mereo's credit facility prohibits it from paying dividends on its equity securities, and any future debt agreements may likewise preclude Mereo from paying dividends. As a result, capital appreciation, if any, on Mereo ADSs or Mereo Shares will be your sole source of gains for the foreseeable future.

If Mereo is a passive foreign investment company ("PFIC"), you could be subject to adverse U.S. federal income tax consequences if you are a U.S. investor.

In general, a non-U.S. corporation will be a PFIC for any taxable year in which (i) 75% or more of its gross income consists of passive income or (ii) 50% or more of the average quarterly value of its assets consists of assets that produce, or are held for the production of, passive income (the "asset test"). For purposes of the above calculations, a non-U.S. corporation that directly or indirectly owns at least 25% by value of the shares of another corporation is treated as if it held its proportionate share of the assets of the other corporation and received directly its proportionate share of the income of the other corporation. Passive income generally includes interest, dividends, gains from certain property transactions, rents and royalties (other than certain rents or royalties derived in the active conduct of a trade or business). Cash is a passive asset for PFIC purposes. Goodwill is an active asset under the PFIC rules to the extent attributable to activities that produce active income.

The assets shown on Mereo's consolidated balance sheet (taking into account OncoMed assets acquired as a result of the Merger) are expected to include a significant amount of cash and cash equivalents for the foreseeable future. Therefore, whether Mereo will satisfy the assets test for the current or any future taxable year generally will depend largely on the quarterly value of Mereo's goodwill, and on how quickly Mereo utilizes the cash in its business. Because (i) the value of Mereo's goodwill may be determined by reference to the market price of the Mereo Shares or the Mereo ADSs, which may be volatile given the nature and early stage of its business, (ii) Mereo expects to continue to hold a significant amount of cash, and (iii) a company's PFIC status is an annual determination that can be made only after the end of each taxable year, Mereo cannot express a view as to whether it will be a PFIC for the current or any future taxable year. For the reasons described above, it is possible that Mereo may be a PFIC for its current or any future taxable year.

If Mereo were a PFIC for any taxable year during which a U.S. investor holds Mereo ADSs or Mereo Shares, certain adverse U.S. federal income tax consequences could apply to such U.S. investor.

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Risks Related to Our Business

We anticipate that we will continue to incur significant losses for the foreseeable future, and if we are unable to achieve and sustain profitability, the market value of our common stock will likely decline.

We are a clinical-stage biopharmaceutical company. Biopharmaceutical product development is a highly speculative undertaking and involves a substantial degree of risk. We do not currently have any therapeutic candidates in pivotal clinical trials or approved for sale, and we continue to incur significant research and development and general and administrative expenses related to our operations. We are not profitable and have incurred losses in each year since our founding in 2004. Our net losses for the years ended December 31, 2018, 2017, and 2016 were $8.1 million, $39.1 million and $103.1 million, respectively. As of December 31, 2018, we had an accumulated deficit of $361.8 million.

We expect to continue to incur significant losses for the foreseeable future. We expect these losses and our cash utilization to continue in the near term as we continue to conduct clinical trials for navicixizumab (anti-DLL4/VEGF bispecific, OMP-305B83), etigilimab (anti-TIGIT, OMP-313M32), and GITRL-Fc (OMP-336B11).

We are collaborating with Celgene Corporation, or Celgene, to develop and commercialize etigilimab. Under this agreement, Celgene has an option to obtain an exclusive license for the development and commercialization of etigilimab. Celgene will generally assume responsibility for funding obligations with respect to clinical development and commercialization of etigilimab after option exercise, with the exception of certain costs for certain continuing clinical trials for which we have accepted responsibility prior to option exercise.

If Celgene does not exercise its option, or if our collaboration with Celgene terminates, we will be responsible for funding further development of etigilimab unless we enter into another collaboration for such biologic therapeutic candidates. In addition, we are responsible for all costs associated with the development of any unpartnered therapeutic candidate. Navicixizumab and GITRL-Fc are not partnered. Unless and until we enter into a collaboration with respect to our unpartnered therapeutic candidates, which we may never do, any ongoing or future development of these therapeutic candidates, including any activities associated with the completion of ongoing clinical trials, will generally be funded entirely by us.

Under our collaboration agreement, we are generally responsible for funding all research and development activities that we choose to undertake for our etigilimab program, including the costs associated with conducting the Phase Ia/b clinical trial, prior to Celgene's exercise of its option for the program. Celgene has not yet exercised its option for our etigilimab program, which it may exercise during certain time periods through the end of certain Phase I clinical trials. Furthermore, there is no guarantee that Celgene will exercise its option for our etigilimab program, and if Celgene does not exercise its option, we may incur additional costs for funding the Phase Ia/b clinical trial and any further development of our etigilimab program.

All of our therapeutic candidates are in development, and none has been approved for sale. To date, we have derived all of our revenues from upfront payments, milestone payments and other payments we received under our prior and current collaborations, and have also supported our research and development efforts by utilizing certain government grants for research and development. We do not anticipate that we will generate revenue from the sale of our therapeutic candidates for the foreseeable future. If any of our therapeutic candidates receive regulatory approval, we may incur significant costs to commercialize our therapeutic candidates. Even after obtaining such regulatory approval, our products may never gain sufficient market acceptance and adequate market share. If our therapeutic candidates fail to demonstrate safety and efficacy in clinical trials, do not gain regulatory approval, or do not achieve market acceptance following regulatory approval and commercialization, we may never become profitable. Even if we achieve profitability in the future, we may not be able to sustain profitability in subsequent periods. If we are unable to achieve and sustain profitability, the market value of our common stock will likely decline. Because of the numerous

risks and uncertainties associated with developing biopharmaceutical products, we are unable to predict the extent of any future losses or whether we will become profitable.

We are heavily dependent on the success of our most advanced therapeutic candidates, which are in various stages of clinical development. All of our therapeutic candidates are still in clinical development. If we, or our current or future collaborators, are unable to commercialize our therapeutic candidates or if we, or our current or future collaborators, experience significant delays in obtaining regulatory approval for, or commercializing, any or all of our therapeutic candidates, our business will be materially and adversely affected.

We have invested a significant portion of our efforts and financial resources in the development of our most advanced therapeutic candidates that are in clinical development, including navicixizumab (anti-DLL4/VEGF bispecific, OMP-305B83) and etigilimab (anti-TIGIT, OMP-313M32) for the treatment of various types of cancer.

All of our therapeutic candidates are still in clinical development. Our ability to generate product revenues will depend heavily on our ability, and/or the ability of our current or future collaborators, to successfully develop and commercialize these therapeutic candidates. We do not expect that such commercialization of any of our therapeutic candidates will occur for at least the next several years, if ever. Our ability, and/or the ability of our current or future collaborators, to commercialize our therapeutic candidates effectively will depend on several factors, including the following:

- successful completion of preclinical studies and clinical trials, including the ability to demonstrate safety and efficacy of our therapeutic candidates;
- receipt of marketing approvals from the U.S. Food and Drug Administration, or FDA, and similar regulatory authorities outside the United States;
- establishing commercial manufacturing capabilities, for example, by making arrangements with third-party manufacturers;
- successfully launching commercial sales of the product, whether alone or in collaboration with others;
- acceptance of the product by patients, the medical community and third-party payors;
- establishing market share while competing with other therapies;
- a continued acceptable safety and adverse event profile of our products following regulatory approval; and
- qualifying for, identifying, registering, maintaining, enforcing and defending intellectual property rights and claims covering our therapeutic candidates.

If we, or our collaborators, do not achieve one or more of these factors in a timely manner or at all, we could experience significant delays or an inability to commercialize our therapeutic candidates, which would materially and adversely affect our business, financial condition and results of operations.

We depend on the successful development of our therapeutic candidates. The development of new drugs and biologics is a highly risky undertaking, which involves a lengthy process, and the results of preclinical and early clinical trials are not necessarily predictive of future results. Our development activities, or those of our current or future collaborators, therefore may not be successful on the time schedule we have planned, or at all.

Our therapeutic candidates are in the early stages of clinical trials and are subject to the risks of failure inherent in drug development. As of the date of this Annual Report on Form 10-K, two of our therapeutic candidates are currently in active clinical development: navicixizumab (anti-DLL4/VEGF bispecific, OMP-305B83) and etigilimab (anti-TIGIT, OMP-313M32). We and/or our current or future collaborators will need to conduct significant additional preclinical studies and/or clinical trials before we can demonstrate that any of our therapeutic candidates is safe and effective to the satisfaction of the FDA and other regulatory authorities. Clinical trials are expensive and uncertain processes that may take years to complete.

Success in preclinical studies and early clinical trials does not ensure that later clinical trials will generate adequate data to demonstrate the efficacy and safety of a therapeutic candidate. A number of companies in the biotechnology industry, including those with greater resources and experience than us, have suffered significant setbacks in Phase II

and Phase III clinical trials, despite promising results in earlier clinical trials. We do not know

whether any Phase II, Phase III or other clinical trials we may conduct, or our current or future collaborators may conduct, will demonstrate adequate efficacy and safety to result in regulatory approval to market any of our therapeutic candidates. If later stage clinical trials do not produce favorable results, our ability, or the ability of our current or future collaborators, to achieve regulatory approval for any of our therapeutic candidates may be adversely impacted.

In addition, even if initial or interim data from a clinical trial appear encouraging, subsequent analyses of the mature data from the same trial at a later time point may or may not be favorable. For example, even if interim median overall survival data from a clinical trial appear positive or encouraging, the final median overall survival data obtained from the trial at a later date may be less favorable.

Delays in the commencement or completion of clinical testing could significantly affect our product development costs or the product development costs of our current or future collaborators. We do not know whether planned clinical trials will begin on time or be completed on schedule, if at all. The commencement and completion of clinical trials can be delayed for a number of reasons, including delays related to:

- obtaining regulatory authorization to commence a clinical trial or complying with conditions imposed by a regulatory authority regarding the scope or design of a clinical trial;
- reaching agreement on acceptable terms with prospective clinical research organizations, or CROs, and trial sites, the terms of which can be subject to extensive negotiation and may vary significantly among different CROs and trial sites;
- manufacturing, including manufacturing sufficient quantities of a therapeutic candidate or other materials for use in clinical trials;
- obtaining IRB approval or the approval of other reviewing entities to conduct a clinical trial at a prospective site;
- recruiting and enrolling patients to participate in clinical trials for a variety of reasons, including size of patient population, complexity of clinical trial protocol, the availability of approved effective treatments for the relevant disease, changed standards of care during the conduct of the trial, and competition from other clinical trial programs for similar indications;
- severe or unexpected drug-related adverse effects experienced by patients in a clinical trial; and
- retaining patients who have initiated a clinical trial, but may withdraw due to treatment protocol, adverse effects from the therapy, lack of efficacy from the treatment, personal issues or who are lost to further follow-up.

Clinical trials may also be delayed, suspended or terminated as a result of ambiguous or negative interim results, or results that are inconsistent with earlier results.

In addition, a clinical trial may be suspended or terminated by us, the FDA, the IRB or other reviewing entity overseeing the clinical trial at issue, any of our clinical trial sites with respect to that site, or other regulatory authorities due to a number of factors, including:

- failure to conduct the clinical trial in accordance with regulatory requirements or our clinical protocols;
- inspection of the clinical trial operations or trial sites by the FDA or other regulatory authorities resulting in the imposition of a clinical hold;
- unforeseen safety issues or any determination that a clinical trial presents unacceptable health risks; and

- lack of adequate funding to continue the clinical trial, including the incurrence of unforeseen costs due to enrollment delays, requirements to conduct additional clinical trials and increased expenses associated with the services of our CROs and other third parties.

Product development costs to us and our collaborators will increase if we or our collaborators have delays in testing or approval of our therapeutic candidates or if we or they need to perform more or larger clinical trials than planned. Additionally, changes in regulatory requirements and policies may occur in any jurisdiction and we or our collaborators may need to amend clinical trial protocols to address these changes. Amendments may require us to resubmit our clinical trial protocols to IRBs for reexamination, which may impact the costs, timing or successful completion of a clinical trial. If we or our collaborators experience delays in completion of, or if we, the FDA or other regulatory authorities, the IRB or other reviewing entities, or any of our clinical trial sites suspend or terminate any of our clinical trials, the commercial prospects for our therapeutic candidates may be harmed and our ability to generate product revenues will be delayed. In addition, many of the factors that cause, or lead to, termination or suspension of, or a delay in the commencement or completion of, clinical trials may also ultimately lead to the denial of regulatory approval of a therapeutic candidate. Also, if one or more clinical trials are delayed, our competitors may be able to bring products to market before we do, and the commercial viability of our therapeutic candidates could be significantly reduced.

If a clinical trial of a therapeutic candidate that is part of one of our current or future collaborations is delayed, suspended, or terminated for any reason, any potential future opt-in, milestone, and contingent consideration payments to us under that collaboration may be delayed or may not occur at all. Also, a delay, suspension, or termination of a clinical trial for a therapeutic candidate under our collaboration agreement with Celgene prior to option exercise, or the factors that led to such delay, suspension or termination, may negatively impact the decision by Celgene as to whether or not to exercise its option with respect to such therapeutic candidate.

Data from clinical trials of some of our previous therapeutic candidates have not been sufficiently encouraging for us to continue clinical development of those candidates. For example, our demcizumab (anti-DLL4; OMP-21M18) program, which was a part of our strategic collaboration with Celgene, was unsuccessful in the clinic and has been discontinued. In 2017, demcizumab failed to meet its primary efficacy endpoints in two Phase II clinical trials. Celgene subsequently terminated the collaboration agreement with respect to demcizumab.

We cannot assure you that any of our clinical trials will succeed or that any of our therapeutic candidates will reach the point where they are able to be successfully commercialized.

If we or our current or future collaborators are required to suspend or discontinue clinical trials due to side effects or other safety risks, or if we or they are required to conduct studies on the long-term effects associated with the use of our therapeutic candidates, our ability to commercialize our therapeutic candidates could be adversely affected or delayed.

Our clinical trials, and any clinical trials with our therapeutic candidates that may be run by our current or future collaborators, may be suspended, delayed, or terminated at any time for a number of safety-related reasons. For example, we may voluntarily suspend, delay, or terminate our clinical trials if at any time we believe that our therapeutic candidates present an unacceptable safety risk to the clinical trial patients, and our current or future collaborators may voluntarily suspend, delay, or terminate clinical trials they may run with our therapeutic candidates, if at any time they believe that our therapeutic candidates present an unacceptable safety risk to the clinical trial patients. In addition, IRBs or regulatory agencies may order the temporary discontinuation or termination of our clinical trials at any time if they believe that the clinical trials are not being conducted in accordance with applicable regulatory requirements, including if they present an unacceptable safety risk to patients. Administering any therapeutic candidate to humans may produce undesirable side effects. The existence of undesirable side effects resulting from our therapeutic candidates could cause us, or our collaborators, or regulatory authorities, such as the

FDA, to interrupt, delay or halt clinical trials of our therapeutic candidates and could result in the FDA or other regulatory agencies denying further development or approval of our therapeutic candidates for any or all targeted indications. This, in turn, could affect whether Celgene exercises its development option for etigilimab under our collaboration and could prevent us from commercializing that therapeutic candidate. Further, our programs modulate novel classes of targets and/or modulate targets in novel ways. As a result, we may experience unforeseen adverse side effects with our therapeutic candidates currently in clinical development and any

future therapeutic candidates, including navicixizumab (anti-DLL4/VEGF bispecific, OMP-305B83), etigilimab (anti-TIGIT, OMP-313M32), and GITRL-Fc (OMP-336B11).

The pharmacokinetic, pharmacodynamic, and safety profile of preclinical studies may not be indicative of results in any clinical trial. As of the date of this Quarterly Report on Form 10-Q, we have observed adverse events in clinical trials for all three of our therapeutic candidates currently in clinical development. We currently believe these adverse events are manageable. Nevertheless, such adverse events may cause challenges in development, approval and/or commercialization.

Patients treated with navicixizumab in our clinical trials have experienced treatment-related adverse events including hypertension, infusion reactions, gastrointestinal/gallbladder perforation, thrombocytopenia, headache, fatigue, proteinuria and pulmonary hypertension. In our earlier clinical trials with a related anti-DLL4 antibody, demcizumab (anti-DLL4, OMP-21M18), cardiopulmonary events, including reversible pulmonary hypertension and/or heart failure, were observed in certain patients and resulted in demcizumab being placed on partial clinical hold until a risk mitigation strategy that included cardiac monitoring and early intervention with cardioprotective medication, if indicated, was implemented. A similar risk mitigation strategy has been implemented in our navicixizumab clinical trials since the initiation of this clinical program. The presence of anti-drug antibodies impacting navicixizumab pharmacokinetics was observed in a subset of patients receiving navicixizumab in our Phase I clinical trials. In several instances, the anti-drug antibodies were associated with infusion reactions to the drug resulting in suspension or termination of navicixizumab administration. Treatment-related adverse events that have occurred in more than one patient treated with etigilimab include rash, pruritis, mucositis and fatigue. Treatment-related adverse events that have occurred in more than one patient treated with GITRL-Fc include nausea and infusion reactions. In addition, anti-drug antibodies have been observed in patients being treated with GITRL-Fc.

Further treatment of patients in the ongoing trials or subsequent trials of any of our therapeutic candidates could reveal significant harmful side effects. We have not conducted complete studies on the long-term effects associated with the use of all of our therapeutic candidates. Studies of these long-term effects may be required for regulatory approval and such requirement would delay the introduction of our therapeutic candidates, including etigilimab under our collaboration with Celgene, into the market. These studies could also be required at any time after regulatory approval of any of our therapeutic candidates. Absence of long-term data may also limit the approved uses of our products, if any, to short-term use. Some or all of our therapeutic candidates may prove to be unsafe for human use, which would materially harm our business.

The successful development and commercialization of our independent programs, and etigilimab if Celgene declines to exercise its option, will depend in large part on our ability either to raise capital to advance development of those programs or to secure collaborations with strategic partners that have the capital and expertise to bring products to market. We may be unable to secure such funds and/or secure such future collaborations.

If Celgene declines to exercise its option with respect to etigilimab, terminates the etigilimab program under the collaboration agreement, or terminates the entire agreement, we will need to secure funding to advance development of that program on our own and/or secure relationships with collaborators that have the necessary capital and expertise. Under our collaboration agreement with Celgene, we are not eligible to receive any further research or development milestone payments for etigilimab prior to Celgene’s decision regarding option exercise with respect to etigilimab.

We may also choose to advance our therapeutic candidates and programs that are not part of the Celgene collaboration independently without partnering such therapeutic candidates and programs, which will require substantial funds. We are currently independently advancing navicixizumab (anti-DLL4/VEGF bispecific, OMP-305B83) through clinical development, which is currently being funded entirely by us. If any of our independent therapeutic candidates receive

regulatory approval and are commercialized, substantial expenditures will also be required.

As of December 31, 2018, we had approximately $57.3 million in cash, cash equivalents and short-term investments. We believe that our available cash, cash equivalents and short-term investments will be sufficient to meet our anticipated cash requirements through at least the first quarter of 2020, even without taking into account potential future milestone payments to us. Our future financing requirements will depend on many factors, some of which are beyond our control, including:

- the rate of progress and cost of our clinical trials, preclinical studies and other discovery and research and development activities;
- the timing of, and costs involved in, seeking and obtaining FDA and other regulatory approvals;
- the continuation and success of our strategic alliance with Celgene and future collaboration partners, including the exercise or non-exercise of the etigilimab development option by Celgene, and the continuation and success of our small molecule program collaboration with Bayer, including the advancement or non-advancement of the small molecule programs into further development and potential commercialization by Bayer;
- the costs of preparing, filing, prosecuting, maintaining, defending and enforcing any patent claims and other intellectual property rights, including litigation costs and the results of such litigation;
- our ability to enter into additional collaboration, licensing, government or other arrangements and the terms and timing of such arrangements;
- the potential need to acquire, by acquisition or in-licensing, other products or technologies; and
- the emergence of competing technologies, changes in standard-of-care treatment, or other adverse market developments.

Future capital requirements will also depend on the extent to which we acquire or invest in additional complementary businesses, products and technologies. We currently have no understandings, commitments or agreements relating to any of these types of transactions.

Until we can generate a sufficient amount of product revenue to finance our cash requirements, which we may never do, we expect to finance future cash needs primarily through public or private equity offerings, debt financings, a credit facility, government grants and contracts and/or strategic collaborations. Additional financing may not be available to us when we need it or it may not be available to us on favorable terms, if at all. Additionally, to the extent that we seek a new strategic partner to develop any of our programs, we may not be able to secure a collaboration on favorable terms, if at all. A collaboration may not provide sufficient funding or value to bring a product to market, and further funding and/or collaborations may be required. The terms of any such collaboration may also significantly limit our share of potential future profits from the associated program, may require us to relinquish potentially valuable rights to our current therapeutic candidates, potential products or proprietary technologies, or may grant licenses on terms that are not favorable to us. If we are unable to obtain adequate financing or form favorable collaborations, when needed, we may have to delay, reduce the scope of, or eliminate one or more of our clinical trials or research and development programs or our commercialization efforts.

If Celgene does not exercise its option for etigilimab, terminates the etigilimab program under its collaboration with us or terminates its entire collaboration agreement with us, or if Bayer terminates the small molecule program under its collaboration agreement with us, whether as a result of our inability to meet milestones or otherwise, any potential revenue from those collaborations will be significantly reduced or non-existent, and our results of operations and financial condition will be materially and adversely affected.

We have invested a significant portion of our time and financial resources in the development of etigilimab (anti-TIGIT, OMP-313M32), which is currently in clinical development and a part of our collaboration with Celgene. It may not be possible to advance etigilimab further in development if Celgene chooses not to exercise its

option with respect to this program, terminates the collaboration agreement with respect to this program or terminates the entire agreement.

Under our agreement with Celgene, Celgene has an option to obtain an exclusive license to develop further and commercialize biologic therapeutics in the etigilimab program, which may be exercised during specified time periods through completion of a certain clinical trial, provided that such completion occurs within a specified time period. We are responsible for funding all research and development activities that we choose to undertake for the etigilimab program under the collaboration prior to Celgene's exercise of the option for such program.

The collaboration provides milestone payments for achievement of specified development, regulatory and commercial milestones, paid on a per-product and per-program basis. The opt-in payments and payments for achievement of development, regulatory and commercial milestones may total up to $440.0 million for products in the etigilimab program (including payments received as of December 31, 2018), including a $35.0 million opt-in payment. Celgene is also required to pay us tiered royalties for etigilimab equal to a percentage of net product sales worldwide in the high-single digits to the mid-teens.

Celgene is under no obligation to exercise its option with respect to the etigilimab program and may choose not do so. Celgene has previously declined to exercise its options for other programs of ours that were formerly part of the Celgene collaboration, including our navicixizumab program. Additionally, Bristol-Myers Squibb Company ("Bristol-Myers Squibb") and Celgene announced on January 3, 2019 that they have entered into a definitive merger agreement under which Bristol-Myers Squibb will acquire Celgene in a cash and stock transaction. We believe it is possible that such transaction may limit the likelihood that the opt-in payment for etigilimab will be achieved due to the uncertainty of Celgene's business operations pending consummation of its proposed merger with Bristol-Myers Squibb and the uncertainty of the attractiveness of OncoMed's etigilimab therapeutic candidate to Bristol-Myers Squibb.

If Celgene does not exercise its option on the etigilimab program, terminates the collaboration agreement with respect to the program or terminates the entire agreement, we will not receive any opt-in payment for the etigilimab program. There is no guarantee that the etigilimab program will successfully advance to achieve the relevant further development, regulatory and commercial milestones and that we will receive the associated milestone payments or any royalty payments on our anticipated timelines or at all.

The agreement with Celgene will terminate upon the expiration of all of Celgene's payment obligations under a license agreement entered into with respect to the etigilimab program following Celgene's exercise of an option for the etigilimab program, or if Celgene fails to exercise its option within the relevant option period. The agreement may be terminated by either party for the insolvency of, or an uncured material breach of the agreement by, the other party. In addition, Celgene may terminate the agreement in its entirety or with respect to the etigilimab program, for any reason, with prior written notice to us. We may also terminate the agreement with respect to the etigilimab program in the event that Celgene challenges the licensed patents with respect to such program. Depending on the timing of any such termination we may not be entitled to receive the opt-in payments, or potential milestone payments, as these payments terminate with termination of the agreement.

If Celgene does not exercise its option with respect to etigilimab, or terminates its rights and obligations with respect to the etigilimab program or the entire agreement, then depending on the timing of such event:

- under certain circumstances, we may owe Celgene single-digit percentage royalties on etigilimab if we elect to continue to commercialize etigilimab and etigilimab is successfully commercialized, subject to a cap;
- the development of etigilimab may be terminated or significantly delayed;
-

our cash expenditures could increase significantly if it is necessary for us to hire additional employees and allocate scarce resources to the development and commercialization of etigilimab;

- we would bear all of the risks and costs related to the further development and commercialization of etigilimab, including the reimbursement of third parties; and
- in order to fund further development and commercialization of etigilimab, we may need to seek out and establish an alternative collaboration arrangement with third-party partners; this may not be possible, or we may not be able to do so on terms which are acceptable to us, in which case, since assumption of sole responsibility for further development and commercialization would greatly increase our expenditures, it may be necessary for us to limit the size or scope of the etigilimab program, seek additional funding by other means, and/or choose to stop work altogether on the etigilimab program.

Any of these events could have a material adverse effect on our results of operations and financial condition.

In addition to our collaboration with Celgene, we have a collaboration with Bayer that currently consists of a small molecule program. Under our agreement with Bayer, if Bayer elects to advance the small molecule program into further development and commercialization, we would be entitled to receive up to $112.0 million in the aggregate for research, development, regulatory, and commercial milestones, plus single-digit percentage royalties on net product sales. However, Bayer is under no obligation to advance the small molecule program into further development and commercialization, and there is no guarantee that Bayer will elect to do so or that we will receive any payments related to the small molecule program on our anticipated timelines or at all. Moreover, there is no guarantee that any such small molecule therapeutic candidate will achieve the relevant further development, regulatory, or commercial milestones.

Bayer may terminate, for any or no reason, the collaboration agreement upon prior written notice to us. The agreement may also be terminated by either party for material breach by the other party that is not cured within a specified cure period. Either party may terminate the agreement for insolvency by the other party, and we may terminate the agreement if Bayer challenges the licensed patents. Depending on the timing of any such termination we may not be entitled to receive potential milestone payments, as these payments terminate with termination of the agreement.

The commercial success of etigilimab will depend in large part on Celgene's development and marketing efforts, if and when Celgene exercises its option on that program. If Celgene is unable to perform in accordance with the terms of our agreement, our potential to generate future revenue from these programs would be significantly reduced and our business would be materially and adversely harmed.

If Celgene opts to exercise its option to license any etigilimab under our agreement, we will have limited influence and/or control over Celgene's approaches to development and commercialization. While we will have potential milestone and royalty streams payable as Celgene or its sublicensees advance development of etigilimab, we are likely to have limited ability to influence Celgene's development and commercialization efforts. Moreover, transitioning a therapeutic candidate to a collaboration partner after exercise of the partner's option can be a complex process and may cause delays in the development program for that therapeutic candidate. If Celgene or any potential future collaboration partners do not perform in the manner that we expect or fulfill their responsibilities in a timely manner, or at all, or if significant delays arise from the transition of a therapeutic candidate to Celgene or a potential future collaboration partner after option exercise, the clinical development, regulatory approval and commercialization efforts related to therapeutic candidates we have licensed to such collaboration partners could be delayed or terminated.

If we terminate our collaboration with Celgene, or any program thereunder, due to a material breach by Celgene, we have the right to assume the responsibility at our own expense for the development of the applicable biologic therapeutic candidates. Assumption of sole responsibility for further development will greatly increase our expenditures, and may mean we need to limit the size and scope of one or more of our programs, seek additional funding and/or choose to stop work altogether on one or more of the affected therapeutic candidates. This could result in a limited potential to generate future revenue from such therapeutic candidates, and our business could be

materially and adversely affected. Further, under certain circumstances, we may owe Celgene a single-digit percentage royalty on a therapeutic candidate successfully commercialized, subject to a cap.

We rely on third parties to conduct some of our preclinical studies and all of our clinical trials. If these third parties do not successfully carry out their contractual duties or meet expected deadlines, we may be unable to obtain regulatory approval for or commercialize any of our therapeutic candidates.

Although we conduct certain preclinical studies, we currently do not have the ability to independently conduct preclinical studies that comply with good laboratory practices, or GLP. We also do not currently have the ability to independently conduct any clinical trials. We rely on medical institutions, clinical investigators, contract laboratories, collaborative partners and other third parties, such as CROs, to conduct GLP compliant preclinical studies and clinical trials on our therapeutic candidates. The third parties with which we contract for execution of our GLP preclinical studies and our clinical trials play a significant role in the conduct of these studies and trials and the subsequent collection and analysis of data. These third parties are not our employees and, except for restrictions imposed by our contracts with such third parties, we have limited ability to control the amount or timing of resources that they devote to our programs. Although we rely on these third parties to conduct our GLP compliant preclinical studies and clinical trials, we remain responsible for ensuring that each of our GLP preclinical studies and clinical trials is conducted in accordance with its investigational plan and protocol. The FDA and regulatory authorities in other jurisdictions require us to comply with regulations and standards, commonly referred to as good clinical practices, or GCPs, for conducting, monitoring, recording and reporting the results of clinical trials, in order to ensure that the data and results are scientifically credible and accurate and that the trial subjects are adequately informed of the potential risks of participating in clinical trials.

Many of the third parties with whom we contract may also have relationships with other commercial entities, some of which may compete with us. If the third parties conducting our GLP preclinical studies or our clinical trials do not perform their contractual duties or obligations, experience work stoppages, do not meet expected deadlines, terminate their agreements with us or need to be replaced, or if the quality or accuracy of the clinical data they obtain is compromised due to their failure to adhere to our clinical trial protocols or to GCPs, or for any other reason, we may need to enter into new arrangements with alternative third parties. This could be costly, and our preclinical studies or clinical trials may need to be extended, delayed, terminated or repeated, and we may not be able to obtain regulatory approval in a timely fashion, or at all, for the applicable therapeutic candidate, or to commercialize such therapeutic candidate being tested in such studies or trials.

We rely on single source third-party contract manufacturing organizations to manufacture and supply our therapeutic candidates for us. If one of our suppliers or manufacturers fails to perform adequately or fulfill our needs, or if these agreements are terminated by the third parties, we may be required to incur significant costs and devote significant efforts to find new suppliers or manufacturers. We may also face delays in the development and commercialization of our therapeutic candidates.

We currently have limited experience in, and we do not own facilities for, manufacturing our therapeutic candidates. We rely upon single source third-party contract manufacturing organizations to manufacture and supply large quantities of our therapeutic candidates. We currently utilize Lonza Sales AG, or Lonza, for the bulk manufacturing of our therapeutic candidates. We have also used Synco Bio Partners B.V. (recently acquired by Wacker Chemie AG) for fill/finish services (e.g. filling vials with drug substance, sealing and inspecting vials and performance of release assays). In addition, a number of our clinical trials require us to source and supply our clinical trial sites with other medications that are administered in conjunction with our therapeutic candidates, or co-medications. We rely upon third-party suppliers for the manufacture and supply of these co-medications, which are subject to the same risks as the manufacture and supply of our therapeutic candidates.

The manufacture of pharmaceutical products in compliance with current good manufacturing practice, or cGMP, regulations requires significant expertise and capital investment, including the development of advanced manufacturing techniques and process controls. Manufacturers of pharmaceutical products often encounter difficulties

in production, including difficulties with production costs and yields, quality control, including stability of the therapeutic candidate and quality assurance testing, or shortages of qualified personnel. We cannot assure you that any stability failures or other issues relating to the manufacture of our therapeutic candidates or the supply of co-medications will not occur in the future. If the manufacturers of our therapeutic candidates or co-medications were to encounter any of these difficulties or otherwise fail to comply with their obligations to us or under applicable regulations, or if we were unable to timely identify third party suppliers of co-medications or enter into agreements with these third party suppliers for the supply of co-medications, our ability to provide study materials in

our preclinical studies and clinical trials would be jeopardized. Any delay or interruption in the supply of preclinical study or clinical trial materials could delay the initiation of, enrollment in, and/or completion of our preclinical studies and clinical trials, increase the costs associated with maintaining our preclinical study and clinical trial programs and, depending upon the period of delay, require us to commence new trials at significant additional expense or terminate the studies and trials completely.

All manufacturers of our therapeutic candidates must comply with cGMP requirements enforced by the FDA through its facilities inspection program. These requirements include, among other things, quality control, quality assurance and the maintenance of records and documentation. Manufacturers of our component materials may be unable to comply with these cGMP requirements and with other FDA, state and foreign regulatory requirements. The FDA or similar foreign regulatory agencies at any time may also implement new standards, or change their interpretation and enforcement of existing standards for manufacture, packaging or testing of products. We have little control over our manufacturers' compliance with these regulations and standards. A failure to comply with these requirements may result in fines and civil penalties, suspension of production, suspension or delay in product approval, product seizure or recall, or withdrawal of product approval. If the safety of any product supplied is compromised due to our manufacturers' failure to adhere to applicable laws or for other reasons, we may not be able to obtain regulatory approval for or successfully commercialize our products, and we may be held liable for any injuries sustained as a result. Any of these factors could cause a delay of clinical trials, regulatory submissions, approvals or commercialization of our therapeutic candidates or entail higher costs or impair our reputation.

Our current agreements with our suppliers do not provide for the entire supply of the bulk drug necessary for additional clinical trials or for full-scale commercialization. In the event that we and our suppliers cannot agree to the terms and conditions for them to provide some or all of our bulk drug clinical and commercial supply needs, or if any single-source supplier terminates the agreement in response to a breach by us, we would not be able to manufacture the bulk drug on a commercial scale until a qualified alternative supplier is identified, which could also delay the development of, and impair our ability to commercialize, our therapeutic candidates.

Although we believe that appropriate alternative sources of supply exist for each of our current therapeutic candidates, the number of third-party suppliers with the necessary manufacturing and regulatory expertise and facilities is limited, and it could be expensive and take a significant amount of time to arrange for alternative suppliers, which could have a material adverse effect on our business. New suppliers of any bulk drug would be required to qualify under applicable regulatory requirements and would need to have sufficient rights under applicable intellectual property laws to the method of manufacturing such ingredients. Obtaining the necessary FDA approvals or other qualifications under applicable regulatory requirements and ensuring non-infringement of third-party intellectual property rights could result in a significant interruption of supply and could require the new manufacturer to bear significant additional costs which may be passed on to us. In addition, we may be required to pay potential fees and royalties to Lonza if we utilize other suppliers for bulk drug, given that we have used their proprietary production cell lines in our programs.

The failure of third-party manufacturers or suppliers to perform adequately or the termination of our arrangements with any of them may adversely affect our business.

Even if our therapeutic candidates do obtain regulatory approval they may never achieve market acceptance or commercial success.

Even if we or our current or future collaborators obtain FDA or other regulatory approvals, and are able to launch our therapeutic candidates commercially, our therapeutic candidates may not achieve market acceptance among physicians, patients and third-party payors and, ultimately, may not be commercially successful. Market acceptance of our therapeutic candidates for which we receive approval depends on a number of factors, including:

- the efficacy and safety of the therapeutic candidates as demonstrated in clinical trials;
- the clinical indications for which the therapeutic candidate is approved;
- acceptance by physicians, operators of treatment facilities and parties responsible for reimbursement of the product as a safe and effective treatment;

- the potential and demonstrable advantages of our therapeutic candidates, including the cost of treatment and benefits over alternative treatments;
- the safety of therapeutic candidates seen in a broader patient group, including use outside the approved indications;
- the cost of treatment in relation to alternative treatments;
- the availability of adequate reimbursement and pricing by third-party payors and government authorities;
- relative convenience and ease of administration;
- the tolerance of the products by patients, including prevalence and severity of adverse side effects; and
- the effectiveness of our sales and marketing efforts.

Any failure by our therapeutic candidates that obtain regulatory approval to achieve market acceptance or commercial success would adversely affect our financial results.

If any of our therapeutic candidates receives marketing approval and we or others later identify undesirable side effects caused by the therapeutic candidate, our ability to market and derive revenue from the therapeutic candidates, or our current or future collaborators' ability to do so, could be compromised.

In the event that any of our therapeutic candidates receive regulatory approval and we or others identify undesirable side effects caused by one of our products, any of the following adverse events could occur:

- regulatory authorities may withdraw their approval of the product or seize the product;
- we or our current or future collaborators may be required to recall the product or change the way the product is administered to patients;
- additional restrictions may be imposed on the marketing of the particular product or the manufacturing processes for the product or any component thereof;
- we or our current or future collaborators may be subject to fines, injunctions or the imposition of civil or criminal penalties;
- regulatory authorities may require the addition of labeling statements, such as a "black box" warning or a contraindication;
- we or our current or future collaborators may be required to create a Medication Guide outlining the risks of such side effects for distribution to patients;
- we or our current or future collaborators could be sued and held liable for harm caused to patients;
- the product may become less competitive; and
- our reputation or the reputation of our current or future collaborators may suffer.

Any of the foregoing events could result in the loss of significant revenues to us, which would materially and adversely affect our results of operations and business.

We currently have no sales and marketing staff or distribution organization. If we are unable to develop a sales and marketing and distribution capability on our own or through potential marketing partners, we will not be successful in commercializing our future products.

We currently have no sales or marketing staff or distribution organization. If Celgene elects to exercise its option for our etigilimab program, there is no guarantee that Celgene will elect to market and distribute etigilimab or that Celgene will not elect to terminate our collaboration arrangement, which they have a right to do at any time with prior notice under our agreement. Further, we are likely to have limited control over the marketing and distribution activities of Celgene for etigilimab.

On the other hand, if Celgene does not exercise its option for etigilimab, and we develop etigilimab ourselves, or if we develop unpartnered product candidates such as navicixizumab to the point of commercialization, we may need to enter into distribution or co-marketing arrangements with other third parties. If we need to rely on third parties for marketing and distributing our independently developed approved products, any revenue we receive will depend upon the efforts of third parties, which may not be successful and are only partially within our control, and our product revenue may be lower than if we directly marketed or sold our products. If we are unable to enter into arrangements with third parties to sell, market and distribute therapeutic candidates for which we have received regulatory approval on acceptable terms or at all, we will need to market these products ourselves. Marketing products ourselves is likely to be expensive and logistically difficult, as it would require us to build our own sales force. We have no experience as a company in this area. If such efforts were necessary, we may not be able to successfully commercialize our future products. If we are not successful in commercializing our future products, either on our own or through our collaboration with one or more third parties, or by co-promoting products with marketing partners, any future product revenue will be materially and adversely affected.

We may experience difficulties in managing our current activities and future growth given our level of managerial, operational, financial and other resources.

On December 4, 2018, our Board of Directors approved a restructuring plan, pursuant to which we reduced our workforce by 38 employees (or 75% of our then-current workforce). The reduction in force is ongoing and the Company expects to complete such reduction in connection with the closing of the Merger. As of December 31, 2018, we had 22 full-time employees. We will need to manage our operations and clinical trials, continue our development activities and commercialize our therapeutic candidates with our reduced workforce and management team. Our management and personnel, systems and facilities currently in place may not be adequate to support our current activities or future growth. Our need to effectively execute our business strategy requires that we:

- manage our clinical trials effectively, including our Phase Ib trial for navicixizumab (anti-DLL4/VEGF bispecific, OMP-305B83), our Phase Ia/b trial for etigilimab (anti-TIGIT, OMP-313M32), and our Phase Ia trial for GITRL-Fc (OMP-336B11), as well as additional clinical trials we may initiate in the future;
- manage our internal research and development efforts effectively while carrying out our contractual obligations to licensors, contractors, collaborators, government agencies and other third parties;
- continue to improve our operational, financial and management controls, reporting systems and procedures; and
- maintain and motivate our remaining employees and identify, recruit, and integrate additional employees.

If we are unable to maintain or expand our managerial, operational, financial and other resources to the extent required to manage our development and commercialization activities, our business will be materially adversely affected.

We are highly dependent on the services of our President and Chief Executive Officer, John Lewicki, Ph.D., and other key executives, and if we are not able to retain these members of our management or retain or recruit additional management, clinical and scientific personnel, our business will suffer.

We may not be able to retain our management, scientific and clinical personnel, or attract qualified management, scientific and clinical personnel in the future, due to the intense competition for qualified personnel among biotechnology, pharmaceutical and other businesses, particularly in the San Francisco Bay Area. Our industry has experienced a high rate of turnover of management personnel in recent years. We have experienced such turnover ourselves. In addition to the competition for personnel, the San Francisco Bay Area in particular is characterized by a high cost of living. As such, we could have difficulty attracting experienced personnel to our company and may be required to expend significant financial resources in our employee recruitment and retention

efforts. If we are not able to attract, retain and motivate necessary personnel to accomplish our business objectives, we may experience constraints that will significantly impede the achievement of our development objectives, our ability to raise additional capital and our ability to implement our business strategy.

We are highly dependent on the principal members of our management. The loss of service of any of our management could harm our business. In addition, we are dependent on our continued ability to retain and motivate our existing management, clinical and scientific personnel, and to potentially attract highly qualified additional management, clinical and scientific personnel. The competition for qualified personnel in the pharmaceutical industry is intense. Due to our limited resources, we may not be able to effectively retain our existing personnel or attract and recruit additional qualified personnel. If we are not able to retain our management, particularly our President and Chief Executive Officer, Dr. Lewicki, or to attract, on acceptable terms, additional qualified personnel necessary for the continued development of our business, we may not be able to sustain our operations or grow. Although we have executed employment agreements with each member of our current executive management team, including Dr. Lewicki, these agreements are terminable at will with or without notice and, therefore, we may not be able to retain their services as expected.

In addition, we have scientific and clinical advisors who assist us in formulating our product development and clinical strategies. These advisors are not our employees and may have commitments to, or consulting or advisory contracts with, other entities that may limit their availability to us, or may have arrangements with other companies to assist in the development of products that may compete with ours.

We face substantial competition and our competitors may discover, develop or commercialize products faster or more successfully than us.

The biotechnology and pharmaceutical industries are highly competitive, and we face significant competition from companies in the biotechnology, pharmaceutical and other related markets that are researching and marketing products designed to address solid tumors and hematologic malignancies. Established pharmaceutical and biotechnology companies that are known to be involved in oncology research and currently sell or are developing drugs in our markets of interest include AbbVie, Amgen, Astellas, AstraZeneca, Bayer, BMS, Celgene, Genentech (Roche), GSK, Johnson & Johnson, Lilly, Merck, Merck Serono, Novartis, Pfizer, Regeneron, Sanofi, Teva and others. There are also biotechnology companies of various sizes that are developing therapies against immuno-oncology targets.

It is possible that our competitors will develop and market drugs or other treatments that are less expensive and more effective than our therapeutic candidates, or that will render our therapeutic candidates obsolete. It is also possible that our competitors will commercialize competing drugs or treatments before we or our collaboration partners can launch any products developed from our therapeutic candidates. If approved for marketing by the FDA or other regulatory agencies worldwide, our therapeutic candidates would compete against existing cancer treatments such as Avastin®, Erbitux®, Yervoy™, Keytruda®, Opdivo®, and chemotherapies, and potentially against other novel drug candidates or treatments that are currently in development. There have been several additional monoclonal antibodies in development for cancer, such as Abbvie's ABT-165, an anti-DLL4/VEGF dual variable domain immunoglobulin, and ABL Bio's ABL001, an anti-DLL4/VEGF antibody, both of which are reportedly being studied in clinical trials. In the immuno-oncology field, there are several companies reportedly advancing antibody programs modulating TIGIT in early stage research and development, including Genentech (Roche), Merck, BMS, and Arcus Biosciences, and there are several approved therapeutic agents against other immuno-oncology targets. We also anticipate that we will face increased competition in the future as new companies enter into our target markets and scientific developments surrounding the immuno-oncology field continue to develop.

Many of our competitors have materially greater name recognition and financial, manufacturing, marketing, legal, research and drug development resources than we do. Additional mergers and acquisitions in the biotechnology and

pharmaceutical industries may result in even more resources being concentrated in our competitors. Large pharmaceutical companies in particular have extensive expertise in preclinical and clinical testing and in obtaining regulatory approvals for drugs. In addition, academic institutions, government agencies, and other public and private organizations conducting research may seek patent protection with respect to potentially competitive products or technologies. These organizations may also establish exclusive collaborative or licensing relationships with our competitors.

Failure to successfully validate, develop and obtain regulatory approval for companion diagnostics could harm our product development strategy.

An important element of our clinical development strategy for certain of our therapeutic candidates such as etigilimab (anti-TIGIT, OMP-313M32) is that we seek to identify patient subsets within a disease category who may derive selective and meaningful benefit from the therapeutic candidates we are developing. In collaboration with our partners, we plan to develop companion diagnostics for selected therapeutic candidates to help us to more accurately identify patients within a particular subset. Such companion diagnostics would be used during our clinical trials as well as in connection with the commercialization of our therapeutic candidates. Companion diagnostics are subject to regulation by the FDA and comparable foreign regulatory authorities as medical devices and therefore require separate regulatory clearance or approval prior to commercialization. The clinical development of novel therapeutics with a companion diagnostic is complex from an operational and regulatory perspective because of the need for both the drug and the diagnostic to receive regulatory clearance or approval.

We will be dependent on identifying suitable third-party development partners, and on entering into appropriate agreements with such third parties, and on the sustained cooperation and effort of our future collaborators in developing and obtaining approval for these companion diagnostics. It may be necessary to resolve issues such as selectivity/specificity, analytical validation, reproducibility, or clinical validation of companion diagnostics during the development and regulatory approval processes. Moreover, even if data from preclinical studies and early clinical trials appear to support development of a companion diagnostic for a therapeutic candidate, data generated in later clinical trials may fail to support the analytical and clinical validation of the companion diagnostic. We and our future collaborators may encounter difficulties in developing, obtaining regulatory approval for, manufacturing and commercializing companion diagnostics similar to those we face with respect to our therapeutic candidates themselves, including issues with achieving regulatory clearance or approval, production of sufficient quantities at commercial scale and with appropriate quality standards, and in gaining market acceptance. Failure to overcome these hurdles would have an adverse effect on our ability to derive revenues from sales of our diagnostic products. Any delay or failure by us or our future collaborators to develop or obtain regulatory approval of the companion diagnostics where required in connection with obtaining approval of our therapeutic candidates could delay or prevent approval of our therapeutic candidates. In addition, a diagnostic company with whom we contract may decide to discontinue selling or manufacturing the companion diagnostic test that we anticipate using in connection with development and commercialization of our therapeutic candidates or our relationship with such diagnostic company may otherwise terminate. We may not be able to enter into arrangements with another diagnostic company to obtain supplies of an alternative diagnostic test for use in connection with the development and commercialization of our therapeutic candidates or do so on commercially reasonable terms, which could adversely affect and/or delay the development or commercialization of our therapeutic candidates.

We may form additional strategic alliances in the future with respect to our independent programs, as well as for etigilimab if Celgene does not exercise its option, and we may not realize the benefits of such alliances.

We may form strategic alliances, create joint ventures or collaborations or enter into licensing arrangements with third parties with respect to our independent programs that we believe will complement or augment our existing business. For example, we may attempt to find a partner for licensing, development and/or commercialization of our unpartnered research, preclinical and clinical assets, or of etigilimab if Celgene decides to terminate our collaboration agreement or to not exercise its option for etigilimab. Our currently unpartnered programs include navicixizumab (anti-DLL4/VEGF bispecific, OMP-305B83). We routinely engage in partnering discussions with a range of pharmaceutical and biotechnology companies and could enter into new collaborations at any time. We face significant competition in seeking appropriate strategic partners, and the negotiation process to secure appropriate terms is time-consuming and complex. Any delays in identifying suitable development partners and entering into agreements to develop our therapeutic candidates could also delay the commercialization of our therapeutic candidates, which

may reduce their competitiveness even if they reach the market. Moreover, we may not be successful in our efforts to establish such a strategic partnership for any of our unpartnered therapeutic candidates and programs on terms that are acceptable to us, or at all. This may be because our therapeutic candidates and programs may be deemed to be at too early of a stage of development for collaborative effort, our research and development pipeline may be viewed as insufficient, and/or third parties may not view our therapeutic candidates and programs as having sufficient potential for commercialization, including the likelihood of an adequate safety and efficacy profile. Even if we are successful in entering into a strategic alliance or license arrangement, there is no

guarantee that the collaboration will be successful, or that any future partner will commit sufficient resources to the development, regulatory approval, and commercialization effort for such products, or that such alliances will result in us achieving revenues that justify such transactions.

We may engage in strategic transactions that could impact our liquidity, increase our expenses and present significant distractions to our management.

From time to time, we may consider strategic transactions, such as acquisitions of companies, asset purchases, and out-licensing or in-licensing of products, therapeutic candidates or technologies. Additional potential transactions that we may consider include a variety of different business arrangements, including spin-offs, strategic partnerships, joint ventures, restructurings, divestitures, business combinations and investments. Any such transaction may require us to incur non-recurring or other charges, may increase our near- and long-term expenditures and may pose significant integration challenges or disrupt our management or business, which could adversely affect our operations and financial results. For example, these transactions may entail numerous operational and financial risks, including:

- exposure to unknown liabilities;
- disruption of our business and diversion of our management's time and attention in order to develop acquired products, therapeutic candidates or technologies;
- incurrence of substantial debt or dilutive issuances of equity securities to pay for acquisitions;
- higher-than-expected acquisition and integration costs;
- write-downs of assets or goodwill or impairment charges;
- increased amortization expenses;
- difficulty and cost in combining the operations and personnel of any acquired businesses with our operations and personnel;
- impairment of relationships with key suppliers or customers of any acquired businesses due to changes in management and ownership; and
- inability to retain key employees of any acquired businesses.

Accordingly, although there can be no assurance that we will undertake or successfully complete any transactions of the nature described above, any transactions that we do complete may be subject to the foregoing or other risks, and could have a material adverse effect on our business, results of operations, financial condition and prospects.

We may be subject to costly product liability claims related to our clinical trials and therapeutic candidates and, if we are unable to obtain, or maintain, adequate insurance or are required to pay for liabilities resulting from a claim excluded from, or beyond the limits of, our insurance coverage, a material liability claim could adversely affect our financial condition.

Because we conduct clinical trials with human patients, we face the risk that the use of our therapeutic candidates may result in adverse side effects to patients in our clinical trials. We face even greater risks upon any commercialization of our therapeutic candidates. Although we have product liability insurance, which covers our clinical trials, for up to $10.0 million, our insurance may be insufficient to reimburse us for any expenses or losses we may suffer, and we may be required to increase our product liability insurance coverage for any advanced clinical trials that we may initiate in the future. We do not know whether we will be able to continue to obtain product liability coverage and obtain expanded coverage if we require it, on acceptable terms, or at all. We may not have sufficient resources to pay for any liabilities resulting from a claim excluded from, or beyond the limits of, our insurance coverage. Where we have provided indemnities in favor of third parties under our agreements with them, there is also a risk that these third parties could incur liability and bring a claim under such indemnities. An individual may bring a product liability claim against us alleging that one of our therapeutic candidates or products causes, or is claimed to have caused, an injury or is found to be unsuitable for consumer use. Any product liability claim brought against us, with or without merit, could result in:

- withdrawal of clinical trial volunteers, investigators, patients or trial sites;
- the inability to commercialize our therapeutic candidates;
- decreased demand for our therapeutic candidates;
- regulatory investigations that could require costly recalls or product modifications;
- loss of revenues;
- substantial costs of litigation;
- liabilities that substantially exceed our product liability insurance, which we would then be required to pay ourselves;
- an increase in our product liability insurance rates or the inability to maintain insurance coverage in the future on acceptable terms, if at all;
- the diversion of management's attention from our business; and
- damage to our reputation and the reputation of our products.

Product liability claims may subject us to the foregoing and other risks, which could have a material adverse effect on our business, results of operations, financial condition and prospects.

Our business involves the use of hazardous materials and we and our third-party manufacturers must comply with environmental laws and regulations, which may be expensive and restrict how we do business.

Our third-party manufacturers' activities and our own activities involve the controlled storage, use and disposal of hazardous materials, including the components of our pharmaceutical therapeutic candidates, test samples and reagents, biological materials and other hazardous compounds. We and our manufacturers are subject to federal, state, local and foreign laws and regulations governing the use, generation, manufacture, storage, handling and disposal of these hazardous materials. We currently carry no insurance specifically covering environmental claims relating to the use of hazardous materials. Although we believe that our safety procedures for handling and disposing of these materials and waste products comply with the standards prescribed by these laws and regulations, we cannot eliminate the risk of accidental injury or contamination from the use, storage, handling or disposal of hazardous materials. In the event of an accident, state or federal or other applicable authorities may curtail our use of these materials and/or interrupt our business operations. In addition, if an accident or environmental discharge occurs, or if we discover contamination caused by prior operations, including by prior owners and operators of

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properties we acquire, we could be liable for cleanup obligations, damages and fines. If such unexpected costs are substantial, this could significantly harm our financial condition and results of operations.

Our internal computer systems, or those of our CROs or other contractors or consultants, may fail or suffer security breaches, which could result in a material disruption of our product development programs.

Our business is increasingly dependent on critical, complex and interdependent information technology systems to support business processes as well as internal and external communications. Despite the implementation of security measures, our internal computer systems and those of our CROs and other contractors and consultants are vulnerable to damage from computer viruses, unauthorized access, natural disasters, terrorism, war and telecommunication and electrical failures. While, to our knowledge, we have not experienced any such system failure, accident or security breach to date, if such an event were to occur and cause interruptions in our operations, it could result in a material disruption of our programs. For example, the loss of clinical trial data from completed or ongoing clinical trials for any of our therapeutic candidates could result in delays in our regulatory approval efforts and significantly increase our costs to recover or reproduce the data. In addition, our systems are potentially vulnerable to data security breaches, whether by employees or others, which may expose sensitive data to unauthorized persons. To the extent that any disruption or security breach results in a loss of or damage to our data or applications, or inappropriate disclosure of confidential or proprietary information, we could incur liability and the further development of our therapeutic candidates could be delayed.

Our employees, independent contractors, principal investigators, CROs, consultants and vendors may engage in misconduct or other improper activities, including noncompliance with regulatory standards and requirements.

We are exposed to the risk that our employees, independent contractors, principal investigators, CROs, consultants and vendors may engage in fraudulent or other illegal activity. Misconduct by these parties could include intentional, reckless and/or negligent conduct or disclosure of unauthorized activities to us that violates: (i) FDA laws and regulations, including those laws that require the reporting of true, complete and accurate information to the FDA, (ii) manufacturing standards, (iii) federal and state healthcare fraud and abuse laws and regulations, and (iv) laws that require the true, complete and accurate reporting of financial information or data. In particular, sales, marketing and business arrangements in the healthcare industry are subject to extensive laws and regulations intended to prevent fraud, kickbacks, self-dealing and other abusive practices. These laws and regulations may restrict or prohibit a wide range of pricing, discounting, marketing and promotion, sales commission, customer incentive programs and other business arrangements. Activities subject to these laws also involve the improper use of information obtained in the course of clinical trials, which could result in regulatory sanctions and serious harm to our reputation. It is not always possible to identify and deter misconduct by employees and other third parties, and the precautions we take to detect and prevent this activity may not be effective in controlling unknown or unmanaged risks or losses or in protecting us from governmental investigations or other actions or lawsuits stemming from a failure to be in compliance with such laws or regulations. Additionally, we are subject to the risk that a person or government could allege such fraud or other misconduct, even if none occurred. If any such actions are instituted against us, and we are not successful in defending ourselves or asserting our rights, those actions could have a significant impact on our business, including the imposition of significant civil, criminal and administrative penalties, damages, monetary fines, disgorgements, possible exclusion from participation in Medicare, Medicaid and other federal healthcare programs, individual imprisonment, other sanctions, contractual damages, reputational harm, diminished profits and future earnings, and curtailment of our operations, any of which could adversely affect our ability to operate our business and our results of operations.

Requirements associated with being a public company have increased our costs significantly and have diverted significant company resources and management attention.

Prior to our initial public offering in July 2013, we had not been subject to the reporting requirements of the Securities Exchange Act of 1934, as amended, or the Exchange Act, or the other rules and regulations of the SEC or any securities exchange relating to public companies. We are continuing to work with our legal, independent accounting and financial advisors to identify those areas in which changes should be made to our financial and management control systems to manage our growth and our obligations as a public company. These areas include corporate governance, corporate control, disclosure controls and procedures and financial reporting and accounting systems. We have made, and will continue to make, changes in these and other areas. However, the expenses that

have been required in order to operate as a public company have been material, and may increase after we cease to be an “emerging growth company.” Compliance with the various reporting and other requirements applicable to public companies has also required considerable time and attention of management. In addition, the changes we have made and may make in the future may not be sufficient to allow us to satisfy our obligations as a public company on a timely basis.

Since we are no longer an “emerging growth company” as defined in the Jumpstart our Business Startups Act, or the JOBS Act, we are no longer able to take advantage of certain exemptions from various reporting requirements that are applicable to other public companies that are not “emerging growth companies.” Accordingly, we are now required to comply with the auditor attestation requirements of Section 404 of the Sarbanes-Oxley Act, increased disclosure obligations regarding executive compensation in our periodic reports and proxy statements and the requirements of holding a nonbinding advisory vote on executive compensation and stockholder approval of any golden parachute payments not previously approved. As a result we will incur the greater expenses associated with such reporting requirements.

In addition, being a public company made it more difficult or more costly for us to obtain certain types of insurance, including directors’ and officers’ liability insurance, and we may be forced to accept reduced policy limits and coverage or incur substantially higher costs to obtain the same or similar coverage in the future. The impact of these events could also make it more difficult for us to attract and retain qualified persons to serve on our board of directors, on our board committees or as executive officers.

If we are not able to comply with the requirements of Section 404 of the Sarbanes-Oxley Act of 2002 in a timely manner or with adequate compliance, we may be subject to sanctions by regulatory authorities.

Section 404 of the Sarbanes-Oxley Act of 2002 requires that we evaluate and determine the effectiveness of our internal controls over financial reporting and have provided a management report on the internal control over financial reporting. If we have a material weakness in our internal control over financial reporting, we may not detect errors on a timely basis and our financial statements may be materially misstated. We evaluate our internal controls systems to allow management to report on, and allow our independent auditors to attest to, our internal controls. We are currently performing and will continue to perform the system and process evaluation and testing (and any necessary remediation) required to comply with the management certification and eventual auditor attestation requirements of Section 404 of the Sarbanes-Oxley Act of 2002.

We cannot be certain as to the timing of completion of our evaluation, testing and remediation actions or the impact of the same on our operations. If we are not able to comply with the requirements of Section 404 in a timely manner or with adequate compliance, we may be subject to sanctions or investigation by regulatory authorities, such as the SEC or The Nasdaq Stock Market LLC, or Nasdaq. Any such action could adversely affect our financial results or investors’ confidence in us and could cause our stock price to fall. Moreover, if we are not able to comply with the requirements of Section 404 in a timely manner, or if we or our independent registered public accounting firm identifies deficiencies in our internal controls that are deemed to be material weaknesses, we could be subject to sanctions or investigations by Nasdaq, the SEC or other regulatory authorities, which would entail expenditure of additional financial and management resources and could materially adversely affect our stock price. Inferior internal controls could also cause us to fail to meet our reporting obligations or cause investors to lose confidence in our reported financial information, which could have a negative effect on our stock price.

The recently enacted comprehensive tax reform legislation could adversely affect our business and financial condition.

On December 22, 2017, the U.S. government enacted comprehensive tax legislation commonly referred to as the Tax Cuts and Jobs Act (“Tax Act”). The Tax Act makes broad and complex changes to the U.S. tax code, including, but not

limited to, (1) reducing the U.S. federal top corporate tax rate from 35% to 21%; (2) requiring companies to pay a one-time transition tax on certain unrepatriated earnings of foreign subsidiaries; (3) generally eliminating U.S. federal income taxes on dividends from foreign subsidiaries; (4) requiring a current inclusion in U.S. federal taxable income of certain earnings of controlled foreign corporations; (5) eliminating the corporate alternative minimum tax ("AMT") and changing how existing AMT credits can be realized; (6) creating the base erosion anti-abuse tax, a new minimum tax; (7) creating a new limitation on deductible interest expense; and (8)

changing rules related to the use and limitations of net operating loss carryforwards created in tax years beginning after December 31, 2017. Notwithstanding the reduction in the corporate income tax rate, the overall impact of the Tax Act is uncertain and our business and financial condition could be adversely affected. In addition, it is uncertain if and to what extent various states will conform to the newly enacted federal tax law. The determination of the benefit from (or provision for) income taxes requires complex estimations, significant judgments and significant knowledge and experience concerning the applicable tax laws. Given that we are still in the transition period for the accounting for income tax effects of the Tax Act, the current assessment on deferred tax assets (liabilities) is based on the currently available information and guidance. If in the future any element of the Tax Act changes the related accounting guidance for income tax, it could affect our income tax position and we may need to adjust the benefit from (or provision for) income taxes accordingly.

Our ability to utilize our net operating loss carryforwards and certain other tax attributes may be limited.

We have incurred substantial losses during our history and do not expect to become profitable in 2019 and may never achieve profitability. To the extent that we continue to generate taxable losses, unused losses will carry forward to offset future taxable income, if any, until such unused losses expire. We may be unable to use these losses to offset income before such unused losses expire. Under Section 382 of the Internal Revenue Code of 1986, as amended (the "Code"), if a corporation undergoes an "ownership change" (generally defined as a greater than 50 percentage point change (by value) in its equity ownership over a rolling three-year period), the corporation's ability to use its pre-change net operating loss carryforwards and other pre-change tax attributes to offset its post-change income may be further limited. We have experienced ownership changes in the past, and we may experience additional ownership changes in the future as a result of subsequent shifts in our equity ownership, some of which are outside of our control. As of December 31, 2018, we had federal and California net operating loss carryforwards of $267.7 million and $97.2 million, respectively, that could be limited if we experience an ownership change, which could have an adverse effect on our results of operations.

We may be adversely affected by the current global economic environment.

Our ability to attract and retain collaboration partners or customers, invest in and grow our business and meet our financial obligations depends on our operating and financial performance, which, in turn, is subject to numerous factors, including the prevailing economic conditions and financial, business and other factors beyond our control, such as the rate of unemployment, the number of uninsured persons in the United States and inflationary pressures. Our results of operations could be adversely affected by general conditions in the global economy and in the global financial markets. The recent global financial crisis caused extreme volatility and disruptions in the capital and credit markets. We cannot anticipate all the ways in which the current global economic climate and global financial market conditions could adversely impact our business.

We are exposed to risks associated with reduced profitability and the potential financial instability of our collaboration partners or customers, many of which may be adversely affected by volatile conditions in the financial markets. For example, unemployment and underemployment, and the resultant loss of insurance, may decrease the demand for healthcare services and pharmaceuticals. If fewer patients are seeking medical care because they do not have insurance coverage, our collaboration partners or customers may experience reductions in revenues, profitability and/or cash flow that could lead them to reduce their support of our programs or financing activities. If collaboration partners or customers are not successful in generating sufficient revenue or are precluded from securing financing, they may not be able to pay, or may delay payment of, accounts receivable that are owed to us. In addition, the volatility in the financial markets could cause significant fluctuations in the interest rate and currency markets. We currently do not hedge for these risks. The foregoing events, in turn, could adversely affect our financial condition and liquidity. To the extent economic challenges result in fewer individuals pursuing or being able to afford our therapeutic candidates once commercialized, our business, results of operations, financial condition and cash flows

could be adversely affected.

Business disruptions could seriously harm our future revenues and financial condition and increase our costs and expenses.

Our operations could be subject to earthquakes, power shortages, telecommunications failures, floods, hurricanes, typhoons, fires, extreme weather conditions, medical epidemics and other natural or manmade disasters

or business interruptions. The occurrence of any of these business disruptions could seriously harm our operations and financial condition and increase our costs and expenses. Our corporate headquarters is located in California and certain clinical sites for our therapeutic candidates, operations of our existing and future partners and suppliers are or will be located in California near major earthquake faults and fire zones. The ultimate impact on us, our significant partners, suppliers and our general infrastructure of being located near major earthquake faults and fire zones and being consolidated in certain geographical areas is unknown, but our operations and financial condition could suffer in the event of a major earthquake, fire or other natural or manmade disaster.

Risks Related to Intellectual Property

We or our collaborators may become subject to third parties' claims alleging infringement of their patents and proprietary rights, which could be costly or delay or prevent the development and commercialization of our therapeutic candidates, or we may need to become involved in legal proceedings to invalidate the patents or proprietary rights of third parties.

Our success will depend, in part, on our ability to operate without infringing upon the proprietary rights of others. Litigation relating to infringement or misappropriation of patent and other intellectual property rights in the pharmaceutical and biotechnology industries is common. We or our collaborators may be subject to third-party claims in the future that would cause us to incur substantial expenses and which, if successful, could cause us to pay substantial damages, if we or our collaborators are found to be infringing a third party's patent rights. These damages potentially include increased damages and attorneys' fees if we are found to have infringed such rights willfully. Further, if a patent infringement suit is brought against us or our collaborators, our research, development, manufacturing or sales activities relating to the product or therapeutic candidate that is the subject of the suit may be delayed or terminated. As a result of patent infringement claims, or in order to avoid potential infringement claims, we or our collaborators may choose to seek, or be required to seek, a license from the third party, which would be likely to include a requirement to pay license fees or royalties or both. These licenses may not be available on acceptable terms, or at all. Even if a license can be obtained on acceptable terms, the rights may be nonexclusive, which would give our competitors access to the same intellectual property rights. If we are unable to enter into a license on acceptable terms, we or our collaborators could be prevented from commercializing one or more of our therapeutic candidates, or forced to modify such therapeutic candidates, or to cease some aspect of our business operations, which could harm our business significantly.

We are aware of U.S. and foreign issued patents and pending patent applications controlled by third parties that may relate to the areas in which we are developing therapeutic candidates. Because all issued patents are entitled to a presumption of validity in many countries, including the United States and many European countries, issued patents held by others that claim our products or technology may limit our freedom to operate unless and until these patents expire or are declared invalid or unenforceable in a court of applicable jurisdiction, if we do not obtain a license or other right to practice the claimed inventions. Pending patent applications controlled by third parties may result in additional issued patents claiming our products and technology. In addition, the publication of patent applications occurs with a certain delay after the date of filing, so we may not be aware of all relevant patent applications of third parties at a given point in time. Further, publication of discoveries in the scientific or patent literature often lags behind actual discoveries, so we may not be able to determine whether inventions claimed in patent applications of third parties have been made before or after the date on which inventions claimed in our patent applications and patents have been made. If U.S. patent applications filed by third parties claim technology or therapeutics that are also claimed by our patent applications or patents, we may, under certain circumstances, have to participate in interference proceedings in the U.S. Patent and Trademark Office, or USPTO, to determine the priority of invention. We may also become involved in inter partes or post-grant review proceedings in the USPTO, opposition proceedings in the European Patent Office, or EPO, or other proceedings before patent offices in the U.S. or foreign countries, regarding the intellectual property rights of third parties. We may also become involved in legal proceedings before courts in the

U.S. or foreign countries in which we challenge the intellectual property rights of a third party. The outcome of these proceedings may be uncertain. An unfavorable outcome in these proceedings regarding the intellectual property rights of a third party could require us to attempt to license rights from the prevailing party, or to cease using the related technology or developing or commercializing the related therapeutic candidate, which would have a material adverse effect on our business.

We may become subject to third parties' claims seeking to invalidate our patents or proprietary rights, or we may need to become involved in lawsuits or other legal proceedings to protect or enforce our patents, which could put our patents and other proprietary rights at risk.

Competitors may infringe our patents, or misappropriate or violate our other intellectual property rights. To counter infringement or unauthorized use, we may find it necessary to file infringement or other claims to protect our intellectual property rights. In addition, in any infringement proceeding brought by us against a third party to enforce our rights, 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 basis that our patents do not cover the technology in question. In patent litigation in the U.S., defendant counterclaims alleging invalidity or unenforceability are commonplace, and there are numerous grounds upon which a third party can assert invalidity or unenforceability of a patent. An adverse result in any patent litigation proceeding could put one or more of our patents at risk of being invalidated or interpreted narrowly, which could open us up to additional competition and have a material adverse effect on our business.

Third parties may also raise claims alleging the invalidity or unenforceability of our patents in other forms of proceedings, including proceedings before administrative bodies in the U.S. or abroad, even outside the context of patent litigation. The use of administrative proceedings for challenging patents, including interference, derivation, and reexamination proceedings before the USPTO or oppositions and other comparable proceedings in foreign jurisdictions, is common in the biotechnology and pharmaceutical industries. For instance, we may be involved in opposition proceedings in the EPO regarding our intellectual property rights with respect to our therapeutic candidates. Due to recent changes in U.S. patent law, new procedures including inter partes review and post-grant review have been implemented and are now also available for use in patent challenges, and the use of inter partes review to challenge the validity of patents in the biotechnology and pharmaceutical industries has become increasingly common. The outcome of administrative proceedings in which our patents are challenged may be uncertain. An unfavorable outcome of these proceedings could weaken our intellectual property position, including potentially reducing some of the patent protection on our therapeutic candidates, and potentially open us up to additional competition. Additional competition may reduce our market share and adversely affect our business.

Any lawsuits or other legal proceedings in which we or our collaborators may become involved regarding our patents or proprietary rights and/or the patents or proprietary rights of third parties could be costly, time-consuming, delay or prevent the development and commercialization of our therapeutic candidates, or adversely affect our stock price.

The cost to us of any patent litigation or other proceedings regarding our patents and/or third party patents, even if resolved in our favor, could be substantial. Such litigation or proceedings could substantially increase our operating losses and reduce our resources available for development 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. 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, there could be a substantial adverse effect on the price of our common stock. 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. Patent litigation and other proceedings may also require significant time and attention of management and technical staff, which may materially and adversely impact our financial position and results of operations. Furthermore, because of the substantial amount of discovery required in connection with any intellectual property litigation, there is a risk that some of our confidential information could be compromised by disclosure during this type of litigation.

Our proprietary rights may not adequately protect our technologies and therapeutic candidates. If we are unable to protect our therapeutic candidates and our intellectual property rights, it may materially and adversely affect our

position in the market.

Our commercial success will depend on our ability to obtain patents and maintain adequate protection for our technologies, intellectual property and therapeutic candidates in the United States and other countries. There is no guarantee that any of our patent applications will result in issued patents, or that any patents, if issued, will include

claims that are sufficiently broad to cover our therapeutic candidates or products, or to provide meaningful protection from our competitors. We will be able to protect our proprietary rights from unauthorized use by third parties only to the extent that our proprietary technologies and future products are covered by valid and enforceable patents or are effectively maintained as trade secrets within our organization. If third parties disclose or misappropriate our proprietary rights, it may materially and adversely impact our position in the market.

We apply for patents covering both our technologies and therapeutic candidates, as we deem appropriate. However, we may fail to apply for patents on important technologies or therapeutic candidates in a timely fashion, or at all. Our existing patents and any future patents we obtain may not be sufficiently broad to prevent others from using our technologies or from developing competing products and technologies. Moreover, the patent positions of numerous biotechnology and pharmaceutical companies are highly uncertain and involve complex legal and factual questions for which important legal principles remain unresolved. As a result, the validity and enforceability of our patents cannot be predicted with certainty. In addition, we cannot guarantee you that:

- we were the first to make the inventions covered by each of our issued patents and pending patent applications;
- we were the first to file patent applications for these inventions;
- others will not independently develop similar or alternative technologies or duplicate any of our technologies by inventing around our claims;
- a third party will not challenge our proprietary rights, and, if challenged, that a court or patent office, as applicable, will hold that our patents are valid and enforceable;
- any patents issued to us or our collaboration partners will cover our product as ultimately developed, or provide us with any competitive advantages, or will not be challenged by third parties;
- we will develop additional proprietary technologies or therapeutic candidates that are patentable; or
- the patents of others will not have an adverse effect on our business.

Patent applications in the United States and most other countries are confidential for a period of time until they are published, and publication of discoveries in scientific or patent literature typically lags behind actual discoveries by several months or more. As a result, we cannot be certain that the inventors of our issued patents and applications and those of any patents and applications that we may in-license were the first to conceive of the inventions covered by such patents and pending patent applications or that we or a licensor were the first to file patent applications covering such inventions.

Our issued patents covering our therapeutic candidates could be found invalid or unenforceable if challenged in court or before the USPTO or comparable foreign authority. For instance, we may become involved in opposition proceedings before the EPO, proceedings such as interferences, re-examination, inter partes review, or post-grant review before the USPTO, and/or legal proceedings before the courts in the U.S. or foreign countries regarding patents in our portfolio, and the outcome of any such proceeding may be uncertain. The outcome regarding legal assertions of invalidity and unenforceability is unpredictable. If a third party challenging one or more of our patents were to prevail on a legal assertion of invalidity and/or enforceability, we would lose at least part, and perhaps all, of the patent protection on our therapeutic candidates. Such a loss of patent protection could have a material adverse impact on our business.

In addition, there are numerous recent changes to the patent laws and proposed changes to the rules of the USPTO which may have a significant impact on our ability to protect our technology and enforce our intellectual property rights. For example, on September 16, 2011, President Obama signed the Leahy-Smith America Invents Act, which codifies several significant changes to the U.S. patent laws, including, among other things, changing from a “first to invent’ to a “first inventor to file” system, limiting where a patentee may file a patent suit, eventually eliminating interference proceedings while creating derivation actions, and creating a set of procedures to challenge patents in the USPTO after they have issued. The effects of these changes are currently uncertain as the courts have yet to address many of these provisions in the context of a dispute. The U.S. Supreme Court has also recently issued multiple

decisions regarding patent law, the full impact of which is not yet known. The rulings have narrowed the scope of patent protection available under certain circumstances and weakened the rights of patent owners in certain

situations. In addition to increasing uncertainty with regard to the ability to obtain patents in the future, these events have created uncertainty with respect to the value of patents once obtained. For example, on March 20, 2012 in Mayo Collaborative Services, DBA Mayo Medical Laboratories, et al. v. Prometheus Laboratories, Inc., the Court held that several claims drawn to measuring drug metabolite levels from patient samples and correlating them to drug doses were not patent eligible subject matter. The decision appears to impact diagnostics patents that merely apply a law of nature via a series of routine steps and it has created uncertainty around the ability to patent certain biomarker-related method claims. Additionally, on June 13, 2013 in Association for Molecular Pathology v. Myriad Genetics, Inc., the Court held that claims to isolated genomic DNA are not patentable, but claims to complementary DNA (cDNA) molecules were held to be valid. The effect of the decision on patents for other isolated natural products is uncertain. Depending on decisions by the U.S. Congress, the federal courts, the USPTO, and foreign courts and patent offices, the laws and regulations governing patents could change in unpredictable ways that would weaken our ability to obtain new patents or to enforce our existing patents and patents that we might obtain in the future.

Restrictions on our patent rights relating to our therapeutic candidates may limit our ability to prevent third parties from competing against us.

Our success will depend, in part, on our ability to prevent third parties from infringing upon our proprietary rights. Composition-of-matter patents on the biological or chemical active pharmaceutical ingredient are generally considered to be the strongest form of intellectual property protection for pharmaceutical products, as such patents provide protection without regard to any method of use. We have filed composition-of-matter patent applications for all of our therapeutic candidates. However, we cannot be certain that the claims in our patent applications to inventions covering our therapeutic candidates will be considered patentable by the USPTO and courts in the United States or by the patent offices and courts in foreign countries.

In addition to composition-of-matter patents and patent applications, we also have filed method-of-use patent applications. This type of patent protects the use of the product only for the specified method. However, this type of patent does not prevent a competitor from making and marketing a product that is identical to our product for an indication that is outside the scope of the patented method. Moreover, even if these competitors do not actively promote their product for our targeted indication, physicians may prescribe these products “off-label.” Although off-label prescriptions may infringe or contribute to the infringement of method-of-use patents, the practice is common and such infringement is difficult to prevent or prosecute.

Although we have a number of issued patents and numerous patent applications pending before the USPTO and foreign patent offices, the resulting patent protection may lapse before we manage to obtain commercial value from them, which might result in increased competition and materially affect our position in the market. Even if our patents do not lapse before we are able to obtain at least some commercial value from them, the life of any patent, and the protection it affords, is limited. Although the term of a U.S. patent may be increased to compensate for certain delays caused by the USPTO, this increase may also be reduced or offset entirely by delays caused by the patent applicant during patent prosecution. Once the patent life has expired for any of our therapeutic candidates, we may be open to competition from biosimilars, which may potentially reduce our market share, and our business and results of operations will be adversely affected.

We may not be able to protect our intellectual property rights throughout the world.

Filing, prosecuting and defending patents on all of our therapeutic candidates and technologies throughout the world would be prohibitively expensive. Competitors may use our technologies in jurisdictions where we have not obtained patent protection to develop their own products and further, may export otherwise infringing products to territories where we have patent protection, but where enforcement is not as strong as that in the United States. These products may compete with our future products in jurisdictions where we do not have any issued patents and our patent claims

or other intellectual property rights may not be effective or sufficient to prevent them from so competing.

Many companies have encountered significant problems in protecting and defending intellectual property rights in foreign jurisdictions. The legal systems of certain countries, particularly certain developing countries, do not favor the enforcement of patents and other intellectual property protection, particularly those relating to

biopharmaceuticals, which could make it difficult for us to stop the infringement of our patents or marketing of competing products in violation of our proprietary rights generally. Proceedings to enforce our patent rights in foreign jurisdictions could result in substantial cost and divert our efforts and attention from other aspects of our business. Furthermore, such proceedings could put our patents at risk of being invalidated, held unenforceable, or interpreted narrowly, could put our other patent applications at risk of not issuing and could provoke third parties to assert counter claims of infringement or misappropriation against us. We may not be able to obtain injunctive relief in foreign jurisdictions to prevent ongoing infringement while we enforce our patent rights and we may not prevail in any lawsuits that we initiate and the damages or other remedies awarded, if any, may not be commercially meaningful. Accordingly, our efforts to enforce our intellectual property rights around the world may be inadequate to obtain a significant commercial advantage from our intellectual property.

If we fail to comply with our obligations in our intellectual property licenses with third parties, we could lose license rights that are important to our business.

We are a party to intellectual property license agreements with third parties, including with respect to navicixizumab (anti-DLL4/VEGF bispecific, OMP-305B83) and the production of all of our biologic therapeutic candidates, and expect to enter into additional license agreements in the future. Our existing license agreements impose, and we expect that our future license agreements will impose, various diligence, milestone payment, royalty, insurance, indemnification and other obligations on us. If we fail to comply with these obligations, our licensors may have the right to terminate these agreements, in which event we, or our collaborators, might not be able to develop and market any therapeutic candidate that is covered by these agreements. Termination of these licenses or reduction or elimination of our licensed rights may result in our having to negotiate new or reinstated licenses with less favorable terms, or in the inability to obtain access to the licensed technology at all. The occurrence of such events could materially harm our business.

Obtaining and maintaining our patent protection depends on compliance with various procedural, document submission, fee payment and other requirements imposed by governmental patent agencies, and our patent protection could be reduced or eliminated for non-compliance with these requirements.

The USPTO and various foreign governmental patent agencies require compliance with a number of procedural, documentary, fee payment and other provisions during the patent application process. In addition, periodic maintenance fees on any issued patent are due to be paid to the USPTO and foreign patent agencies in several stages over the lifetime of a patent. There are situations in which noncompliance can result in abandonment or lapse of a patent or patent application, resulting in partial or complete loss of patent rights in the relevant jurisdiction. Noncompliance events that could result in abandonment or lapse of a patent or patent application include failure to respond to official actions within prescribed time limits, non-payment of fees, and failure to properly legalize and submit formal documents. In the event that noncompliance leads to abandonment or lapse of a patent or patent application, competitors might be able to enter the market earlier than would otherwise have been the case, which could have a material adverse effect on our business.

If our trademarks and trade names are not adequately protected, then we may not be able to build name recognition in our markets of interest and our business may be adversely affected.

Our registered or unregistered trademarks or trade names may be challenged, infringed, circumvented or declared generic or determined to be infringing on other marks. Litigation may be necessary to protect our rights to our trademarks or trade names. Such litigation may be costly and be a distraction to management. Also, an adverse result in any such litigation proceedings could put our trademarks or trade names at risk. We may not be able to protect our rights to these trademarks and trade names, which we need to build name recognition by potential partners or customers in our markets of interest. Over the long term, if we are unable to establish name recognition based on our

trademarks and trade names, then we may not be able to compete effectively and our business may be adversely affected.

We may be subject to claims that we or our employees or consultants have wrongfully used or disclosed alleged trade secrets of our employees' or consultants' former employers or their clients. These claims may be costly to defend and if we do not successfully do so, we may be required to pay monetary damages and may lose valuable intellectual property rights or personnel.

Many of our employees were previously employed at universities or biopharmaceutical or pharmaceutical companies, including our competitors or potential competitors. Although no claims against us are currently pending, we may be subject to claims that these employees or we have inadvertently or otherwise used or disclosed trade secrets or other proprietary information of their former employers. Litigation may be necessary to defend against these claims. If we fail in defending such claims, in addition to paying monetary damages, we may lose valuable intellectual property rights or personnel. A loss of key research personnel or their work product could hamper our ability to commercialize, or prevent us from commercializing our therapeutic candidates, which could severely harm our business. Even if we are successful in defending against these claims, litigation could result in substantial costs and be a distraction to management.

If we are unable to protect the confidentiality of our trade secrets, our business and competitive position would be harmed.

In addition to seeking patents for some of our technology and therapeutic candidates, we also rely on trade secrets, including unpatented know-how, technology and other proprietary information, to maintain our competitive position. We seek to protect these trade secrets, in part, by entering into non-disclosure and confidentiality agreements with parties who have access to them, such as our employees, corporate collaborators, outside scientific collaborators, contract manufacturers, consultants, advisors and other third parties. We also enter into confidentiality and invention or patent assignment agreements with our employees and consultants that obligate them to assign their inventions to us. Despite these efforts, any of these parties may breach the agreements and disclose our proprietary information, including our trade secrets, and we may not be able to obtain adequate remedies for such breaches. Enforcing a claim that a party illegally disclosed or misappropriated a trade secret is difficult, expensive and time-consuming, and the outcome is unpredictable. In addition, some courts inside and outside the United States, including in foreign jurisdictions, are less willing or unwilling to protect trade secrets. If any of our trade secrets were to be lawfully obtained or independently developed by a competitor, we would have no right to prevent them from using that technology or information to compete with us. If any of our trade secrets were to be disclosed to or independently developed by a competitor, our competitive position would be harmed.

Risks Related to Government Regulation

The regulatory approval process is expensive, time-consuming and uncertain and may prevent us or our collaboration partners from obtaining approvals for the commercialization of some or all of our therapeutic candidates.

The development, research, testing, manufacturing, labeling, approval, selling, import, export, marketing and distribution of drug and biologic products are subject to extensive and evolving regulation by federal, state and local governmental authorities in the United States, principally by the FDA, and foreign regulatory authorities, which regulations differ from country to country. Neither we nor our collaboration partners are permitted to market our therapeutic candidates in the United States until we receive regulatory approval from the FDA. Our therapeutic candidates are subject to regulation as biologics, and we will require approval of a BLA from the FDA before we may market our therapeutic candidates. Neither we nor our collaboration partners have submitted an application for or received marketing approval for any of our therapeutic candidates. Obtaining approval of a BLA can be a lengthy, expensive and uncertain process. In addition, failure to comply with FDA and other applicable U.S. and foreign regulatory requirements may subject us to administrative or judicially imposed sanctions, including:

- warning letters;
- civil and criminal penalties;
- injunctions;
- withdrawal of approved products;
- product seizure or detention;

- product recalls;
- total or partial suspension of production; and
- refusal to approve pending BLAs or supplements to approved BLAs.

Prior to receiving approval to commercialize any of our therapeutic candidates in the United States or abroad, we and our collaboration partners must demonstrate with substantial evidence from well-controlled clinical trials, and to the satisfaction of the FDA and other regulatory authorities abroad, that such therapeutic candidates are safe and effective for their intended uses. Preclinical testing and clinical trials are long, expensive and uncertain processes. We may spend several years completing our testing for any particular therapeutic candidate, and failure can occur at any stage. Negative or inconclusive results or adverse medical events during a clinical trial could also cause the FDA or us to terminate a clinical trial or require that we repeat it or conduct additional clinical trials. Additionally, data obtained from preclinical studies and clinical trials can be interpreted in different ways and the FDA or other regulatory authorities may interpret the results of our studies and trials less favorably than we do. Even if we and our collaboration partners believe the preclinical or clinical data for our therapeutic candidates are promising, such data may not be sufficient to support approval by the FDA and other regulatory authorities. Administering any of our therapeutic candidates to humans may produce undesirable side effects, which could interrupt, delay or halt clinical trials of our therapeutic candidates and result in the FDA or other regulatory authorities denying approval of our therapeutic candidates for any or all targeted indications.

Regulatory approval of our therapeutic candidates is not guaranteed, and the approval process is expensive and may take several years. The FDA and foreign regulatory entities also have substantial discretion in the approval process. Despite the time and expense exerted, failure can occur at any stage, and we could encounter problems that cause us to abandon or repeat clinical trials, or perform additional preclinical studies and clinical trials. The number of preclinical studies and clinical trials that will be required for FDA approval varies depending on the therapeutic candidate, the disease or condition that the therapeutic candidate is designed to address, and the regulations applicable to any particular therapeutic candidate. The FDA can delay, limit or deny approval of a therapeutic candidate for many reasons, including, but not limited to, the following:

- a therapeutic candidate may not be deemed safe or effective;
- FDA officials may not find the data from preclinical studies and clinical trials sufficient;
- the FDA might not approve our or our third-party manufacturer’s processes or facilities; or
- the FDA may change its approval policies or adopt new regulations.

If any of our therapeutic candidates fails to demonstrate safety and efficacy in clinical trials or does not gain regulatory approval, our business and results of operations will be materially and adversely harmed.

Even if we or our collaboration partners receive regulatory approval for a therapeutic candidate, we and our collaboration partners will be subject to ongoing regulatory obligations and continued regulatory review, which may result in significant additional expense and subject us to penalties if we fail to comply with applicable regulatory requirements.

Once regulatory approval has been granted, the approved product and its manufacturer are subject to continual review by the FDA and/or non-U.S. regulatory authorities. Any regulatory approval that we or our collaboration partners receive for our therapeutic candidates may be subject to limitations on the indicated uses for which the product may be marketed or contain requirements for potentially costly post-marketing follow-up studies to monitor the safety and efficacy of the product. In addition, if the FDA and/or non-U.S. regulatory authorities approve any of our therapeutic candidates, we will be subject to extensive and ongoing regulatory requirements by the FDA and other regulatory authorities with regard to the labeling, packaging, adverse event reporting, storage, advertising, promotion and recordkeeping for our products. Manufacturers of our products are required to comply with cGMP regulations, which include requirements related to quality control and quality assurance as well as the corresponding maintenance of records and documentation. Further, regulatory authorities must approve these manufacturing facilities before they can

be used to manufacture our products, and these facilities are subject to continual review and periodic inspections by the FDA and other regulatory authorities for compliance with cGMP regulations. If we, a collaboration partner or a regulatory authority discovers previously unknown problems with a product, such as

adverse events of unanticipated severity or frequency, or problems with the facility where the product is manufactured, a regulatory authority may impose restrictions on that product, the collaboration partner, the manufacturer or us, including requiring withdrawal of the product from the market or suspension of manufacturing. If we, our therapeutic candidates or the manufacturing facilities for our therapeutic candidates fail to comply with regulatory requirements of the FDA and/or other non-U.S. regulatory authorities, we could be subject to administrative or judicially imposed sanctions, including:

- warning letters;
- civil or criminal penalties;
- injunctions;
- suspension of or withdrawal of regulatory approval;
- suspension of any ongoing clinical trials;
- voluntary or mandatory product recalls and publicity requirements;
- refusal to approve pending applications for marketing approval of new products or supplements to approved applications filed by us;
- restrictions on operations, including costly new manufacturing requirements; or
- seizure or detention of our products or import bans.

The regulatory requirements and policies may change and additional government regulations may be enacted for which we may also be required to comply and that could prevent, limit or delay regulatory approval of our therapeutic candidates. For example, in December 2016, the 21st Century Cures Act, or Cures Act, was signed into law. The Cures Act, among other things, is intended to modernize the regulation of biologics and spur innovation. If we or our collaboration partners are slow or unable to adapt to changes in existing requirements or the adoption of new requirements or policies, or if we are not able to maintain regulatory compliance, we or our collaboration partners, as applicable, may lose any marketing approval that we may have obtained and will not be permitted to market our future products, which would adversely affect our business, prospects and ability to achieve or sustain profitability.

We cannot predict the likelihood, nature or extent of government regulation that may arise from future legislation or administrative or executive action, either in the United States or abroad. For example, certain policies of the Trump administration may impact our business and industry. Namely, the Trump administration has taken several executive actions, including the issuance of a number of Executive Orders, that could impose significant burdens on, or otherwise materially delay, FDA's ability to engage in routine regulatory and oversight activities such as implementing statutes through rulemaking, issuance of guidance, and review and approval of marketing applications. It is difficult to predict how these executive actions, including the Executive Orders, will be implemented, and the extent to which they will impact the FDA's ability to exercise its regulatory authority. If these executive actions impose constraints on FDA's ability to engage in oversight and implementation activities in the normal course, our business may be negatively impacted.

Changes in funding for the FDA and other government agencies could hinder their ability to hire and retain key leadership and other personnel, or otherwise prevent new products and services from being developed or commercialized in a timely manner, which could negatively impact our business.

The ability of the FDA to review and approve new products can be affected by a variety of factors, including government budget and funding levels, ability to hire and retain key personnel and accept the payment of user fees, and statutory, regulatory, and policy changes. Average review times at the agency have fluctuated in recent years as a result. In addition, government funding of other government agencies that fund research and development activities is subject to the political process, which is inherently fluid and unpredictable.

Disruptions at the FDA and other agencies may also slow the time necessary for new drugs to be reviewed and/or approved by necessary government agencies, which would adversely affect our business. For example, over the last

several years, including for 35 days beginning on December 22, 2018, the U.S. government has shut down

several times and certain regulatory agencies, such as the FDA, have had to furlough critical FDA employees and stop critical activities. If a prolonged government shutdown occurs, it could significantly impact the ability of the FDA to timely review and process our regulatory submissions, which could have a material adverse effect on our business.

The availability of adequate third-party coverage and reimbursement for newly approved products is uncertain, and failure to obtain adequate coverage and reimbursement from third-party payors could impede our ability to market any future products we may develop and could limit our ability to generate revenue.

There is significant uncertainty related to the third-party payor coverage and reimbursement of newly approved medical products. The commercial success of our future products in both domestic and international markets depends on whether such third-party coverage and reimbursement is available for our future products. Governmental payors, including Medicare and Medicaid, health maintenance organizations and other third-party payors are increasingly attempting to manage their healthcare expenditures by limiting both coverage and the level of reimbursement of newly approved drugs and biologics and, as a result, they may not cover or provide adequate reimbursement for our future products. These payors may not view our future products as cost-effective, and coverage and reimbursement may not be available to our customers or may not be sufficient to allow our future products to be marketed on a competitive basis. Third-party payors are exerting increasing influence on decisions regarding the use of, and coverage and reimbursement levels for, particular treatments. Such third-party payors, including Medicare, are challenging the prices charged for medical products and services, and many third-party payors limit or delay coverage and reimbursement for newly approved healthcare products. In particular, third-party payors may limit the covered indications. Cost-control initiatives could cause us to decrease the price we might establish for products, which could result in lower than anticipated product revenues. If we decrease the prices for our therapeutic candidates because of competitive pressures or if governmental and other third-party payors do not provide adequate coverage or reimbursement, our prospects for revenue and profitability will suffer.

Failure to obtain regulatory approvals in foreign jurisdictions will prevent us from marketing our therapeutic candidates internationally.

We may seek a distribution and marketing partner for our unpartnered programs outside North America and may market future products in international markets. In order to market our therapeutic candidates in the European Economic Area, or EEA (which is comprised of the 28 Member States of the EU plus Norway, Iceland and Liechtenstein), and many other foreign jurisdictions, we or our collaboration partners must obtain separate regulatory approvals. More concretely, in the EEA, medicinal products can only be commercialized after obtaining a Marketing Authorization, or MA. There are two types of marketing authorizations:

- The Community MA, which is issued by the European Commission through the Centralized Procedure, based on the opinion of the Committee for Medicinal Products for Human Use of the European Medicines Agency, or EMA, and which is valid throughout the entire territory of the EEA. The Centralized Procedure is mandatory for certain types of products, such as biotechnology medicinal products, orphan medicinal products, and medicinal products indicated for the treatment of AIDS, cancer, neurodegenerative disorders, diabetes, auto-immune and viral diseases. The Centralized Procedure is optional for products containing a new active substance not yet authorized in the EEA, or for products that constitute a significant therapeutic, scientific or technical innovation or which are in the interest of public health in the EU.
- National MAs, which are issued by the competent authorities of the Member States of the EEA and only cover their respective territory, are available for products not falling within the mandatory scope of the Centralized Procedure. Where a product has already been authorized for marketing in a Member State of the EEA, this National MA can be recognized in another Member State through the Mutual Recognition Procedure. If the product has not received a National MA in any Member State at the time of application, it can be approved simultaneously in various Member States through the Decentralized Procedure.

Under the above described procedures, before granting the MA, the EMA or the competent authorities of the Member States of the EEA make an assessment of the risk-benefit balance of the product on the basis of scientific criteria concerning its quality, safety and efficacy.

We have had limited interactions with foreign regulatory authorities, and the approval procedures vary among countries and can involve additional clinical testing, and the time required to obtain approval may differ from that required to obtain FDA approval. Clinical trials conducted in one country may not be accepted by regulatory authorities in other countries. Approval by the FDA does not ensure approval by regulatory authorities in other countries, and approval by one or more foreign regulatory authorities does not ensure approval by regulatory authorities in other foreign countries or by the FDA. However, a failure or delay in obtaining regulatory approval in one country may have a negative effect on the regulatory process in others. The foreign regulatory approval process may include all of the risks associated with obtaining FDA approval. We or our collaboration partners may not obtain foreign regulatory approvals on a timely basis, if at all. We or our collaboration partners may not be able to file for regulatory approvals and even if we or our collaboration partners file, we may not receive necessary approvals to commercialize our therapeutic candidates in any market.

Healthcare reform measures could hinder or prevent our therapeutic candidates' commercial success.

In the United States, there have been, and we expect there will continue to be, a number of legislative and regulatory changes and proposed changes to the healthcare system that could affect our future revenues and profitability and the future revenues and profitability of our potential customers. Federal and state lawmakers regularly propose and, at times, enact legislation that results in significant changes to the healthcare system, some of which are intended to contain or reduce the costs of medical products and services. For example, in March 2010, the U.S. Congress passed and President Obama signed into law the Affordable Care Act. It contains a number of provisions, including those governing enrollment in federal healthcare programs, reimbursement changes and fraud and abuse measures, all of which have impacted existing government healthcare programs and have resulted in the development of new programs. The Affordable Care Act, among other things:

- imposed a non-deductible annual fee on pharmaceutical manufacturers or importers who sell "branded prescription drugs";
- increased the minimum level of Medicaid rebates payable by manufacturers of brand-name drugs from 15.1% to 23.1%;
- extended the rebate program to individuals enrolled in Medicaid managed care organizations;
- addressed a new methodology by which rebates owed by manufacturers under the Medicaid Drug Rebate Program are calculated for drugs that are inhaled, infused, instilled, implanted or injected;
- expanded the eligibility criteria for Medicaid programs by, among other things, allowing states to offer Medicaid coverage to additional individuals and by adding new mandatory eligibility categories for certain individuals with income at or below 133% of the federal poverty level, thereby potentially increasing a manufacturer's Medicaid rebate liability;
- expanded access to commercial health insurance coverage through new state-based health insurance marketplaces, or exchanges; and
- required manufacturers to participate in a coverage gap discount program, under which they must agree to offer 50% point-of-sale discounts, which, through subsequent legislative amendments, were increased to 70%, off negotiated prices of applicable brand drugs to eligible beneficiaries during their coverage gap period, as a condition for the manufacturer's outpatient drugs to be covered under Medicare Part D.

Since its enactment, there have been judicial and Congressional challenges to certain aspects of the Affordable Care Act. We expect that the current presidential administration and U.S. Congress will likely continue to seek to modify, repeal, or otherwise invalidate all or certain provisions of, the Affordable Care Act. For example, the Tax Act was enacted, which, among other things, removes penalties for not complying with the Affordable Care Act's individual mandate to carry health insurance. Additionally, on December 14, 2018, a U.S. District Court Judge in the Northern District of Texas, ruled that the individual mandate is a critical and inseverable feature of the Affordable Care Act, and therefore, because it was repealed as part of the Tax Act, the remaining provisions of the Affordable Care Act are invalid as well. While the Trump Administration and the Centers for Medicare & Medicaid Services have both stated

that the ruling will have no immediate effect, it is unclear how this decision, subsequent appeals, if any, will impact the law. As a result, there is still uncertainty with respect to the impact President Trump's administration and the U.S. Congress may have, if any, and any changes will likely take time to unfold, and could

have an impact on coverage and reimbursement for healthcare items and services covered by plans that were authorized by the Affordable Care Act. However, we cannot predict the ultimate content, timing or effect of any healthcare reform legislation or the impact of potential legislation on us.

In addition, other legislative changes have been proposed and adopted in the United States since the Affordable Care Act was enacted. These changes include aggregate reductions of Medicare payments to providers of 2 percent per fiscal year, which went into effect on April 1, 2013, and, due to subsequent legislative amendments, will remain in effect through 2027 unless additional Congressional action is taken, and the American Taxpayer Relief Act, which, among other things, further reduced Medicare payments to several types of providers, including hospitals, imaging centers and cancer treatment centers, and increased the statute of limitations period for the government to recover overpayments to providers from three to five years. These new laws may result in additional reductions in Medicare and other health care funding, which could have a material adverse effect on our customers and accordingly, our financial operations.

Moreover, payment methodologies, including payment for companion diagnostics, may be subject to changes in healthcare legislation and regulatory initiatives. For example, the CMS has begun bundling the Medicare payments for certain laboratory tests ordered while a patient received services in a hospital outpatient setting and, in 2018, the CMS began paying for clinical laboratory services based on a weighted average of reported prices that private payors, Medicare Advantage plans, and Medicaid Managed Care plans pay for laboratory services. In addition, recently, there has been heightened governmental scrutiny over the manner in which manufacturers set prices for their marketed products, which has resulted in several Congressional inquiries and proposed and enacted legislation designed to, among other things, bring more transparency to product pricing, review the relationship between pricing and manufacturer patient programs, and reform government program reimbursement methodologies for drug products. For example, the 21st Century Cures Act changed the reimbursement methodology for infusion drugs and biologics furnished through durable medical equipment in an attempt to remedy over- and underpayment of certain products. Individual states in the United States have also become increasingly active in implementing regulations designed to control pharmaceutical product pricing, including price or patient reimbursement constraints, discounts, restrictions on certain product access and marketing cost disclosure and transparency measures, and, in some cases, designed to encourage importation from other countries and bulk purchasing. We expect that additional state and federal healthcare reform measures will be adopted in the future, any of which could limit the amount that federal and state governments will pay for healthcare products and services, which could result in reduced demand for our therapeutic candidates or companion diagnostics or additional pricing pressures.

There likely will continue to be legislative and regulatory proposals at the federal and state levels directed at containing or lowering the cost of health care. We cannot predict the initiatives that may be adopted in the future or their full impact. The continuing efforts of the government, insurance companies, managed care organizations and other payors of healthcare services to contain or reduce costs of health care may adversely affect:

- our ability to set a price we believe is fair for our products;
- our ability to generate revenues and achieve or maintain profitability; and
- the availability of capital.

In light of widely publicized events concerning the safety risk of certain drug products, regulatory authorities, members of Congress, the Governmental Accounting Office, medical professionals and the general public have raised concerns about potential drug safety issues. These events have resulted in the withdrawal of drug products, revisions to drug labeling that further limit use of the drug products and establishment of risk management programs that may, for instance, restrict distribution of drug products. The increased attention to drug safety issues may result in a more cautious approach by the FDA to clinical trials and the drug approval process. Data from clinical trials may receive greater scrutiny with respect to safety, which may make the FDA or other regulatory authorities more likely to terminate clinical trials before completion, or require longer or additional clinical trials that may result in substantial

additional expense and a delay or failure in obtaining approval or approval for a more limited indication than originally sought. In, addition, because of the serious public health risks of high profile adverse safety events with certain products, the FDA may require, as a condition of approval, costly risk management programs which may include safety surveillance, restricted distribution and use, patient education, enhanced labeling, special

packaging or labeling, expedited reporting of certain adverse events, preapproval of promotional materials and restrictions on direct-to-consumer advertising.

Our therapeutic candidates for which we intend to seek approval as biologic products may face competition from biosimilars and may face such competition sooner than anticipated.

With the enactment of the Biologics Price Competition and Innovation Act of 2009, or BPCIA, as part of the Affordable Care Act, an abbreviated pathway for the approval of biosimilar and interchangeable biological products was created. The abbreviated regulatory pathway establishes legal authority for the FDA to review and approve biosimilar biologics, including the possible designation of a biosimilar as "interchangeable," based on their similarity to existing brand product. Under the BPCIA, an application for a biosimilar product cannot be submitted to the FDA until four years following the date that the reference product was first licensed by the FDA, and the approval of a biosimilar product may not be made effective by the FDA until 12 years from the date on which the reference product was first licensed. During this 12-year period of exclusivity, another company may still market a competing version of the reference product if the FDA approves a full BLA for the competing product containing the sponsor's own preclinical data and data from adequate and well-controlled clinical trials to demonstrate the safety, purity and potency of their product. The 12 years of data exclusivity afforded to biologics under the BPCIA does not prevent another company from developing a product that is highly similar to the innovative product, generating its own data, and seeking approval. Data exclusivity only assures that another company cannot rely upon data within the innovator's application to support the biosimilar product's application. The law is complex and is subject to continuing interpretation and implementation by the FDA. As a result, its ultimate impact, implementation and meaning are subject to continuing uncertainty. The FDA has continued to approve few biosimilar products, however, reflecting that the Agency is continuing to move forward with implementation and application of a regulatory pathway for biosimilars despite some ongoing uncertainty surrounding the specifics of the biosimilar regulatory pathway. The FDA's processes for biosimilars could have a material adverse effect on the future commercial prospects for our biological products.

We believe that any of our therapeutic candidates approved as a biological product under a BLA should qualify for the 12-year period of exclusivity. However, there is a risk that the U.S. Congress could amend the BPCIA to significantly shorten this exclusivity period or take other measures to reduce or eliminate periods of exclusivity. There is also a risk that the FDA will not consider our therapeutic candidates to be reference products for competing products, potentially creating the opportunity for competition sooner than anticipated. Moreover, the extent to which a biosimilar, once approved, will be substituted for any one of our reference products in a way that is similar to traditional generic substitution for non-biological products is not yet clear, and will depend on a number of marketplace and regulatory factors that are still developing.

In addition, foreign regulatory authorities may also provide for exclusivity periods for approved biological products. For example, biological products in Europe may be eligible for a 10-year period of exclusivity. Biosimilar products have been approved under the centralized procedure since 2006. The pathway allows sponsors of a biosimilar product to seek and obtain regulatory approval based in part on the clinical trial data of an originator product to which the biosimilar product has been demonstrated to be "similar." In many cases, this allows biosimilar products to be brought to market without conducting the full suite of clinical trials typically required of originators. It is unclear whether we would face competition to our products in European markets sooner than anticipated.

If we fail to comply with healthcare regulations, we could face substantial penalties and our business, operations and financial condition could be adversely affected.

Even though we do not and will not control referrals of healthcare services or bill directly to Medicare, Medicaid or other third-party payors, certain federal and state healthcare laws and regulations pertaining to fraud and abuse and

patients' rights are and will be applicable to our business. We could be subject to healthcare fraud and abuse and patient privacy regulation by both the federal government and the states in which we conduct our business. The regulations that may affect our ability to operate include, without limitation:

- the federal Anti-Kickback Statute, which prohibits, among other things, any person from knowingly and willfully offering, soliciting, receiving or providing remuneration, directly or indirectly, to induce either the referral of an individual, for an item or service or the purchasing or ordering of a good or service, for

which payment may be made under federal healthcare programs such as the Medicare and Medicaid programs. A person or entity does not need to have actual knowledge of this statute or specific intent to violate it in order to have committed a violation. In addition, the government may assert that a claim including items or services resulting from a violation of the federal Anti-Kickback Statute constitutes a false or fraudulent claim for purposes of the false claims statutes;

- the federal False Claims Act, which prohibits, among other things, individuals or entities from knowingly presenting, or causing to be presented, false claims, or knowingly using false statements, to obtain payment from the federal government, and which may apply to entities that provide coding and billing advice to customers;
- federal criminal laws that prohibit executing a scheme to defraud any healthcare benefit program or making false statements relating to healthcare matters. Similar to the federal Anti-Kickback Statute, a person or entity does not need to have actual knowledge of these statutes or specific intent to violate them in order to have committed a violation;
- the federal Physician Payments Sunshine Act, which requires manufacturers of drugs, devices, biologics and medical supplies for which payment is available under Medicare, Medicaid or the Children's Health Insurance Program (with certain exceptions) to report annually to the government information related to payments or other "transfers of value" made to physicians (defined to include doctors, dentists, optometrists, podiatrists and chiropractors) and teaching hospitals, and applicable manufacturers and group purchasing organizations to report annually to the government ownership and investment interests held by physicians (as defined above) and their immediate family members and payments or other "transfers of value" to such physician owners. Manufacturers are required to report such data to the government by the 90th calendar day of each year;
- the federal Health Insurance Portability and Accountability Act of 1996, as amended by the Health Information Technology for Economic and Clinical Health Act, which governs the conduct of certain electronic healthcare transactions and protects the security and privacy of protected health information;
- state law equivalents of each of the above federal laws, such as anti-kickback and false claims laws which may apply to items or services reimbursed by any third-party payor, including commercial insurers; state laws that require pharmaceutical companies to comply with the pharmaceutical industry's voluntary compliance guidelines and the relevant compliance guidance promulgated by the federal government or otherwise restrict payments that may be made to healthcare providers; state laws that require drug manufacturers to report information related to payments and other transfers of value to physicians and other healthcare providers or pricing information and marketing expenditures; and state laws governing the privacy and security of health information in certain circumstances, many of which differ from each other in significant ways and often are not preempted by HIPAA, thus complicating compliance efforts; and
- similar healthcare laws and regulations in the European Union and other jurisdictions, including reporting requirements detailing interactions with and payments to healthcare providers and requirements regarding the collection, distribution, use, security, and storage of personally identifiable information and other data relating to individuals (including the GDPR).

If our operations are found to be in violation of any of the laws described above or any other governmental regulations that apply to us, we may be subject to penalties, including civil and criminal penalties, damages, fines, exclusion from government-funded healthcare programs, such as Medicare and Medicaid or similar programs in other countries or jurisdictions, integrity oversight and reporting obligations to resolve allegations of non-compliance, individual imprisonment, and the curtailment or restructuring of our operations. Any penalties could adversely affect our ability to operate our business and our financial results. Any action against us for violation of these laws, even if we successfully defend against it, could cause us to incur significant legal expenses and divert our management's attention from the operation of our business. Moreover, achieving and sustaining compliance with applicable federal and state privacy, security and fraud laws may prove costly.

Risks Related to the Securities Market and Investment in Our Common Stock

On January 23, 2019 we received written notice from Nasdaq that we were not in compliance with Nasdaq's continued listing requirements due to our failure to maintain a minimum closing bid price. Our common stock may be delisted from the Nasdaq Global Select Market if we cannot satisfy Nasdaq's continued listing requirements.

On January 23, 2019, we received a letter from the listing qualifications department of The Nasdaq Stock Market ("Nasdaq") indicating that for 30 consecutive business days we did not maintain a minimum closing bid price of $1.00 per share as required by Nasdaq Listing Rule 5450(a)(1) (the "Minimum Bid Price Requirement").

In accordance with Nasdaq Listing Rule 5810(c)(3)(A), we have 180 calendar days, or until July 22, 2019, to regain compliance with the Minimum Bid Price Requirement. To regain compliance, the closing bid price of our common stock must be at least $1.00 per share for a minimum of ten consecutive business days before July 22, 2019.

If our common stock does not achieve compliance by July 22, 2019, we may be eligible for an additional 180-day period to regain compliance if we transfer to the Nasdaq Capital Market, provided that we meet the continued listing requirement for market value of publicly-held shares and all other initial listing standards of the Nasdaq Capital Market, with the exception of the Minimum Bid Price Requirement, and provide written notice to Nasdaq of our intention to cure the deficiency during the second compliance period, for example, by effecting a reverse stock split, if necessary. However, if it appears to the Nasdaq staff that we will not be able to cure the deficiency, or if we do not meet the other listing standards, Nasdaq could provide notice that our common stock will become subject to delisting. In the event we receive notice that our common stock is being delisted, Nasdaq rules permit us to appeal any delisting determination by the Nasdaq staff to a Hearings Panel.

We believe that the completion of the Merger will address the above-indicated Nasdaq compliance matter. We will also continue to monitor the bid price for its common stock and consider various other options available to it if our common stock does not trade at a level that is likely to regain compliance. However, there can be no assurance that we will be able to regain compliance with the Minimum Bid Price Requirement or maintain compliance with any other Nasdaq requirement in the future.

The price of our common stock may be volatile, and you may not be able to resell your shares at prices that are attractive to you.

There was no public market for our common stock prior to our initial public offering in July 2013, the trading volume of our common stock on The Nasdaq Global Select Market has been limited since then, and there can be no assurance that an active and liquid trading market for our common stock will be sustained. We cannot predict the extent to which investor interest in our company will sustain an active trading market on The Nasdaq Global Select Market or otherwise or how liquid that market might become. If an active and liquid market is not sustained, it may be difficult for stockholders to sell their shares of common stock at prices that are attractive to them, or at all. Further, an inactive market may also impair our ability to raise capital by selling shares of our common stock and may impair our ability to enter into strategic partnerships or acquire companies or products, therapeutic candidates or technologies by using our shares of common stock as consideration. Stockholders may also be unable to sell their shares of common stock at prices that are attractive to them due to fluctuations in the market price of our common stock. Factors that could cause volatility in the market price of our common stock include, but are not limited to:

- ability to commercialize or obtain regulatory approval for our therapeutic candidates, or delays in commercializing or obtaining regulatory approval;

- results from, or any delays in, clinical trial programs relating to our therapeutic candidates, including the ongoing and planned clinical trials for navicixizumab (anti-DLL4/VEGF bispecific, OMP-305B83) and etigilimab (anti-TIGIT, OMP-313M32);
- failure to achieve anticipated research and development milestones and obtain the applicable milestone payments under our agreements with our collaboration partners, on our anticipated timelines or at all;

- any need to suspend or discontinue clinical trials due to side effects or other safety risks, or any need to conduct studies on the long-term effects associated with the use of our therapeutic candidates;
- announcements relating to future collaborations; our existing collaboration with Celgene, including decisions regarding the exercise by Celgene of its option for etigilimab or any termination by Celgene the etigilimab development program; or our small molecule program collaboration with Bayer, including the advancement or non-advancement of the small molecule programs into further development and potential commercialization by Bayer;
- manufacturing issues related to our therapeutic candidates for clinical trials or future products for commercialization;
- commercial success and market acceptance of our therapeutic candidates following regulatory approval;
- undesirable side effects caused by therapeutic candidates after they have entered the market;
- ability to discover, develop and commercialize additional therapeutic candidates;
- success of our competitors in discovering, developing or commercializing products;
- strategic transactions undertaken by us;
- additions or departures of key personnel;
- product liability claims related to our clinical trials or therapeutic candidates;
- prevailing economic conditions;
- business disruptions caused by external factors, such as natural disasters and other crises;
- disputes concerning our intellectual property or other proprietary rights;
- FDA or other U.S. or foreign regulatory actions affecting us or our industry;
- healthcare reform measures in the United States;
- sales of our common stock by our officers, directors or significant stockholders;
- future sales or issuances of equity or debt securities by us;
- fluctuations in our quarterly operating results; and
- the issuance of new or changed securities analysts' reports or recommendations regarding us.

In addition, the stock markets in general, and the markets for pharmaceutical, biopharmaceutical and biotechnology stocks in particular, have experienced extreme volatility that have been often unrelated to the operating performance of the issuer. These broad market fluctuations may adversely affect the trading price or liquidity of our common stock. In the past, when the market price of a stock has been volatile, holders of that stock have sometimes instituted securities class action litigation against the issuer. If any of our stockholders were to bring such a lawsuit against us, we could incur substantial costs defending the lawsuit and the attention of our management would be diverted from the operation of our business.

Together with their affiliates, our directors and management own a significant percentage of our stock and will be able to exert significant control over matters subject to stockholder approval.

Based on the beneficial ownership of our outstanding common stock as of December 31, 2018, our officers and directors, together with their respective affiliates, beneficially own approximately 14.3% of our outstanding common stock. Accordingly, these stockholders will continue to have significant influence over the outcome of corporate actions requiring stockholder approval, including the election of directors, any merger, consolidation or sale of all or substantially all of our assets or any other significant corporate transaction. The interests of these stockholders may not be the same as or may even conflict with your interests. For example, these stockholders could delay or prevent a change of control of our company, even if such a change of control would benefit our other stockholders, which could deprive our stockholders of an opportunity to receive a premium for their common stock as part of a sale of our company or our assets and might affect the prevailing market price of our common stock. The

significant concentration of stock ownership may adversely affect the trading price of our common stock due to investors' perception that conflicts of interest may exist or arise.

Future sales of our common stock or securities convertible or exchangeable for our common stock may depress our stock price.

If our existing stockholders or holders of our options or warrants sell, or indicate an intention to sell, substantial amounts of our common stock in the public market, the trading price of our common stock could decline. The perception in the market that these sales may occur could also cause the trading price of our common stock to decline. As of December 31, 2018, we have a total of 38,660,146 shares of common stock outstanding.

Based on the number of shares subject to outstanding awards under our 2004 Stock Incentive Plan and 2013 Equity Incentive Award Plan, or available for issuance under our 2013 Equity Incentive Award Plan and Employee Stock Purchase Plan as of December 31, 2018, 9,311,367 shares of common stock that are either subject to outstanding options, outstanding but subject to vesting, or reserved for future issuance under our employee benefit plans will be eligible for sale in the public market, subject to, in the case of shares issued to directors, executive officers and other affiliates, the volume limitations under Rule 144 under the Securities Act. If these additional shares of common stock are sold, or if it is perceived that they will be sold, in the public market, the trading price of our common stock could decline.

Approximately 4.4 million shares of our common stock are entitled to rights with respect to the registration of their shares under the Securities Act. Registration of these shares under the Securities Act would result in the shares becoming freely tradable without restriction under the Securities Act, except for shares purchased by affiliates. In addition, our directors, executive officers and other affiliates may establish, and certain executive officers, directors and affiliates have established, programmed selling plans under Rule 10b5-1 of the Exchange Act, for the purpose of effecting sales of our common stock. Any sales of securities by these stockholders, or the perception that those sales may occur, including the entry into such programmed selling plans, could have a material adverse effect on the trading price of our common stock.

Future sales and issuances of equity and debt securities could result in additional dilution to our stockholders and could place restrictions on our operations and assets, and such securities could have rights, preferences and privileges senior to those of our common stock.

We expect that significant additional capital will be needed in the future to continue our planned operations. To raise capital, we may from time to time issue additional shares of common stock at a discount from the then-current trading price of our common stock. As a result, our common stockholders would experience immediate dilution upon the purchase of any shares of our common stock sold at such discount. For example, on August 23, 2016, we closed the sale of an aggregate of 6,325,000 shares of our common stock at a public offering price of $10.00 per share, a discount from the then-current trading price of our common stock. In addition, as opportunities present themselves, we may enter into financing or similar arrangements in the future, including the issuance of debt securities, preferred stock or common stock. Whether or not we issue additional shares of common stock at a discount, any issuance of common stock will, and any issuance of other equity securities or of options, warrants or other rights to purchase common stock may, result in additional dilution of the percentage ownership of our stockholders and could cause our stock price to decline. New investors could also gain rights, preference and privileges senior to those of holders of our common stock, which could cause the price of our common stock to decline. Debt securities may also contain covenants that restrict our operational flexibility or impose liens or other restrictions on our assets, which could also cause the price of our common stock to decline.

Pursuant to our equity incentive plan, we are authorized to grant equity-based incentive awards to our employees, directors and consultants. As of December 31, 2018, there were 3,349,842 shares of our common stock reserved for future issuance under our 2013 Equity Incentive Award Plan, or the 2013 Plan. The number of shares of our common stock reserved for issuance under our 2013 Plan will be increased (i) from time to time by the number of shares of our common stock forfeited upon the expiration, cancellation, forfeiture, cash settlement or other termination of awards under our 2004 Stock Incentive Plan, or the 2004 Plan, and (ii) annually on the first day of the year by the lesser of (x) a number of additional shares of our common stock representing 4% of our then-outstanding shares of common stock on the last day of the immediately preceding fiscal year; (y) 1,500,000 shares of our

common stock; and (z) such smaller number of shares as determined by our board of directors. As a result of this increase, an additional 1,500,000 shares of our common stock became available for future issuance under our 2013 Plan as of January 1, 2018. Future option grants and issuances of common stock under our 2013 Plan may have an adverse effect on the market price of our common stock.

In addition, pursuant to our 2013 Employee Stock Purchase Plan, or ESPP, as of December 31, 2018, 1,510,518 shares of our common stock were available for issuance to our employees. The number of shares of our common stock reserved for issuance under our ESPP will be increased annually on the first day of the year by the lesser of (x) a number of additional shares of our common stock representing 1% of our then-outstanding shares of common stock on the last day of the immediately preceding fiscal year; (y) 350,000 shares of our common stock; and (z) such number of shares as determined by our board of directors. As a result of this increase, an additional 350,000 shares of our common stock became available for future issuance under our ESPP as of January 1, 2018. Future issuances of common stock under our ESPP may have an adverse effect on the market price of our common stock.

Our quarterly operating results may fluctuate significantly or may fall below the expectations of investors or securities analysts, each of which may cause our stock price to fluctuate or decline.

We expect our operating results to be subject to quarterly fluctuations. Our net loss and other operating results will be affected by numerous factors, including:

- variations in the level of expenses related to our therapeutic candidates or future development programs;
- if any of our therapeutic candidates receives regulatory approval, the level of underlying demand for these therapeutic candidates and wholesalers' buying patterns;
- addition or termination of clinical trials or funding support;
- our execution of any collaborative, licensing or similar arrangements, and the timing of payments we may make or receive under these arrangements or existing such arrangements, such as our collaboration agreement with Celgene and our small molecule program collaboration with Bayer;
- any intellectual property infringement lawsuit or opposition, interference, or cancellation proceeding in which we may become involved; and
- regulatory developments affecting our therapeutic candidates or those of our competitors.

If our quarterly operating results fall below the expectations of investors or securities analysts, the price of our common stock could decline substantially. Furthermore, any quarterly fluctuations in our operating results may, in turn, cause the price of our stock to fluctuate substantially. We believe that quarterly comparisons of our financial results are not necessarily meaningful and should not be relied upon as an indication of our future performance.

Provisions of our charter documents or Delaware law could delay or prevent an acquisition of our company, even if the acquisition would be beneficial to our stockholders, and could make it more difficult for you to change management.

Provisions in our amended and restated certificate of incorporation and our amended and restated bylaws may discourage, delay or prevent a merger, acquisition or other change in control that stockholders may consider favorable, including transactions in which stockholders might otherwise receive a premium for their shares. In addition, these provisions may frustrate or prevent any attempt by our stockholders to replace or remove our current management by making it more difficult to replace or remove our board of directors. These provisions include:

- a classified board of directors so that not all directors are elected at one time;
- a prohibition on stockholder action through written consent;
- a requirement that special meetings of stockholders be called only by the board of directors, the chairman of the board of directors, the chief executive officer or, in the absence of a chief executive officer, the president;

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- an advance notice requirement for stockholder proposals and nominations;
- the authority of our board of directors to issue preferred stock with such terms as our board of directors may determine; and
- a requirement of approval of not less than 66 2/3% of all outstanding shares of our capital stock entitled to vote to amend any bylaws by stockholder action, or to amend specific provisions of our certificate of incorporation.

In addition, Delaware law prohibits a publicly held Delaware corporation from engaging in a business combination with an interested stockholder, generally a person who, together with its affiliates, owns or within the last three years has owned 15% or more of our voting stock, for a period of three years after the date of the transaction in which the person became an interested stockholder, unless the business combination is approved in a prescribed manner. Accordingly, Delaware law may discourage, delay or prevent a change in control of our company. Furthermore, our amended and restated certificate of incorporation specifies that the Court of Chancery of the State of Delaware is the sole and exclusive forum for most legal actions involving actions brought against us by stockholders. We believe this provision benefits us by providing increased consistency in the application of Delaware law by chancellors particularly experienced in resolving corporate disputes, efficient administration of cases on a more expedited schedule relative to other forums and protection against the burdens of multi-forum litigation. However, the provision may have the effect of discouraging lawsuits against our directors and officers. The enforceability of similar choice of forum provisions in other companies' certificates of incorporation has been challenged in legal proceedings, and it is possible that, in connection with any applicable action brought against us, a court could find the choice of forum provisions contained in our amended and restated certificate of incorporation to be inapplicable or unenforceable in such action.

Provisions in our charter and other provisions of Delaware law could limit the price that investors are willing to pay in the future for shares of our common stock.

Our employment agreements with our officers may require us to pay severance benefits to any of those persons who are terminated in connection with a change of control of us, which could harm our financial condition or results.

Our officers are parties to employment agreements providing for aggregate cash payments of up to approximately $3.5 million for severance and other benefits and acceleration of vesting of stock options with a value of up to approximately $.01 million (as of December 31, 2018) in the event of a termination of employment in connection with a change of control of us. The accelerated vesting of options could result in dilution to our existing stockholders and harm the market price of our common stock. The payment of these severance benefits could harm our financial condition and results. In addition, these potential severance payments may discourage or prevent third parties from seeking a business combination with us.

We do not anticipate paying any cash dividends on our capital stock in the foreseeable future; therefore capital appreciation, if any, of our common stock will be your sole source of gain for the foreseeable future.

We have never declared or paid cash dividends on our capital stock. We do not anticipate paying any cash dividends on our capital stock in the foreseeable future. We currently intend to retain all available funds and any future earnings to fund the development and growth of our business. In addition, the terms of any future debt financing arrangement may contain terms prohibiting or limiting the amount of dividends that may be declared or paid on our common stock. As a result, capital appreciation, if any, of our common stock will be your sole source of gain for the foreseeable future.

If securities or industry analysts publish inaccurate or unfavorable research about our business, or fail to publish research about our business regularly, our stock price and trading volume could decline.

The trading market for our common stock will depend, in part, on the research and reports that securities or industry analysts publish about us or our business. A limited number of securities and industry analysts currently publish research on our company. If one or more of the analysts who cover us downgrade our stock or publish

inaccurate or unfavorable research about our business, our stock price would likely decline. In addition, if our operating results fail to meet the forecast of analysts, our stock price would likely decline. If one or more of the analysts covering us or our business cease coverage of our company or fail to publish reports on us regularly, demand for our stock could decrease, which might cause our stock price and trading volume to decline.

Changes in, or interpretations of, accounting rules and regulations could result in unfavorable accounting charges or require us to change our compensation policies.

Accounting methods and policies for biopharmaceutical companies, including policies governing revenue recognition, research and development and related expenses and accounting for stock-based compensation, are subject to further review, interpretation and guidance from relevant accounting authorities, including the SEC. Changes to, or interpretations of, accounting methods or policies may require us to reclassify, restate or otherwise change or revise our financial statements, including those contained in this filing.

## Item 1B. UNRESOLVED STAFF COMMENTS

None.

## Item 2. PROPERTIES

Our corporate headquarters are located in Redwood City, California, where we lease 45,690 square feet of office and laboratory space. In May 2006, we entered into a lease agreement for office and laboratory facilities in Redwood City, California. The lease term commenced in February 2007 for a period of seven years with options to extend the lease for two additional five-year terms. On December 22, 2010, the lease agreement was amended to extend the lease term for an additional five years, expiring in February 2019, with options to further extend the lease for two additional three-year terms. On November 11, 2016, the lease agreement was further amended to extend the lease term through May 2028, with an option to further extend the lease for an additional three-year term, and an option to expand the premises by an additional approximately 22,750 square feet of office and laboratory space if we choose to so expand the premises prior to September 16, 2017, which we chose not to do.

In October 2018 and January 2019, the Company subleased a specified portion of the Company’s office facility located in Redwood City, California. These subleases have terms of 12 to 24 months and will expire in 2020. The aggregate sublease proceeds are approximately $1.6 million and $0.8 million for the years ended December 31, 2019 and 2020, respectively.

## Item 3. LEGAL PROCEEDINGS

From time to time, we may become involved in legal proceedings and claims arising in the ordinary course of our business. We are not currently a party to any legal proceedings the outcome of which, if determined adversely to us, we believe would individually or in the aggregate have a material adverse effect on our business, operating results,

financial condition or cash flows.

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 has been listed on The Nasdaq Global Select Market under the symbol "OMED" since July 18, 2013. Prior to that date, there was no public trading market for our common stock.

### Holders of Common Stock

As of December 31, 2018, there were approximately 44 holders of record of our common stock. In addition, a substantially greater number of stockholders may be "street name" or beneficial holders, whose shares are held of record by banks, brokers and other financial institutions.

### Dividend Policy

We have never declared or paid cash dividends on our capital stock. We intend to retain all available funds and any future earnings, if any, to fund the development and expansion of our business and we do not anticipate paying any cash dividends in the foreseeable future. Any future determination related to dividend policy will be made at the discretion of our board of directors.

### Recent Sales of Unregistered Securities

None.

### Issuer Purchases of Equity Securities

Not applicable.

### Securities Authorized for Issuance Under Equity Compensation Plans

The information required by this Item regarding equity compensation plans is incorporated by reference to the information set forth in Part III, Item 12 of this Annual Report on Form 10 K.

## ITEM 6. SELECTED FINANCIAL DATA

The selected statement of operations data for the years ended December 31, 2018, 2017 and 2016, and the selected balance sheet data as of December 31, 2018 and 2017 are derived from our audited financial statements included elsewhere in this Annual Report on Form 10-K. The selected statement of operations data for the years ended December 31, 2015 and 2014 and the selected balance sheet data as of December 31, 2016, 2015 and 2014 are derived from our audited financial statements which are not included in this Annual Report on Form 10-K.

Our historical results are not necessarily indicative of the results that may be expected in the future. You should read the selected historical financial data below in conjunction with the section titled "Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations" and the financial statements and related notes included elsewhere in this Annual Report on Form 10-K.

| (In thousands, except share and per share data) | Year Ended December 31, 2018 | 2017 | 2016 | 2015 | 2014 |
|---|---|---|---|---|---|
| Statement of Operations Data: | | | | | |
| Revenue: | | | | | |
| Collaboration revenue | $44,421 | $36,016 | $21,277 | $25,216 | $39,559 |
| Other revenue | - | 2,138 | 3,876 | 683 | — |
| Total revenue | 44,421 | 38,154 | 25,153 | 25,899 | 39,559 |
| Operating expenses: | | | | | |
| Research and development [1] | 34,443 | 59,839 | 109,713 | 92,873 | 76,430 |
| General and administrative [1] | 18,172 | 16,761 | 18,827 | 18,583 | 13,753 |
| Restructuring charges [1] | 1,851 | 2,527 | — | — | — |
| Total operating expenses | 54,466 | 79,127 | 128,540 | 111,456 | 90,183 |
| Loss from operations | (10,045) | (40,973) | (103,387) | (85,557) | (50,624) |
| Interest and other income (expense), net | 1,562 | 828 | 299 | 170 | 105 |
| Loss before income taxes | (8,483) | (40,145) | (103,088) | (85,387) | (50,519) |
| Income tax provision (benefit) | (382) | (1,083) | 14 | 20 | (509) |
| Net loss | $(8,101) | $(39,062) | $(103,102) | $(85,407) | $(50,010) |
| Net loss per common share, basic and diluted [2] | $(0.21) | $(1.04) | $(3.14) | $(2.84) | $(1.69) |
| Shares used to compute net loss per common share, basic and diluted [2] | 38,442,994 | 37,631,348 | 32,859,554 | 30,028,684 | 29,664,326 |

[1] Included in the statement of operations data above are the following non-cash stock-based compensation expenses:

| (In thousands) | Year Ended December 31, 2018 | 2017 | 2016 | 2015 | 2014 |
|---|---|---|---|---|---|
| Research and development | $3,380 | $4,886 | $5,892 | $6,113 | $3,600 |
| General and administrative | 3,397 | 4,522 | 5,239 | 4,653 | 2,594 |
| Restructuring charges | 65 | 6 | — | — | — |
| Total stock-based compensation | $6,842 | $9,414 | $11,131 | $10,766 | $6,194 |

(2) See Notes 2 and 14 to our audited financial statements included in this Annual Report on Form 10-K for an explanation of the calculations of our basic and diluted net loss per common share.

| | As of December 31, | | | | |
|---|---|---|---|---|---|
| (In thousands) | 2018 | 2017 | 2016 | 2015 | 2014 |
| Balance Sheet Data: | | | | | |
| Cash and short-term investments | $57,345 | $103,091 | $184,573 | $157,279 | $231,966 |
| Working capital | 51,083 | 12,073 | 133,730 | 178,614 | 202,264 |
| Total assets | 65,078 | 110,322 | 195,482 | 237,887 | 247,842 |
| Accumulated deficit | (361,786) | (452,007) | (412,945) | (309,843) | (224,436) |
| Total stockholders' equity (deficit) | 48,231 | (48,603) | (23,028) | 3,551 | 76,367 |

## ITEM 7. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

You should read the following discussion in conjunction with our financial statements and related notes included elsewhere in this Annual Report on Form 10-K. This discussion and other parts of this Annual Report on Form 10-K contains forward-looking statements that involve risks and uncertainties. All statements other than statements of historical facts contained in this report are forward-looking statements. In some cases, you can identify forward-looking statements by terminology such as "may," "could," "will," "would," "should," "expect," "plan," "anticipate," "estimate," "intend," "predict," "seek," "contemplate," "potential" or "continue" or the negative of these terms or other compar terminology. These forward-looking statements, include, but are not limited to, the initiation, timing, progress and results of our preclinical studies and clinical trials, and our research and development programs; our ability to advance therapeutic candidates into, and successfully complete, clinical trials; the structure, timing, and completion of the proposed business combination with Mereo BioPharma Group plc, Mereo US Holdings Inc. ("HoldCo"), and Mereo MergerCo One Inc.; our continued listing on The Nasdaq Global Select Market until the closing of the Merger; our continued compliance with the listing requirements of The Nasdaq Stock Market; HoldCo's anticipated listing of American Depositary Shares on The Nasdaq Stock Market in connection with the closing of the Merger; our receipt of future milestone payments and/or royalties, and the expected timing of such payments; our collaborators' exercise of their license options; the commercialization of our therapeutic candidates; the implementation of our business model, strategic plans for our business, therapeutic candidates and technology; the scope of protection we are able to establish and maintain for intellectual property rights covering our therapeutic candidates and technology; estimates of our expenses, future revenues, capital requirements and our needs for additional financing; the timing or likelihood of regulatory filings, including Investigational New Drug applications, and approvals; our ability to maintain and establish collaborations or obtain additional government grant funding; our use of proceeds from our initial public offering or IPO; our financial performance; and developments relating to our competitors and our industry. These statements reflect our current views with respect to future events or our future financial performance, are based on assumptions, and involve known and unknown risks, uncertainties and other factors which may cause our actual results, performance or achievements to be materially different from any future results, performance or achievements expressed or implied by the forward-looking statements. Given these uncertainties, you should not place undue reliance on these forward-looking statements. Factors that may cause actual results to differ materially from current expectations include, among other things, those listed under "Item 1A. Risk Factors" of this Annual Report on Form 10-K. These forward-looking statements speak only as of the date hereof. Except as required by law, we assume no obligation to update or revise these forward-looking statements for any reason, even if new information becomes available in the future.

### Overview

OncoMed is a clinical-stage biopharmaceutical company focused on developing novel therapeutics that address the fundamental biology driving cancer's growth, resistance, recurrence and metastasis. We believe our therapeutic candidates are quite distinct from current generations of chemotherapies and targeted therapies, and have the potential to significantly impact cancer treatment and the clinical outcome of patients with cancer.

We currently have two therapeutic candidates in active clinical development targeting key cancer pathways, including pathways regulating can stem cells (CSCs) and the immune systems response to cancer. The first therapeutic candidate in active clinical development, navicixizumab (anti-DLL4/VEGF bispecific, OMP-305B83), has completed a single-agent Phase Ia trial in patients with advanced solid tumors, and we are conducting a Phase Ib clinical trial of navicixizumab in combination with a standard chemotherapy regimen in patients with platinum-resistant ovarian cancer. Enrollment of patients in the Phase Ib clinical trial has been completed, and we are determining next steps for the program. Our second therapeutic candidate, etigilimab (anti-TIGIT, OMP-313M32), recently completed the single-agent Phase Ia portion of a Phase Ia/b clinical trial, which enrolled patients with advanced or metastatic solid tumors, and is currently in the Phase Ib portion of the clinical trial, which combines etigilimab with anti-PD1

(nivolumab). Enrollment in the Phase Ia/b clinical trial has been completed. Etigilimab is part of our collaboration with Celgene Corporation, or Celgene. Clinical trials for these two therapeutic candidates are ongoing, with the intent of gathering additional data required to proceed to later stage clinical trials and potentially product approval. Another therapeutic candidate, GITRL-Fc (OMP-336B11), is currently in a single-

agent Phase Ia trial in patients with advanced or metastatic solid tumors, although enrollment has ended, and we do not plan to advance GITRL-Fc beyond Phase Ia.

Financial Operations Overview

Revenue

We have not generated any revenue from product sales. Our revenue to date has been primarily derived from upfront payments and development milestones received from our current collaborators Celgene Corporation, or Celgene, and Bayer Pharma AG, or Bayer, and our former collaborator GlaxoSmithKline LLC, or GSK.

The following table summarizes our revenue for the years ended December 31, 2018, 2017 and 2016, which is related to the recognition of upfront payments, milestone payments and reimbursements of research and development costs under our various collaboration arrangements:

| | Year Ended December 31, | | |
|---|---|---|---|
| (In thousands) | 2018 | 2017 | 2016 |
| Celgene: | | | |
| Recognition of upfront payment | $44,421 | $35,588 | $20,053 |
| Other revenue | — | 409 | 1,780 |
| Celgene total | 44,421 | 35,997 | 21,833 |
| Bayer: | | | |
| Recognition of upfront payment | — | 278 | 648 |
| Other revenue | — | 1,726 | 1,457 |
| Bayer total | — | 2,004 | 2,105 |
| GSK: | | | |
| Recognition of upfront payment | — | 150 | 576 |
| Other revenue | — | 3 | 639 |
| GSK total | — | 153 | 1,215 |
| Total revenue | $44,421 | $38,154 | $25,153 |

We expect that any revenue we generate will fluctuate from period to period as a result of the timing and amount of milestones and other payments from our current collaboration with Celgene, our small molecule program collaboration with Bayer, or any new collaboration we may enter in the future.

Research and Development

Research and development expenses represent costs incurred to conduct research such as the discovery and development of clinical candidates for our prior and current collaborators GSK, Bayer and Celgene as well as discovery and development of our proprietary unpartnered therapeutic candidates. We expense all research and development costs as they are incurred. Our research and development expenses consist of employee salaries and related benefits, including stock-based compensation, third-party contract costs relating to research, manufacturing, preclinical studies, clinical trial activities, laboratory consumables, and allocated facility costs.

At any point in time, we typically have various early stage research and drug discovery projects. Our internal resources, employees and infrastructure are not directly tied to any one research or drug discovery project and are

typically deployed across multiple projects. As such, we do not maintain information regarding these costs incurred for these early stage research and drug discovery programs on a project-specific basis.

The following table summarizes our research and development expenses for the years ended December 31, 2018, 2017 and 2016. The internal costs include personnel, facility costs, laboratory consumables and discovery and research related activities associated with our pipeline. The external program costs reflect external costs attributable to our clinical development candidates and preclinical candidates selected for further development. Such expenses include third-party contract costs relating to manufacturing, clinical trial activities, translational medicine and toxicology activities.

| | Year Ended December 31, | | |
|---|---|---|---|
| (In thousands) | 2018 | 2017 | 2016 |
| Internal Costs: | | | |
| Cancer biology, pathology and toxicology | $7,145 | $12,027 | $17,404 |
| Molecular and cellular biology | 6,256 | 6,660 | 7,886 |
| Process development and manufacturing | 3,630 | 3,612 | 6,018 |
| Product development | 5,864 | 8,817 | 11,751 |
| Subtotal internal costs | 22,895 | 31,116 | 43,059 |
| External Program Costs: | | | |
| Manufacturing | 3,121 | 4,334 | 16,766 |
| Clinical | 6,392 | 20,456 | 40,810 |
| Translational medicine | 1,590 | 2,807 | 4,500 |
| Toxicology | 445 | 1,126 | 4,578 |
| Subtotal external program costs | 11,548 | 28,723 | 66,654 |
| Total research and development expense | $34,443 | $59,839 | $109,713 |

Our research and development expenses decreased from 2018 to 2017 as we discontinued development of multiple therapeutic product candidates. The process of conducting preclinical studies and clinical trials necessary to obtain regulatory approval is costly and time-consuming. We or our current or future partners may never succeed in achieving marketing approval for any of our therapeutic candidates. The probability of success of each therapeutic candidate may be affected by numerous factors, including preclinical data, clinical data, competition, manufacturing capability and commercial viability.

For the biologic programs covered under our strategic alliance with Celgene, we are responsible for development that we choose to undertake of each therapeutic candidate prior to the exercise of Celgene’s option for the applicable program. Celgene may exercise such option on a program-by-program basis during time periods through the earlier of completion of certain clinical trials or the twelfth anniversary of the date of our collaboration agreement. As of December 31, 2018, the etigilimab program is the only program remaining under the collaboration. During the fourth quarter of 2018, we evaluated the development program status of the product candidates under the collaboration agreement with Celgene and determined that the clinical data we have obtained to date supported a revision in our estimate of the remaining period of performance up to the first quarter of 2019. If Celgene exercises its option for the etigilimab program, we will enter into a license agreement with Celgene for etigilimab whereupon Celgene would be responsible for all further development costs.

Our product development programs are at an early stage; therefore, the successful development of our therapeutic candidates is highly uncertain and may not result in approved products. Completion dates and completion costs can vary significantly for each therapeutic candidate and are difficult to predict. We may need to raise additional capital or may seek additional strategic alliances in the future in order to complete the development and commercialization of our therapeutic candidates.

General and Administrative

Our general and administrative expenses consist primarily of personnel costs, allocated facilities-related expenses, depreciation of capital equipment and other expenses for outside professional services. Personnel costs consist of salaries, benefits and stock-based compensation. General and administrative personnel include our executive, finance, human resources, information technology and legal organizations. Our professional fees principally consist of outside legal, human resource, audit, tax and accounting services and other consulting costs.

Since becoming a public company in 2013, we have incurred and expect to continue to incur additional expenses required of public companies, including costs to comply with the rules and regulations applicable to companies listed on a national securities exchange and costs related to compliance and reporting obligations pursuant to the rules and regulations of the SEC. Other related public company costs include increased expenses for additional insurance, investor relations and other needs for human resources and professional services.

Restructuring Charges

Restructuring charges relate to severance, other one-time benefits and other employee related charges as a result of the restructuring plan that we implemented in December 2018 and April 2017.

Interest and Other Income (Expense), net

Interest and other income (expense), net consists primarily of interest received on our cash, cash equivalents and short-term investments balances.

Provision for Income Taxes

For the year ended December 31, 2018, we recorded an income tax benefit of $0.4 million in the statement of operations as a result of a lapse of statute of limitations on uncertain tax positions. For the year ended December 31, 2017, we recorded an income tax benefit of $1.1 million due to an AMT refundable credit as a result of the Tax Cuts and Jobs Act (“Tax Act”), enacted on December 22, 2017. For the year ended December 31, 2016, we recorded tax expense of $14,000 due to interest on uncertain tax positions.

On December 22, 2017, the Tax Act was signed into law making significant changes to the Internal Revenue Code. Changes included the reduction of the federal corporate income tax rate from 35% to 21% and the repeal of corporate AMT. We recorded $1.1 million as income tax benefit in the fourth quarter of 2017, the period in which the legislation was enacted. We expect a portion of the AMT to be refunded in the following 12 months.

On December 22, 2017, SEC Staff Accounting Bulletin No. 118 (SAB 118) was issued to address the application of US GAAP in situations when a registrant does not have the necessary information available, prepared, or analyzed (including computations) in reasonable detail to complete the accounting for certain income tax effects of the Act. The impact of the Act was finalized during the year ended December 31, 2018, and no change was made from the previously reported provisional amount.

We estimate our income tax provision, including deferred tax assets and liabilities, based on significant management judgment. We evaluate the realization of all or a portion of our deferred tax assets on a quarterly basis. We record a valuation allowance to reduce our deferred tax assets to the amounts that are more likely than not to be realized. We consider future taxable income, ongoing tax planning strategies and our historical financial performance in assessing the need for a valuation allowance. If we expect to realize deferred tax assets for which we have previously recorded a valuation allowance, we will reduce the valuation allowance in the period in which such determination is first made. Our future effective income tax rate may be affected by such factors as changes in tax laws, regulations or rates, changing interpretation of existing laws or regulations, the impact of accounting for stock-based compensation and changes in overall levels of income before tax.

We record liabilities related to uncertain tax positions in accordance with the guidance that clarifies the accounting for uncertainty in income taxes recognized in an enterprise’s financial statements by prescribing a minimum recognition threshold and measurement attribute for the financial statement recognition and measurement of a tax position taken or expected to be taken in a tax return.

At December 31, 2018 and 2017, we had total federal and state unrecognized tax benefits of $17.0 million and $16.7 million, respectively. Of the total unrecognized tax benefits, $16.2 million and $15.9 million at December 31, 2018 and 2017, respectively, if recognized, in the absence of a valuation allowance, would reduce our effective tax rate in the period of recognition. As of December 31, 2018, we do not believe that it is reasonably possible that our unrecognized tax benefits will significantly change in the next 12 months.

Results of Operations

Comparison of the Years Ended December 31, 2018 and 2017

| (In thousands) | Year Ended December 31, 2018 | 2017 | Dollar Change |
|---|---|---|---|
| Revenue: | | | |
| Collaboration revenue | $44,421 | $36,016 | $8,405 |
| Other revenue | — | 2,138 | (2,138) |
| Total revenue | 44,421 | 38,154 | 6,267 |
| Operating expenses: | | | |
| Research and development | 34,443 | 59,839 | (25,396) |
| General and administrative | 18,172 | 16,761 | 1,411 |
| Restructuring charges | 1,851 | 2,527 | (676) |
| Total operating expenses | 54,466 | 79,127 | (24,661) |
| Loss from operations | (10,045) | (40,973) | 30,928 |
| Interest and other income, net | 1,562 | 828 | 734 |
| Loss before income taxes | (8,483) | (40,145) | 31,662 |
| Income tax provision (benefit) | (382) | (1,083) | 701 |
| Net loss | $(8,101) | $(39,062) | $30,961 |

Revenue

Total revenue for the year ended December 31, 2018 was $44.4 million, an increase of $6.2 million, or 16%, compared to $38.2 million for the year ended December 31, 2017. Effective January 1, 2018, we adopted Accounting Standards Codification, Topic 606, Revenue from Contracts with Customers, using the modified retrospective method for our collaboration agreement with Celgene. Under this method, the impact of the transition is reflected in the opening balance of the accumulated deficit as of January 1, 2018, while the prior period revenue amounts are not adjusted. For the year ended December 31, 2018, under Topic 606, we recognized collaboration revenue of $44.4 million based on a measure of progress toward the completion of the performance obligation. For the year ended December 31, 2017, we recognized collaboration revenue of $36.0 million on a straight-line basis as permitted by the legacy revenue recognition guidance. For further discussion regarding our revenue recognition policy, see Note 2 to our Financial Statements included in Part II, Item 8 of this Annual Report on Form 10-K.

Research and Development

Research and development expenses were $34.4 million for the year ended December 31, 2018, a decrease of $25.4 million, or 42%, compared to $59.8 million for the year ended December 31, 2017. The decrease was comprised of a $17.2 million decrease in our external program costs and an $8.2 million decrease in our internal program costs.

The decrease in external costs of $17.2 million for the year ended December 31, 2018 compared to the year ended December 31, 2017 was primarily due to decreases in clinical study costs of $14.1 million as a result of the discontinuation of various clinical programs in 2018. The decrease in internal costs of $8.2 million for the year ended December 31, 2018 compared to the year ended December 31, 2017 was due to overall decrease in activity and spend on our clinical programs. We expect that our research and development expenses will continue to decrease as our

clinical development activities decrease.

General and Administrative

General and administrative expenses were $18.2 million for the year ended December 31, 2018, an increase of $1.4 million, or 8%, compared to $16.8 million for the year ended December 31, 2017. The increase is primarily due to increases in consulting costs and outside professional fees of $1.2 million and transaction costs of $1.8 million incurred as a result of the Merger Agreement entered into with Mereo in the fourth quarter of 2018. The increase in

general and administrative expenses was offset by decreases in legal cost of $0.7 million and payroll-related expense of $1.1 million as a result of the reduction in force implemented in April 2017.

Restructuring Charges

Restructuring charges were $1.9 million and $2.5 million for the year ended December 31, 2018 and 2017, respectively. The restructuring costs are related to severance, other one-time benefits and other employee related charges as a result of the restructuring plan that we implemented in December 2018 and April 2017.

Interest and Other Income (Expense), net

Interest and other income (expense), net was $1.5 million for the year ended December 31, 2018, a change of $0.7 million, compared to $0.8 million for the year ended December 31, 2017. The change was due to interest earned on cash, cash equivalents and short-term investments during the year.

Comparison of the Years Ended December 31, 2017 and 2016

| (In thousands) | Year Ended December 31, 2017 | 2016 | Dollar Change |
|---|---|---|---|
| Revenue: | | | |
| Collaboration revenue | $36,016 | $21,277 | $14,739 |
| Other revenue | 2,138 | 3,876 | (1,738) |
| Total revenue | 38,154 | 25,153 | 13,001 |
| Operating expenses: | | | |
| Research and development | 59,839 | 109,713 | (49,874) |
| General and administrative | 16,761 | 18,827 | (2,066) |
| | 2,527 | — | 2,527 |
| Total operating expenses | 79,127 | 128,540 | (49,413) |
| Loss from operations | (40,973) | (103,387) | 62,414 |
| Interest and other income (expense), net | 828 | 299 | 529 |
| Loss before income taxes | (40,145) | (103,088) | 62,943 |
| Income tax provision (benefit) | (1,083) | 14 | (1,097) |
| Net loss | $(39,062) | $(103,102) | $64,040 |

Revenue

Total revenue for the year ended December 31, 2017 was $38.2 million, an increase of $13.0 million, or 52%, compared to $25.2 million for the year ended December 31, 2016. Revenue recognized during 2017 from amortization of upfront fees amounted to $36.0 million, an increase of $14.7 million compared to $21.3 million for the year ended December 31, 2016. The increase in collaboration revenue was due to an increase of $15.5 million in amortization of upfront fees from our partnership with Celgene as a result of the revision of the estimated period of performance. In the fourth quarter of 2017, the Company evaluated the status of its obligations to Celgene and determined that the estimated period to complete the Company's performance of all remaining obligations was in the third quarter of 2019. Accordingly, the estimated period of performance was revised to two years, up to the third quarter of 2019. The Company will recognize the remaining unamortized portion of deferred revenue over the revised estimated period of

performance on a prospective basis.

Other revenue for the year ended December 31, 2017 decreased by $1.7 million compared to $3.9 million for the year ended December 31, 2016 due to lower reimbursement of research and development costs for services performed in 2017.

Research and Development

Research and development expenses were $59.8 million for the year ended December 31, 2017, a decrease of $49.9 million, or 45%, compared to $109.7 million for the year ended December 31, 2016. The decrease was comprised of a $37.9 million decrease in our external program costs and an $11.9 million decrease in our internal program costs.

The decrease in our external program costs of $37.9 million was primarily due to a decrease of $20.2 million in clinical study costs resulting from discontinuation of dosing of all patients in our demcizumab and tarextumab programs. The decrease in manufacturing costs of $12.4 million and toxicology cost of $3.5 million was mainly related to our GITRL-Fc and anti-TIGIT programs due to the timing of production of materials used in clinical studies of these programs and the discontinuation of our demcizumab program in 2017.

The decrease in our internal costs by $11.9 million was primarily due to a decrease of $5.8 million in personnel costs, including a decrease in stock-based compensation of $1.0 million, as a result of our reduced headcount following our restructuring actions in April 2017, a decrease of $2.1 million in regulatory, clinical consulting costs and outside professional fees, and a decrease of $1.5 million in laboratory supplies as a result of an overall decrease in activity and spend on our clinical programs. We expect that our research and development expenses will continue to decrease as our clinical development activities decrease.

General and Administrative

General and administrative expenses were $16.7 million for the year ended December 31, 2017, a decrease of $2.1 million, or 11%, compared to $18.8 million for the year ended December 31, 2016. The decrease is primarily due to a decrease of $2.0 million in personnel costs, including a decrease in stock-based compensation of $0.7 million, as a result of our reduced headcount following the restructuring plan that we implemented in April 2017.

Restructuring Charges

Restructuring charges were $2.5 million for the year ended December 31, 2017 related to severance, other one-time benefits and other employee related charges as a result of the restructuring plan that we implemented in April 2017.

Interest and Other Income (Expense), net

Interest and other income (expense), net was $0.8 million for the year ended December 31, 2017, a change of $0.5 million, compared to $0.3 million for the year ended December 31, 2016. The change was primarily due to interest earned on cash, cash equivalents and short-term investments during the year.

Liquidity and Capital Resources

As of December 31, 2018, we had cash, cash equivalents and short term investments totaling $57.3 million.

In June 2015, we filed a shelf registration statement on Form S-3 (File No. 333-204914), which permitted: (a) the offering, issuance and sale by us of up to a maximum aggregate offering price of $250.0 million of our common stock, preferred stock, debt securities, warrants, purchase contracts and/or units; and (b) as part of the $250.0 million, the offering, issuance and sale by us of up to a maximum aggregate offering price of $50.0 million of our common stock could have been issued and sold under a sales agreement with Cantor Fitzgerald & Co. in one or more at-the-market offerings. Through December 31, 2017, we sold 743,987 shares pursuant to our at-the-market program at a weighted average price of $8.93 per share, resulting in aggregate net proceeds to us of $6.5 million, net of offering costs.

On August 23, 2016, we closed the sale of an aggregate of 6,325,000 shares of our common stock at a public offering price of $10.00 per share. The shares were issued pursuant to a prospectus supplement filed with the SEC

on August 17, 2016, and related prospectus, pursuant to the shelf registration statement. We received net offering proceeds of approximately $59.2 million, net of underwriting discounts and commissions and offering costs.

In May 2018, we filed a new shelf registration statement on Form S-3 (File No. 333-225225) that permits: (a) the offering, issuance and sale by us of up to a maximum aggregate offering price of $150.0 million of our common stock, preferred stock, debt securities, warrants and/or units; and (b) as part of the $150.0 million, the offering, issuance and sale by us of up to a maximum aggregate offering price of $30.0 million of our common stock that may be issued and sold under our sales agreement with Cantor Fitzgerald & Co. in one or more at-the-market offerings. As of December 31, 2018, we have not sold any securities pursuant to this shelf registration statement. Following the effectiveness of this shelf registration statement on Form S-3 in June 2018, no additional securities covered by the prior shelf registration statement on Form S-3 (File No. 333-204914) shall be offered or sold.

Our primary uses of cash are to fund operating expenses. Cash used to fund operating expenses is impacted by the timing of when we pay these expenses, as reflected in the change in our outstanding accounts payable and accrued expenses.

We believe that our existing cash, cash equivalents and short-term investments as of December 31, 2018 will be sufficient to meet our anticipated cash requirements through at least the first quarter of 2020, even without taking into account potential future milestone payments to us. However, our forecast of the period of time through which our financial resources will be adequate to support our operations is a forward-looking statement that involves risks and uncertainties, and actual results could vary materially.

Our future capital requirements are difficult to forecast and will depend on many factors, including:

- the achievement of milestones and/or exercise of the etigilimab option under our agreement with Celgene or the achievement of milestones and/or advancement of the small molecule programs into further development and potential commercialization under our agreement with Bayer;
- the initiation, progress, timing and completion of clinical trials for our therapeutic candidates;
- the number and characteristics of therapeutic candidates that we pursue;
- the progress, costs and results of our clinical trials;
- the outcome, timing and cost of regulatory approvals;
- delays that may be caused by changing regulatory requirements;
- funding we may receive under any new collaborations we may enter into or new government grants we may be awarded in the future;
- the costs and timing of hiring new employees to support any future growth; and
- the costs and timing of procuring clinical supplies of our therapeutic candidates.

The following table summarizes our cash flows for the periods indicated:

| | Year Ended December 31, | | |
|---|---|---|---|
| (In thousands) | 2018 | 2017 | 2016 |
| Cash used in operating activities | $(44,862) | $(84,970) | $(36,936) |
| Cash provided by (used in) investing activities | 41,182 | 57,250 | (29,703) |
| Cash provided by financing activities | 89 | 4,044 | 65,148 |

Cash Flows from Operating Activities

Cash used in operating activities for the year ended December 31, 2018 was $44.9 million. The net loss of $8.1 million was offset by non-cash charges of $1.7 million for depreciation and amortization and $6.8 million for stock-based compensation expense. The change in net operating assets of $45.3 million was due primarily to a decrease in accrued clinical liabilities of $1.7 million due to the decrease in our clinical development activities, and

a decrease in deferred revenue of $44.4 million due to the amortization of upfront payments from our current collaboration arrangements with Celgene.

Cash used in operating activities for the year ended December 31, 2017 was $85.0 million. The net loss of $39.1 million was offset by non-cash charges of $1.7 million for depreciation and amortization and $9.4 million for stock-based compensation expense. The change in net operating assets of $57.0 million was due primarily to a decrease in accounts payable of $2.3 million and accrued liabilities and income tax payable of $4.6 million due to the timing of vendor payments, a decrease in accrued clinical liabilities of $17.4 million due to the decrease in our clinical development activities, and a decrease in deferred revenue of $36.0 million due to the amortization of upfront payments from our prior and current collaboration arrangements with GSK, Bayer and Celgene.

Cash used in operating activities for the year ended December 31, 2016 was $36.9 million. The net loss of $103.1 million was offset by non-cash charges of $1.8 million for depreciation and amortization and $11.1 million for stock-based compensation expense. The change in net operating assets of $53.3 million was due primarily to a decrease of $68.2 million in accounts receivable as a result of collection in 2016 of payments related to the achievement of the $70.0 million safety milestone during 2015 from Celgene based on an analysis of Phase Ib and blinded interim Phase II clinical trial safety data associated with the demcizumab (anti-DLL4, OMP-21M18) program. The decrease in deferred revenue is due to the amortization of upfront and milestone payments from our prior and current collaboration arrangements with GSK, Bayer and Celgene in the amount of $21.3 million. The remaining net change in operating assets which increased cash was a result of an increase in accrued clinical liabilities of $9.6 million offset by a decrease in accounts payable of $1.8 million and accrued liabilities of $3.1 million due to timing of payments.

Cash Flows from Investing Activities

Cash provided by (used in) investing activities for the years ended December 31, 2018, 2017 and 2016 was comprised of purchases of short-term investments amounting to $82.3 million, $127.4 million and $207.3 million, respectively, offset by maturities of short-term investments amounting to $124.1 million, $185.2 million and $178.7 million, respectively. Acquisition of property and equipment for the years ended December 31, 2018, 2017 and 2016, amounted to $0.7 million, $0.6 million and $1.2 million, respectively.

Cash Flows from Financing Activities

Cash provided by financing activities for the year ended December 31, 2018 was comprised of aggregate net proceeds of $89,000 received from issuance of common stock related to employee stock plan purchases.

Cash provided by financing activities for the year ended December 31, 2017 was comprised of aggregate net proceeds of $1.7 million received from our at-the-market offering program and $2.3 million received from issuance of common stock upon the exercise of stock options and employee stock plan purchases.

Cash provided by financing activities for the year ended December 31, 2016 was comprised of aggregate net proceeds of $59.2 million received from the sale of shares of our common stock through our underwritten public offering that closed on August 23, 2016 and $4.7 million from our at-the-market offering program, and $1.2 million received from the issuance of common stock upon the exercise of stock options and employee stock plan purchases.

Contractual Obligations and Other Commitments

The following table summarizes our contractual obligations as of December 31, 2018:

| | Payments Due by Period | | | | |
|---|---|---|---|---|---|
| (In thousands) | Less than 1 year | 2 to 3 Years | 4 to 5 Years | More Than 5 Years | Total |
| Operating leases, net of sublease income [1] | $776 | $4,217 | $5,428 | $13,382 | $23,803 |

(1)Operating leases include total future non-cancelable obligations under our operating lease agreement. The amounts set forth in the table above are net of sublease income of $1.6 million and $0.8 million for the years ended December 31, 2019 and 2020.

The Company leases office and laboratory facilities in Redwood City, California under a lease agreement that was originally set to expire in January 2019 and included a lease extension option for two additional three-year terms. During the fourth quarter of 2016, the Company signed an amendment to the lease agreement to extend the lease term through May 2028, with an option to extend the lease for an additional three-year term.

The amendment to the lease agreement includes a 10-year cancelable lease agreement for additional office and laboratory space that expires in May 2028, subject to the Company's three-year lease extension option described above. The Company exercised its right to terminate the lease agreement for this additional space in September 2017. The exercise of such cancelation did not result in an economic penalty to the Company.

In October 2018 and January 2019, the Company subleased a specified portion of the Company's office facility located in Redwood City, California. These subleases are cancellable and have terms of 12 to 24 months up to 2020. The aggregate sublease proceeds are $1.6 million and $0.8 million for the years ending December 31, 2019 and 2020, respectively.

Off-Balance Sheet Arrangements

As of December 31, 2018, we did not have any off-balance sheet arrangements or any holdings in variable interest entities.

Critical Accounting Polices and Estimates

Our financial statements are prepared in accordance with generally accepted accounting principles in the United States, or GAAP. The preparation of these financial statements requires us to make estimates and assumptions that affect the reported amounts of assets, liabilities, revenues, costs and expenses and related disclosures. We base our estimates on historical experience and on various other assumptions that we believe to be reasonable under the circumstances. In many instances, we could have reasonably used different accounting estimates, and in other instances changes in the accounting estimates are reasonably likely to occur from period to period. Accordingly, actual results could differ significantly from the estimates made by our management. To the extent that there are material differences between these estimates and actual results, our future financial statement presentation, financial condition, results of operations and cash flows will be affected. We believe that the accounting policies discussed below are critical to understanding our historical and future performance, as these policies relate to the more significant areas involving management's judgments and estimates. See Note 2 to Financial Statements included in Part II, Item 8 of this Annual Report on Form 10-K for a summary of significant accounting policies and the effect on our financial statements.

Revenue Recognition

We generate substantially all of our revenue from collaborative research and development agreements with pharmaceutical companies. Under collaboration agreements, we may receive non-refundable upfront payments, funding for research and development services, milestones, other contingent payments and royalties.

Effective January 1, 2018, we adopted Topic 606 using the modified retrospective transition method. Under this method, we recorded a cumulative adjustment to the opening balance of accumulated deficit and to deferred revenue. Under Topic 606, we recognize revenue when we transfer control of promised goods or services to our customers in an amount that reflects the consideration which we expect to receive in exchange for those goods or services. To determine revenue recognition for arrangements that we determine are within the scope of Topic 606, we perform the following five steps: (i) identify the contract(s) with a customer; (ii) identify the performance obligations in the contract; (iii) determine the transaction price; (iv) allocate the transaction price to the performance obligations in the contract; and (v) recognize revenue when (or as) the entity satisfies a performance obligation. We

only apply the five-step model to contracts when it is probable that we will collect the consideration we are entitled to in exchange for the goods or services we transfer to the customer. At contract inception, once a contract is determined to be within the scope of Topic 606, we assess the goods or services promised within the contract and determine those that are performance obligations, and assess whether each promised good or service is distinct. We then recognize as revenue the amount of the transaction price that is allocated to the respective performance obligation when (or as) the performance obligation is satisfied.

We evaluated our existing contracts and only applied Topic 606 to those contracts that were not completed at January 1, 2018. As a result of this evaluation, we determined that only our collaboration with Celgene is within the scope of Topic 606 and concluded that Celgene is a customer. The Company determined that its performance obligation under the arrangement with Celgene is research and development services. As part of the promised research and development services, the Company may provide the resultant data to Celgene to assist Celgene in determining whether or not to exercise its options. Under the arrangement, Celgene has options to further develop and commercialize biologic therapeutics in each program under the collaboration, which may be exercised during time periods specified in the agreement. Upon Celgene's exercise of its option for certain programs, the Company may, at its discretion, gain co-development and co-commercialization rights and corresponding obligations. The Company determined that the exclusive option(s) provided to Celgene is not a material right under Topic 606 and thus it is not a performance obligation. Based on its assessment, the Company has identified the research and development services as the only performance obligation at the inception of the collaboration agreement.

The terms of our arrangement with Celgene include payments by Celgene of a non-refundable upfront fee; potential development, regulatory and sales milestones; program opt-in payments; and royalties on net product sales. Each of these payments results in collaboration revenue, except for revenues from royalties on net product sales, which would be classified as royalty revenues. Prior to recognizing revenue, we estimate the transaction price, including variable consideration that is subject to a constraint. Amounts of variable consideration are included in the transaction price to the extent that it is probable that a significant reversal in the amount of cumulative revenue recognized will not occur when the uncertainty associated with the variable consideration is subsequently resolved. Variable consideration includes payments based upon the achievement of specified milestones, and royalty payments based on product sales derived from the collaboration. Under the collaboration agreement, we determined that the non-refundable upfront cash payment of $155.0 million and stock premium of $1.7 million received in December 2013, the $70.0 million demcizumab (anti-DLL4, OMP-21M18) safety milestone that was achieved in December 2015 and the two designation milestone payments of $2.5 million each for the designation of rosmantuzumab and etigilimab as clinical candidates in 2014 and 2015, respectively, constitute consideration to be included in the transaction price. The total consideration received of $231.7 million constitutes the transaction price at the transition date for Topic 606.

We apply the five-step model in determining the appropriate amount of revenue to be recognized as we fulfill our obligations under our collaboration agreement with Celgene. As part of the accounting for this arrangement, we must develop assumptions that require judgment to determine the stand-alone selling price for each performance obligation identified in the contract. We also must develop assumptions that require judgment in determining the measure of progress used to recognize revenue. Under Topic 606, we recognize collaboration revenue by measuring the progress toward complete satisfaction of the performance using an input measure. We concluded the method that best correlates with progress of the services provided to Celgene is the input method, based on actual costs incurred to date compared to the overall total expected costs to satisfy the performance obligation. We evaluate the estimate of expected costs to satisfy the performance obligation each reporting period and make adjustments for any significant changes.

Amounts received prior to satisfying the revenue recognition criteria are recorded as deferred revenue in our balance sheets. Amounts expected to be recognized as revenue within the 12 months following the balance sheet date are classified as current liabilities.

We recognize revenue for reimbursements of research and development costs as the services are performed. The reimbursement of research and development costs has been excluded from the transaction price, as the performance of these research and development services was at our discretion and is not a commitment or performance obligation pursuant to the Celgene collaboration agreement.

Preclinical Studies and Clinical Trial Accruals

We estimate our preclinical studies and clinical trial expenses based on the services performed pursuant to contracts with research institutions and clinical research organizations that conduct these activities on our behalf. In recording service fees, we estimate the time period over which the related services will be performed and compare the level of effort expended through the end of each period to the cumulative expenses recorded and payments made for such services and, as appropriate, accrue additional service fees or defer any non-refundable advance payments until the related services are performed. If the actual timing of the performance of services or the level of effort varies from the estimate, we will adjust our accrual or deferred advance payment accordingly. If we underestimate or overestimate the level of services performed or the costs of these services, our actual expenses could differ from our estimates. To date, we have not experienced significant changes in our estimates of preclinical studies and clinical trial accruals.

Stock-Based Compensation

We recognize compensation costs related to stock options granted to employees based on the estimated fair value of the awards on the date of grant, net of estimated forfeitures. We estimate the grant date fair value, and the resulting stock-based compensation expense, using the Black-Scholes option-pricing model. The grant date fair value of the stock-based awards is generally recognized on a straight-line basis over the requisite service period, which is generally the vesting period of the respective awards. Stock-based compensation expense was $6.8 million, $9.4 million and $11.1 million for the years ended December 31, 2018, 2017 and 2016, respectively.

The Black-Scholes option-pricing model requires the use of highly subjective and complex assumptions which determine the fair value of stock-based awards, including the expected term and the price volatility of the underlying stock. These assumptions include:

- Expected term—The expected term represents the period that the stock-based awards are expected to be outstanding. We used the simplified method to determine the expected terms as provided by the SEC. The simplified method calculates the expected term as the average of the time-to-vesting and the contractual life of the options.
- Volatility—The expected volatility is derived from a blend of the historical volatilities of the Company's own common stock and of the common stock of comparable publicly listed biopharmaceutical companies over a period approximately equal to the expected term of the stock option grants because we have limited information on the volatility of our common stock due to no significant trading history. The comparable companies were chosen based on their similar size, stage in the life cycle, and financial leverage in comparison to us.
- Risk-free interest rate—The risk-free interest rate is based on the U.S. Treasury yield in effect at the time of grant for zero coupon U.S. Treasury notes with maturities approximately equal to the expected term of the awards.
- Expected dividend—The expected dividend is assumed to be zero as we have never paid dividends and have no current plans to pay any dividends on our common stock.

In addition to the assumptions used in the Black-Scholes option-pricing model, we must also estimate a forfeiture rate to calculate the stock-based compensation for our awards. We continue to use judgment in evaluating the expected volatility and forfeiture rates used for our stock-based compensation calculations on a prospective basis. As we continue to accumulate additional data related to our common stock, we may have refinements to the estimates of our expected volatility, expected terms, and forfeiture rates, which could materially impact our future stock-based compensation expense.

Provision for Income Taxes

We estimate our income tax provision, including deferred tax assets and liabilities, based on significant management judgment. We evaluate the realization of all or a portion of our deferred tax assets on a quarterly basis. We record a valuation allowance to reduce our deferred tax assets to the amounts that are more likely than not to be realized. We

consider future taxable income, ongoing tax planning strategies and our historical financial

performance in assessing the need for a valuation allowance. If we expect to realize deferred tax assets for which we have previously recorded a valuation allowance, we will reduce the valuation allowance in the period in which such determination is first made. Our future effective income tax rate may be affected by such factors as changes in tax laws, regulations or rates, changing interpretation of existing laws or regulations, the impact of accounting for stock-based compensation and changes in overall levels of income before tax.

We record liabilities related to uncertain tax positions in accordance with the guidance that clarifies the accounting for uncertainty in income taxes recognized in an enterprise's financial statements by prescribing a minimum recognition threshold and measurement attribute for the financial statement recognition and measurement of a tax position taken or expected to be taken in a tax return.

Newly Adopted and Recent Accounting Pronouncements

Refer to Newly Adopted and Recent Accounting Pronouncements in Note 2 to our Financial Statements included in Part II, Item 8 of this Annual Report on Form 10-K.

## ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

We are exposed to market risks in the ordinary course of our business. These risks primarily include risk related to interest rate sensitivities and foreign currency exchange rate sensitivity.

Interest Rate Sensitivity

We had cash and short-term investments of $57.3 million and $103.1 million as of December 31, 2018 and 2017, respectively, which consisted of bank deposits and U.S. Treasury Bills. Such interest-earning instruments carry a degree of interest rate risk; however, historical fluctuations in interest income have not been significant. We had no outstanding debt as of December 31, 2018 or 2017.

We do not enter into investments for trading or speculative purposes and have not used any derivative financial instruments to manage our interest rate risk exposure. We have not been exposed nor do we anticipate being exposed to material risks due to changes in interest rates. A hypothetical 10% change in interest rates during any of the periods presented would not have had a material impact on our financial statements. There have been no material quantitative changes in our market risk exposures between the current fiscal year and preceding fiscal years.

Foreign Currency Exchange Rate Sensitivity

We face foreign exchange risk as a result of entering into transactions denominated in currencies other than U.S. dollars, particularly in Euro and British Sterling. Due to the uncertain timing of expected payments in foreign currencies, we do not utilize any forward foreign exchange contracts, nor did we in the year ended December 31, 2018. In the years ended December 31, 2018 and 2017, all foreign transactions settled on the applicable spot exchange basis at the time such payments were made.

An adverse movement in foreign exchange rates could have a material effect on payments we make to foreign suppliers. The impact of an adverse change in foreign exchange rates may be offset in the event we receive a

milestone payment from a foreign partner. A hypothetical 10% change in foreign exchange rates during any of the preceding periods presented would not have a material impact on our financial statements. There have been no material quantitative changes in our market risk exposures between the current fiscal year and preceding fiscal years.

ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA
ONCOMED PHARMACEUTICALS, INC.

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REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Stockholders and Board of Directors of OncoMed Pharmaceuticals, Inc.

Opinion on the Financial Statements

We have audited the accompanying balance sheets of OncoMed Pharmaceuticals, Inc. (the Company) as of December 31, 2018 and 2017, the related statements of operations, comprehensive loss, stockholders' equity (deficit) and cash flows for each of the three years in the period ended December 31, 2018, 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 at December 31, 2018 and 2017, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2018, in conformity with U.S. generally accepted accounting principles.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the Company's internal control over financial reporting as of December 31, 2018, based on criteria established in Internal Control-Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework) and our report dated March 7, 2019 expressed an unqualified opinion thereon.

Adoption of ASU No. 2014-09

As discussed in Note 2 to the financial statements, the Company changed its method for recognizing revenue as a result of the adoption of Accounting Standards Update No. 2014-09, Revenue from Contracts with Customers (Topic 606), effective January 1, 2018.

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 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 audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. 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.

/s/ Ernst & Young LLP

We have served as the Company's auditor since 2005.

Redwood City, California

March 7, 2019

OncoMed Pharmaceuticals, Inc.

Balance Sheets

(In thousands, except share and per share data)

| | December 31, 2018 | 2017 |
|---|---|---|
| Assets | | |
| Current assets: | | |
| Cash and cash equivalents | $9,686 | $13,277 |
| Short-term investments | 47,659 | 89,814 |
| Accounts receivable and other receivables | 3,026 | 405 |
| Prepaid and other current assets | 1,913 | 1,709 |
| Assets held for sale | 1,443 | — |
| Total current assets | 63,727 | 105,205 |
| Property and equipment, net | 623 | 3,275 |
| Other assets | 728 | 1,842 |
| Total assets | $65,078 | $110,322 |
| Liabilities and stockholders' deficit | | |
| Current liabilities: | | |
| Accounts payable | $1,787 | $2,565 |
| Accrued liabilities | 4,368 | 3,940 |
| Accrued clinical liabilities | 2,736 | 4,434 |
| Current portion of deferred revenue | 3,697 | 82,193 |
| Current portion of deferred rent | 56 | — |
| Total current liabilities | 12,644 | 93,132 |
| Deferred revenue, less current portion | — | 61,645 |
| Deferred rent, less current potion | 4,103 | 3,765 |
| Noncurrent income tax payable | — | 383 |
| Other liabilities | 100 | — |
| Total liabilities | 16,847 | 158,925 |
| Commitments and contingencies (Note 7) | | |
| Stockholders’ equity (deficit): | | |
| Preferred stock, $0.001 par value; 5,000,000 shares authorized at December 31, 2018 and 2017; no shares issued and outstanding at December 31, 2018 and 2017 | — | — |
| Common stock, $0.001 par value; 145,000,000 shares authorized at December 31, 2018 and 2017; 38,660,146 and 38,212,505 shares issued and outstanding at December 31, 2018 and 2017, respectively | 38 | 38 |
| Additional paid-in capital | 410,008 | 403,077 |
| Accumulated other comprehensive (loss) income | (29) | 289 |
| Accumulated deficit | (361,786) | (452,007) |

| | | |
|---|---|---|
| Total stockholders' equity (deficit) | 48,231 | (48,603 ) |
| Total liabilities and stockholders' equity (deficit) | $65,078 | $110,322 |

See accompanying notes to the financial statements.

OncoMed Pharmaceuticals, Inc.

Statements of Operations

(In thousands, except share and per share data)

| | Year Ended December 31, | | |
|---|---|---|---|
| | 2018 | 2017 | 2016 |
| Revenue: | | | |
| Collaboration revenue | $44,421 | $36,016 | $21,277 |
| Other revenue | — | 2,138 | 3,876 |
| Total revenue | 44,421 | 38,154 | 25,153 |
| Operating expenses: | | | |
| Research and development | 34,443 | 59,839 | 109,713 |
| General and administrative | 18,172 | 16,761 | 18,827 |
| Restructuring charges | 1,851 | 2,527 | — |
| Total operating expenses | 54,466 | 79,127 | 128,540 |
| Loss from operations | (10,045) | (40,973) | (103,387) |
| Interest and other income, net | 1,562 | 828 | 299 |
| Loss before income taxes | (8,483) | (40,145) | (103,088) |
| Income tax provision (benefit) | (382) | (1,083) | 14 |
| Net loss | $(8,101) | $(39,062) | $(103,102) |
| Net loss per common share, basic and diluted | $(0.21) | $(1.04) | $(3.14) |
| Shares used to compute net loss per common share, basic and diluted | 38,442,994 | 37,631,348 | 32,859,554 |

See accompanying notes to the financial statements.

OncoMed Pharmaceuticals, Inc.

Statements of Comprehensive Loss

(In thousands)

| | Year Ended December 31, | | |
|---|---|---|---|
| | 2018 | 2017 | 2016 |
| Net loss | $(8,101) | $(39,062) | $(103,102) |
| Other comprehensive income (loss): | | | |
| Unrealized gain (loss) on available-for-sale securities, net of tax | (318) | 29 | 240 |
| Total comprehensive loss | $(8,419) | $(39,033) | $(102,862) |

See accompanying notes to the financial statements.

OncoMed Pharmaceuticals, Inc.

Statements of Stockholders' Equity (Deficit)

(In thousands, except share data)

| | Common Stock | | Additional Paid-In | Accumulated Other Comprehensive | Accumulated | Total Stockholders' Equity |
|---|---|---|---|---|---|---|
| | Shares | Amount | Capital | (Loss) Income | Deficit | (Deficit) |
| Balances at December 31, 2015 | 30,116,633 | $ 30 | $ 313,344 | $ 20 | $ (309,843) | $ 3,551 |
| Issuance of common stock upon public offering, net of offering costs | 6,325,000 | 7 | 59,163 | — | — | 59,170 |
| Issuance of common stock under At-the-Market Agreement, net of offering costs | 388,166 | — | 4,739 | — | — | 4,739 |
| Issuance of common stock related to stock incentive plans | 284,790 | — | 1,243 | — | — | 1,243 |
| Stock-based compensation | — | — | 11,131 | — | — | 11,131 |
| Net unrealized gain on available-for-sale securities | — | — | — | 240 | — | 240 |
| Net loss | — | — | — | — | (103,102) | (103,102) |
| Balances at December 31, 2016 | 37,114,589 | 37 | 389,620 | 260 | (412,945) | (23,028) |
| Issuance of common stock under At-the-Market Agreement, net of offering costs | 355,821 | — | 1,701 | — | — | 1,701 |
| Issuance of common stock related to stock incentive plans | 742,095 | 1 | 2,342 | — | — | 2,343 |
| Stock-based compensation | — | — | 9,414 | — | — | 9,414 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Net unrealized gain on available-for-sale securities | — | — | — | 29 | — | 29 |
| Net loss | — | — | — | — | (39,062) | (39,062) |
| Balances at December 31, 2017 | 38,212,505 | $ 38 | $ 403,077 | $ 289 | $ (452,007) | (48,603) |
| Adoption of ASU 2014-09, Revenue from Contracts with Customers (Topic 606) | — | — | — | — | 98,322 | 98,322 |
| Issuance of common stock related to stock incentive plans | 447,641 | — | 89 | — | — | 89 |
| Stock-based compensation | — | — | 6,842 | — | — | 6,842 |
| Net unrealized loss on available-for-sale securities | — | — | — | (318) | — | (318) |
| Net loss | — | — | — | — | (8,101) | (8,101) |
| Balances at December 31, 2018 | 38,660,146 | $ 38 | $ 410,008 | $ (29) | $ (361,786) | $ 48,231 |

See accompanying notes to the financial statements.

OncoMed Pharmaceuticals, Inc.

Statements of Cash Flows

(In thousands)

| | Year Ended December 31, | | |
|---|---|---|---|
| | 2018 | 2017 | 2016 |
| Operating activities | | | |
| Net loss | $(8,101) | $(39,062) | $(103,102) |
| Adjustments to reconcile net loss to net cash used in operating activities: | | | |
| Depreciation and amortization | 1,691 | 1,710 | 1,764 |
| Stock-based compensation | 6,842 | 9,414 | 11,131 |
| Changes in operating assets and liabilities: | | | |
| Accounts receivable and other receivables | (19) | 2,110 | 68,184 |
| Income tax refund receivable | — | (1,098) | — |
| Prepaid and other current assets | (204) | 786 | 782 |
| Other assets | 1,114 | 684 | 379 |
| Accounts payable | (778) | (2,325) | (1,770) |
| Accrued liabilities, income tax payable and other liabilities | 318 | (4,572) | (3,115) |
| Accrued clinical liabilities | (1,698) | (17,420) | 9,633 |
| Deferred revenue | (44,421) | (36,045) | (21,272) |
| Deferred rent | 394 | 848 | 450 |
| Net cash used in operating activities | (44,862) | (84,970) | (36,936) |
| Investing activities | | | |
| Purchases of property and equipment | (655) | (585) | (1,158) |
| Purchases of short-term investments | (82,305) | (127,376) | (207,283) |
| Maturities of short-term investments | 124,142 | 185,211 | 178,738 |
| Net cash provided by (used in) investing activities | 41,182 | 57,250 | (29,703) |
| Financing activities | | | |
| Proceeds from issuance of common stock related to the exercise of options and employee stock plan purchases | 89 | 2,343 | 1,239 |
| Net proceeds from issuance of common stock under At-the-market Agreement | — | 1,701 | 4,739 |
| Net proceeds from issuance of common stock upon public offering | — | — | 59,170 |
| Net cash provided by financing activities | 89 | 4,044 | 65,148 |
| Net decrease in cash and cash equivalents | (3,591) | (23,676) | (1,491) |

| | | | |
|---|---|---|---|
| Cash and cash equivalents at beginning of year | 13,277 | 36,953 | 38,444 |
| Cash and cash equivalents at end of year | $9,686 | $13,277 | $36,953 |
| Supplemental cash flow information: | | | |
| Accrued liabilities for purchase of property and equipment | $— | $173 | $244 |

See accompanying notes to the financial statements.

OncoMed Pharmaceuticals, Inc.

Notes to the Financial Statements

1. Organization

OncoMed Pharmaceuticals, Inc. (“OncoMed”, the “Company”, “us”, “we”, or “our”) is a clinical-stage biopharmaceutical company focused on developing novel therapeutics that address the fundamental biology driving cancer’s growth, resistance, recurrence and metastasis. The Company currently has two therapeutic candidates in active clinical development targeting pathways regulating cancer, including cancer stem cell, or CSC, pathways or immuno-oncology. The Company’s operations are based in Redwood City, California and it operates in one segment.

2. Summary of Significant Accounting Policies

Basis of Presentation

The Company’s financial statements have been prepared in accordance with U.S. generally accepted accounting principles (“U.S. GAAP”).

Use of Estimates

The preparation of financial statements in conformity with U.S. GAAP requires management to make estimates and judgments that affect the amounts reported in the financial statements and accompanying notes. On an ongoing basis, management evaluates its estimates, including those related to revenue recognition, preclinical study and clinical trial accruals, fair value of assets and liabilities, stock-based compensation, restructuring charges and income taxes. Management bases its estimates on historical experience and on various other market-specific and relevant assumptions that management believes to be reasonable under the circumstances. Actual results may differ from those estimates.

Cash and Cash Equivalents

The Company considers all highly liquid investments with original maturities of 90 days or less at the date of purchase to be cash and cash equivalents.

Short-Term Investments

Short-term investments consist of debt securities classified as available-for-sale and have maturities greater than 90 days, but less than 365 days from the date of acquisition. Short-term investments are carried at fair value based upon quoted market prices. Unrealized gains and losses on available-for-sale securities are excluded from earnings and were reported as a component of accumulated other comprehensive income. The cost of available-for-sale securities sold is based on the specific-identification method.

Other Comprehensive (Loss) Income

Other comprehensive (loss) income includes certain changes in equity from non-owner sources that are excluded from net loss, specifically, unrealized gains and losses on available-for-sale investments and the related tax impact.

Concentrations of Credit Risk

Financial instruments that potentially subject the Company to significant concentrations of credit risk consist primarily of cash and short-term investments. Cash and short-term investments are invested through banks and other financial institutions in the United States. Such deposits may be in excess of insured limits. The Company maintains cash and investments with various high credit quality and capitalized financial institutions.

Property and Equipment

Property and equipment are stated at cost less accumulated depreciation and amortization. Depreciation and amortization is calculated using the straight-line method over the estimated useful lives of the assets, which range from three to five years. Leasehold improvements are amortized over the shorter of their estimated useful lives or the remaining life of the lease at the time the asset is placed into service. In December 2018, the Company changed the estimated useful life of its leasehold improvements to better reflect the period during which these assets are expected to remain in service. The change in estimated useful life has been accounted for as a change in accounting estimate. The remaining carrying amounts of the leasehold improvements as of December 31, 2018 will be amortized prospectively over one year up to December 31, 2019. The change in estimated useful life increased loss from operations and net loss by approximately $26,000, or less than $0.01 per share, as reported in the Statement of Operations for the year ended December 31, 2018.

For assets held for sale, the property and equipment (the “disposal group”) are measured at the lower of their carrying amount or fair value less cost to sell. Losses are recognized for any initial or subsequent write-down to fair value less cost to sell, while gains are recognized for any subsequent increase in fair value less cost to sell, but not in excess of the cumulative loss previously recognized. Any gains or losses not previously recognized that result from the sale of the disposal group shall be recognized at the date of sale. Property and equipment are not depreciated while classified as held for sale. During the fourth quarter of 2018, certain property and equipment qualified as held for sale treatment. See Note 5 Property and Equipment, net to the Notes to Financial Statements.

Impairment of Long-Lived Assets

The carrying value of long-lived assets, including property and equipment, are reviewed for impairment whenever events or changes in circumstances indicate that the asset may not be recoverable. An impairment loss is recognized when the total of estimated future undiscounted cash flows, expected to result from the use of the asset and its eventual disposition, are less than its carrying amount. Impairment, if any, would be assessed using discounted cash flows or other appropriate measures of fair value. Through December 31, 2018, there have been no such impairment losses.

Revenue Recognition

Effective January 1, 2018, the Company adopted Accounting Standards Codification, or ASC, Topic 606, Revenue from Contracts with Customers, using the modified retrospective transition method. Under this method, the Company recorded a cumulative adjustment to the opening balance of accumulated deficit and to deferred revenue. Under Topic 606, the Company recognizes revenue when it transfers control of promised goods or services to its customers in an amount that reflects the consideration which the Company expects to receive in exchange for those goods or services. To determine revenue recognition for arrangements that the Company determines are within the scope of Topic 606, the Company performs the following five steps: (i) identify the contract(s) with a customer; (ii) identify the performance obligations in the contract; (iii) determine the transaction price; (iv) allocate the transaction price to the performance obligations in the contract; and (v) recognize revenue when (or as) the entity satisfies a performance obligation. The Company only applies the five-step model to contracts when it is probable that the Company will collect the consideration it is entitled to in exchange for the goods or services it transfers to the customer. At contract inception, once a contract is determined to be within the scope of Topic 606, the Company assesses the goods or services promised within the contract and determines those that are performance obligations, and assesses whether each promised good or service is distinct. The Company then recognizes as revenue the amount of the transaction price that is allocated to the respective performance obligation when (or as) the performance obligation is satisfied.

The Company evaluated its existing contracts and only applied Topic 606 to those contracts that were not completed at January 1, 2018. As a result of this evaluation, the Company determined that only its collaboration with Celgene Corporation ("Celgene") is within the scope of Topic 606. The terms of this arrangement include payment to the Company of a non-refundable, upfront fee; potential development, regulatory and sales milestones; program opt-in payments; and royalties on net product sales. Each of these payments results in collaboration revenue, except for revenues from royalties on net product sales, which would be classified as royalty revenues. In determining the appropriate amount of revenue to be recognized as it fulfills its obligations under its collaboration agreement with Celgene, the Company applies the five-step model. As part of the accounting for this arrangement,

the Company must develop assumptions that require judgment to determine the stand-alone selling price for each performance obligation identified in the contract. The Company also must develop assumptions that require judgment in determining the measure of progress used to recognize revenue.

Milestone Payments

At the inception of each arrangement that includes development, regulatory or commercial milestone payments, the Company evaluates whether the milestones are considered probable of being reached and estimates the amount to be included in the transaction price using the most likely amount method. If it is probable that a significant reversal of cumulative revenue would not occur, the associated milestone value is included in the transaction price. Milestone payments that are not within the control of the Company or partner, such as regulatory approvals, are not considered probable of being achieved until those approvals are received or the underlying activity has been completed. The transaction price is then allocated to each performance obligation on a relative stand-alone selling price basis, for which the Company recognizes revenue as or when the performance obligations under the contract are satisfied. At the end of each subsequent reporting period, the Company re-evaluates the probability of achievement of such development milestones and any related constraint, and if necessary, adjusts its estimate of the overall transaction price. Any such adjustments are recorded on a cumulative catch-up basis, which would affect collaboration revenues and earnings in the period of adjustment.

Customer Concentration

Customers whose collaboration revenue accounted for 10% or more of total revenues were as follows:

| | Year Ended December 31, | | |
|---|---|---|---|
| | 2018 | 2017 | 2016 |
| GlaxoSmithKline LLC (“GSK”) | — | * | * |
| Bayer Pharma AG (“Bayer”) | — | * | * |
| Celgene Corporation (“Celgene”) | 100% | 94% | 87% |

* less than 10%

Research and Development Expenses

Research and development costs are expensed as incurred. Research and development costs consist of salaries and other personnel-related expenses, including associated stock-based compensation, consulting fees, lab supplies, and facility costs, as well as fees paid to other entities that conduct certain research, development and manufacturing activities on behalf of the Company.

Clinical Trial Accruals

Clinical trial costs are a component of research and development expenses. The Company accrues and expenses clinical trial activities performed by third parties based upon actual work completed in accordance with agreements established with clinical research organizations and clinical sites. The Company determines the actual costs through

discussions with internal personnel and external service providers as to the progress or stage of completion of trials or services and the agreed-upon fee to be paid for such services.

Nonrefundable advance payments for goods and services that will be used or rendered in future research and development activities, are deferred and recognized as expense in the period that the related goods are delivered or services are performed.

Stock-Based Compensation

The Company recognizes compensation expense for all share-based payment awards made to employees and directors based on estimated fair values. For employee stock options, the Company determines the grant date fair value of the awards using the Black-Scholes option-pricing model and generally recognizes the fair value as stock-based compensation expense on a straight-line basis over the vesting period of the respective awards. Stock-based

compensation expense is based on the value of the portion of stock-based payment awards that is ultimately expected to vest. As such, the Company's stock-based compensation is reduced for the estimated forfeitures at the date of grant and revised, if necessary, in subsequent periods if actual forfeitures differ from those estimates. For restricted stock, the compensation cost for these awards is based on the closing price of the Company's common stock on the date of grant and recognized as compensation expense on a straight-line basis over the requisite service period.

In the second quarter of 2018, the Company early adopted ASU 2018-07, Stock Compensation. ASU 2018-07 clarifies the accounting for share-based payment transactions for acquiring goods and services from non-employees. Specifically, the standard aligns the accounting for payments to non-employees to match the accounting for payments to employees, and no longer accounting for these transactions differently. The adoption of the standard did not have material impact on the Company's financial statements.

Leases

The Company rents its office space and facilities under cancelable and non-cancelable operating lease agreements and recognizes related rent expense on a straight-line basis over the term of the lease. The Company's lease agreements contain rent holidays, scheduled rent increases, lease incentives and renewal options. Rent holidays and scheduled rent increases are included in the determination of rent expense to be recorded over the lease term. Lease incentives are recognized as a reduction of rent expense on a straight-line basis over the term of the lease. The Company does not assume renewals in its determination of the lease term unless they are deemed to be reasonably assured at the inception of the lease. The Company begins recognizing rent expense on the date that the Company obtains the legal right to use and control the leased space.

The Company entered into a sublease agreement during the fourth quarter of 2018. The Company records sublease income as a reduction of rent expense.

Restructuring Charges

Restructuring charges consist of severance, other one-time benefits and other employee related charges. Liabilities for costs associated with a restructuring activity are measured at fair value and are recognized when the liability is incurred. One-time termination benefits are expensed at the date the Company notifies the employee, unless the employee will continue to provide future services, in which case the benefits are expensed ratably over the future service period.

The Company continually evaluates the adequacy of the remaining liabilities under its restructuring initiatives. Although the Company believes that these estimates accurately reflect the costs of the Company's restructuring plan, actual results may differ and thereby require the Company to record an additional provision or reverse a portion of such a provision.

Income Taxes

The Company accounts for income taxes using the liability method under which deferred tax assets and liabilities are determined based on differences between financial reporting and tax basis of assets and liabilities and are measured using the enacted tax rates and laws that will be in effect when the differences are expected to reverse. Valuation allowances are established when necessary to reduce deferred tax assets to the amount which is more likely than not to be realizable.

The recognition, derecognition and measurement of a tax position is based on management's best judgment given the facts, circumstances and information available at each reporting date. The Company's policy is to recognize interest

and penalties related to the underpayment of income taxes as a component of income tax expense. To date, there have been no interest or penalties charged in relation to the unrecognized tax benefits.

Net Loss per Common Share

Basic net loss per common share is calculated by dividing the net loss by the weighted-average number of common shares outstanding during the period, without consideration for common stock equivalents. Diluted net loss per common share is computed by dividing the net loss by the weighted-average number of common shares and common share equivalents outstanding for the period determined using the treasury-stock method. For purposes of this calculation, potentially dilutive securities consisting of stock options and restricted stock units are considered to be common stock equivalents and were excluded in the calculation of diluted net loss per common share because their effect would be anti-dilutive for all periods presented.

Newly Adopted and Recent Accounting Pronouncements

Accounting Standard Update ("ASU") No. 2014-09, Revenue from Contracts with Customers (Topic 606), which supersedes the revenue recognition requirements in ASC 605, Revenue Recognition.

In May 2014, the Financial Accounting Standards Board ("FASB") issued a comprehensive new standard on revenue from contracts with customers, ASU No. 2014-09, Revenue from Contracts with Customers, or Topic 606. The standard's core principle is that a reporting entity will recognize revenue when it transfers promised goods or services to customers in an amount that reflects the consideration to which the entity expects to be entitled in exchange for those goods or services. Entities have the option of using either a full retrospective or a modified retrospective approach to adopt this new guidance. In 2016, the FASB updated the guidance for reporting revenue gross versus net to improve the implementation guidance on principal versus agent considerations, and for identifying performance obligations and the accounting of intellectual property licenses. In addition, the FASB introduced practical expedients and made narrow scope improvements to the new accounting guidance.

Collaboration with Celgene

The Company adopted the accounting standard update on January 1, 2018 using the modified retrospective approach, for its collaboration agreement with Celgene. Therefore, comparative historical information will not be adjusted and will continue to be reported under ASC 605 with the impact of the transition reflected in the opening balance of accumulated deficit as of January 1, 2018. The consideration the Company is eligible to receive under this agreement includes upfront payments, milestone payments and program opt-in payments. The new revenue recognition standard differs from ASC 605 in many respects, such as in the accounting for variable consideration and the measurement of progress toward completion of performance obligations. The most significant impact of the standard relates to the Company's method of revenue recognition for performance obligations that are delivered over time. Under the new standard, milestone payments are included in the transaction price as variable consideration, subject to a constraint, and are allocated to the performance obligations in the contract when recognized. Through December 31, 2017, the Company also received payments from Celgene to reimburse the costs of research and development services performed by the Company; these payments were historically recorded as other revenue. As the performance of these research and development services was at the Company's discretion and are not reflective of a commitment or performance obligation pursuant to the Celgene agreement, the reimbursement paid to the Company has been excluded from the transaction price.

The Company's deferred revenue associated with its Celgene collaboration agreement as of December 31, 2017 under Topic 605 was $143.8 million. As a result of adopting Topic 606, the Company recorded a $98.3 million reduction to its deferred revenue and opening accumulated deficit on January 1, 2018 as a result of the cumulative impact of the change in the recognition of the upfront and milestone payments using the input method (described further in Note 5, "Collaborations") under Topic 606, rather than on a ratable basis which was applied in prior periods. Under Topic 606, collaboration revenue under the Company's collaboration agreement with Celgene from inception of the agreement

through January 1, 2018 was $186.2 million and deferred revenue was $45.5 million as of January 1, 2018. At adoption date, the remaining performance obligation under the contract was estimated to be substantially complete by the third quarter of 2019. At December 31, 2018, the Company evaluated the development program status of the remaining product candidate under the collaboration agreement with Celgene, etigilimab, and estimated that the remaining performance obligation under the contract will be completed by the first quarter of 2019.

Collaborations with Bayer and GSK

As the GSK collaboration was terminated in its entirety on October 28, 2017, this arrangement was outside the scope of Topic 606 as of the adoption date. For the Bayer collaboration, Bayer terminated all biologic therapeutic programs under the collaboration effective June 16, 2017, while the small molecule therapeutics program remained active. Refer to Note 5, “Collaborations,” for further details. The Company has determined that the small molecule therapeutic program remaining as of December 31, 2017 is immaterial in the context of the collaboration agreement relative to the biologics therapeutic programs that was terminated during 2017. The Company’s performance obligations under the small molecule therapeutic program with respect to Bayer were substantially complete at December 31, 2017, and any future receipts in the form of milestones or royalties are contingent upon the achievement of specified development, commercial and/or sales targets. The Company has concluded that there was no transition adjustment to be recognized on January 1, 2018 for these two agreements.

Impact of Adoption

The following table summarizes the impact of adopting Topic 606 on select balance sheets and statement of operations line items:

| (In thousands) | Balance at December 31, 2017 | Adjustment | Balance at January 1, 2018 |
|---|---|---|---|
| Balance Sheets: | | | |
| Deferred revenue, current portion | $82,193 | $ (51,299) | $30,894 |
| Deferred revenue, non-current portion | 61,645 | (47,023) | 14,622 |
| Accumulated deficit | (452,007) | 98,322 | (353,685) |

| | For the year ended December 31, 2018 | | |
|---|---|---|---|
| (In thousands, except per share data) | As reported under Topic 606 | Adjustment | Balances without the adoption of Topic 606 |
| Statements of Operations: | | | |
| Collaboration revenue | $44,421 | $ 58,321 | $102,742 |
| Income (loss) from operations | (10,045) | 58,321 | 48,276 |
| Net income (loss) | (8,101) | 58,321 | 50,220 |
| Net income (loss) per common shares, basic | (0.21) | 1.52 | 1.31 |
| Net income (loss) per common shares, diluted | (0.21) | 1.51 | 1.30 |

Contract Balances

Upfront payments and fees may be required to be recorded as deferred revenue upon receipt or when due, and recognized in a future period when or as the Company performs its obligations under these arrangements. Amounts payable to the Company are recorded as accounts receivable when the Company’s right to consideration is unconditional.

As of December 31, 2018, the Company’s contract liabilities, which consisted of deferred revenue, decreased by a total of $142.7 million from December 31, 2017, of which $98.3 million was related to the cumulative adjustment to the

opening balance of accumulated deficit upon the adoption of Topic 606 on January 1, 2018 and $44.4 million related to revenue recognized for the year ended December 31, 2018. Upon adoption of the standard as of January 1, 2018, the Company had a $45.5 million contract liability. As of December 31, 2018, the Company had a $1.1 million contract liability. The remaining performance obligation under the contract is expected to be substantially complete by the first quarter of 2019.

ASU No. 2016-02, Leases (Topic 842)

In February 2016, the FASB issued ASU No. 2016-02, Leases (Topic 842), which amends the existing accounting standards for leases. The new standard requires lessees to record a right-of-use asset and a corresponding lease liability on the balance sheet (with the exception of short-term leases). For lessees, leases will continue to be classified as either operating or financing in the income statement. This ASU becomes effective in the first quarter of fiscal year 2019 and early adoption is permitted. This ASU is required to be applied with a modified retrospective approach and requires application of the new standard at the beginning of the earliest comparative period presented. In July 2018, the FASB issued ASU No. 2018-11, Leases (Topic 842): Targeted Improvements. In issuing ASU No. 2018-11, the FASB decided to provide another transition method in addition to the existing transition method by allowing entities to initially apply the new leases standard at the adoption date and recognize a cumulative-effect adjustment to the opening balance of retained earnings in the period of adoption. The Company is currently evaluating our population of leases and are continuing to assess all potential impacts of ASU 2016-02 and ASU 2018-11, but currently believe that the most significant impact relates to the Company’s accounting for office building operating leases. The Company anticipates recognition of additional assets and corresponding liabilities related to leases upon adoption, but have not yet quantified these at this time. The Company will adopt the standard effective January 1, 2019 and plan to utilize the transition method stated in ASU 2018-11.

ASU No. 2018-07, Improvement to Nonemployees Share-based Payment Accounting (Topic 718)

In June 2018, the FASB issued ASU No. 2018-07, Stock Compensation. ASU No. 2018-07 simplifies the accounting for share-based payments to nonemployees by aligning it with the accounting for share-based payments to employees, with certain exceptions. The guidance is effective for fiscal years beginning after December 15, 2019, and interim periods within fiscal years beginning after December 15, 2020. Early adoption is permitted, but not earlier than the Company’s adoption of Topic 606. The Company chose to adopt the guidance early, in the second quarter of 2018. The adoption of the standard did not have material impact on the Company’s financial statements.

3. Cash and Investments

The fair value of securities, not including cash at December 31, 2018 and 2017 were as follows:

| | December 31, 2018 | | | |
|---|---|---|---|---|
| (In thousands) | Amortized Cost | Gross Unrealized Gains | Losses | Fair Value |
| Money market funds | $275 | $ — | $ — | $275 |
| U.S. treasury bills | 47,688 | — | (29) | 47,659 |
| Total | $47,963 | $ — | $ (29) | $47,934 |
| Classified as: | | | | |
| Cash equivalents | | | | $275 |
| Short-term investments | | | | 47,659 |
| Total | | | | $47,934 |

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As of December 31, 2018, the Company had a total of $57.3 million in cash, cash equivalents and short-term investments, which includes $9.7 million in cash and cash equivalents and $47.6 million in short-term investments.

| | December 31, 2017 | | | |
|---|---|---|---|---|
| (In thousands) | Amortized Cost | Gross Unrealized Gains | Losses | Fair Value |
| Money market funds | $99 | $ — | $ — | $99 |
| U.S. treasury bills | 89,525 | 289 | — | 89,814 |
| Total | $89,624 | $ 289 | $ — | $89,913 |
| Classified as: | | | | |
| Cash equivalents | | | | $99 |
| Short-term investments | | | | 89,814 |
| Total | | | | $89,913 |

As of December 31, 2017, the Company had a total of $103.1 million in cash, cash equivalents and short-term investments, which includes $13.3 million in cash and cash equivalents and $89.8 million in and short-term investments.

All available-for-sale securities held as of December 31, 2018 had contractual maturities of less than one year. There have been no significant realized gains or losses on available-for-sale securities for the periods presented.

4. Fair Value Measurements

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

- Level 1: Inputs which include quoted prices in active markets for identical assets and liabilities.
- Level 2: Inputs other than Level 1 that are observable, either directly or indirectly, such as quoted prices for similar assets or liabilities; quoted prices in markets that are not active; or other inputs that are observable or can be corroborated by observable market data for substantially the full term of the assets or liabilities.
- Level 3: Unobservable inputs that are supported by little or no market activity and that are significant to the fair value of the assets or liabilities.

The Company’s financial assets and liabilities subject to fair value measurements on a recurring basis and the level of inputs used in such measurements were as follows:

| | December 31, 2018 | |
|---|---|---|
| (In thousands) | Level 2 | Total |

| | Level 1 | | Level 3 | |
|---|---|---|---|---|
| Assets: | | | | |
| Money market funds | $275 | $— | $ — | $275 |
| U.S. treasury bills | — | 47,659 | — | 47,659 |
| Total | $275 | $47,659 | $ — | $47,934 |

| | December 31, 2017 | | | |
|---|---|---|---|---|
| (In thousands) | Level 1 | Level 2 | Level 3 | Total |
| Assets: | | | | |
| Money market funds | $99 | $— | $ — | $99 |
| U.S. treasury bills | — | 89,814 | — | 89,814 |
| Total | $99 | $89,814 | $ — | $89,913 |

Where quoted prices are available in an active market, securities are classified as Level 1. When quoted market prices are not available for the specific security, then the Company estimates fair value by using benchmark yields, reported trades, broker/dealer quotes, and issuer spreads. The Company classifies U.S. Treasury securities as Level 2. There were no transfers between Level 1 and Level 2 during the periods presented.

5. Property and Equipment, net

Property and equipment, net consist of the following:

| | December 31, | |
|---|---|---|
| (In thousands) | 2018 | 2017 |
| Computer equipment and software | $1,440 | $1,935 |
| Furniture and fixtures | 415 | 547 |
| Laboratory equipment | — | 11,720 |
| Leasehold improvements | 9,598 | 9,250 |
| | 11,453 | 23,452 |
| Less accumulated depreciation and amortization | (10,830) | (20,177) |
| Property and equipment, net | $623 | $3,275 |

Depreciation expense for the years ended December 31, 2018, 2017 and 2016 was $1.7 million, $1.7 million and $1.8 million, respectively

The Company reviews the estimated useful lives of its property and equipment on an ongoing basis. Effective December 1, 2018, the Company changed its estimated useful life of leasehold improvements and this change has been accounted for as a change in accounting estimate. The remaining carrying amounts of the leasehold improvements as of December 31, 2018 will be amortized prospectively over one year up to December 31, 2019. The change in estimated useful life increased net loss by approximately $26,000, or less than $0.01 per share, as reported in the Statement of Operations for the year ended December 31, 2018.

In the fourth quarter of 2018, property and equipment with net book value of $1.4 million qualified as held for sale treatment. Assets held for sale are measured at the lower of their carrying amount or fair value less cost to sell. The property and equipment are not depreciated while classified as held for sale. As of December 31, 2018, assets held for sale were composed mainly of laboratory equipment and were recorded at $1.4 million. Subsequently, in January 2019, the Company sold the property and equipment classified as held for sale for net sale proceeds of approximately $1.4 million. No impairment loss was recorded for such assets held for sale as of December 31, 2018.

6. Accrued Liabilities

Accrued liabilities consist of the following:

| | December 31, | |
|---|---|---|
| (In thousands) | 2018 | 2017 |
| Research and development related | $988 | $670 |
| Compensation related | 1,809 | 2,733 |
| Other | 1,571 | 537 |
| Total accrued liabilities | $4,368 | $3,940 |

7. Commitments and Contingencies

Operating Leases

The Company leases an office and laboratory facility in Redwood City, California under a lease agreement that was originally set to expire in January 2019 and included a lease extension option for two additional three-year

terms. During the fourth quarter of 2016, the Company signed an amendment to the lease agreement to extend the lease term through May 2028 with an option to extend the lease for an additional three-year term.

The amendment to the lease agreement includes a 10-year cancelable lease agreement for additional office and laboratory space that expires in May 2028, subject to the Company's three-year lease extension option described above. The Company exercised its right to terminate the lease agreement for this additional space prior to September 2017. The exercise of such cancelation did not result in an economic penalty to the Company.

As of December 31, 2018, future minimum annual rental payments under the Company's non-cancelable operating lease agreement are as follows (in thousands):

| Year ending December 31, | Operating Leases, net of Sublease Income |
|---|---|
| 2019 | $ 776 |
| 2020 | 1,640 |
| 2021 | 2,577 |
| 2022 | 2,667 |
| 2023 | 2,761 |
| 2024 and thereafter | 13,382 |
| Total minimum payments | $ 23,803 |

Through December 31, 2018, the landlord provided the Company a tenant improvement allowance for a total of $8.0 million for its office and laboratory expansion in prior years and office improvements. The Company recorded the tenant improvement allowance received as leasehold improvements under the property and equipment account and deferred rent liability on the accompanying balance sheets.

In October 2018 and January 2019, the Company subleased a specified portion of the Company's office facility located in Redwood City, California. These subleases have terms of 12 to 24 months and will expire in 2020. The aggregate sublease proceeds of $1.6 million and $0.8 million for the years ending December 31, 2019 and 2020, respectively, are included in the table above.

The operating lease agreement contains rent escalation provisions and tenant improvement allowances. The total rent obligation is being expensed ratably over the term of the agreement. Rent expense for year ended December 31, 2018 was $2.3 million, net of sublease income of $0.1 million. Rent expense for years ended December 31 2017 and 2016 was $2.4 million and $1.6 million, respectively.

Guarantees and Indemnifications

The Company, as permitted under Delaware law and in accordance with its certificate of incorporation and bylaws, and pursuant to indemnification agreements with certain of its officers and directors, indemnifies its officers and directors for certain events or occurrences, subject to certain limits, while the officer or director is or was serving at the Company's request in such capacity. The term of the indemnification period lasts as long as an officer or director may be subject to any proceeding arising out of acts or omissions of such officer or director in such capacity.

The maximum amount of potential future indemnification is unlimited; however, the Company currently holds director and officer liability insurance. This insurance limits the Company's exposure and may enable it to recover a portion of any future amounts paid. The Company believes that the fair value of these indemnification obligations is minimal. Accordingly, the Company has not recognized any liabilities relating to these obligations for any period presented.

8. License Agreement

In 2004, the Company assumed an exclusive, worldwide license agreement with the University of Michigan relating to the use of certain patents and technology relating to its cancer stem cell ("CSC") technology for which an up-front fee of $10,000 had been paid and the Company issued 7,796 shares of its common stock. Pursuant to the agreement, the Company is obligated to make low single-digit royalty payments to the University of Michigan on net sales of its or its licensees' products and processes covered under the agreement, pay an annual license maintenance fee, and reimburse the University of Michigan for costs of prosecution and maintenance of the licensed patents which reduces future royalty obligations. With respect to one family of licensed patent applications that does not relate to any of the Company's lead therapeutic programs, the Company is also required to pay a tiered, single-digit percentage of any sublicense revenues, including any upfront or milestone payments, received from any sublicensees under such family of patents. Once the University of Michigan has received $10.0 million in royalties, the Company may at its option convert the license to a fully paid-up license provided the Company transfers additional shares of nonvoting common stock equal to 0.25% of the fully diluted shares then outstanding to the University of Michigan. The amounts incurred for patent legal costs amounted to $27,000, $32,000 and $69,000 for the years ended December 31, 2018, 2017 and 2016, respectively, all of which has been recorded as general and administrative expense in the statements of operations.

9. Collaborations

The Company has entered into three collaboration arrangements, each having multiple deliverables under which the Company received non-refundable upfront payments. For collaborations where the Company has determined that there is a single unit of accounting the Company recognizes revenue related to the upfront payments ratably over its estimated period of performance for each collaboration. Two of these collaboration agreements have since been entirely or substantially terminated.

The Company's prior and current collaboration arrangements include contractual milestones, which relate to the achievement of pre-specified research, development, regulatory and commercialization events. The milestone events contained in the Company's alliances coincide with the progression of the Company's product candidates from research and development, to regulatory approval and through to commercialization. The process of successfully discovering a new product candidate, having it selected by the alliance partner for development, having it approved and ultimately sold for a profit is highly uncertain. As such, the milestone payments that the Company may earn from its collaborators involve a significant degree of risk to achieve.

Research and development milestones in the Company's strategic alliances may include the following types of events:

- Completion of pre-clinical research and development work leading to selection of product clinical candidates.
- Advancement of candidates into clinical development, which may include filing of investigational new drug ("IND") applications.
- Initiation of Phase I, Phase II or Phase III clinical trials.
- Achievement of certain scientific or development events.

Regulatory milestones may include the following types of events:

- Filing of regulatory applications for marketing approval such as a New Drug Application in the United States, or a Marketing Authorization Application in Europe.

- Marketing approval in a major market, such as the United States, Europe or Japan.

Commercialization milestones may include the following types of events:

- Product sales in excess of pre-specified thresholds.

Summary of Collaboration Related Revenue

The Company has recognized the following revenues from its prior and current collaboration agreements during the years ended December 31, 2018, 2017 and 2016:

| | Year Ended December 31, | | |
|---|---|---|---|
| (In thousands) | 2018 | 2017 | 2016 |
| Celgene: | | | |
| Recognition of upfront payment | $44,421 | $35,588 | $20,053 |
| Other revenue | — | 409 | 1,780 |
| Celgene total | 44,421 | 35,997 | 21,833 |
| Bayer: | | | |
| Recognition of upfront payments | — | 278 | 648 |
| Other revenue | — | 1,726 | 1,457 |
| Bayer total | — | 2,004 | 2,105 |
| GSK: | | | |
| Recognition of upfront payment | — | 150 | 576 |
| Other revenue | — | 3 | 639 |
| GSK total | — | 153 | 1,215 |
| Total collaboration related revenue | $44,421 | $38,154 | $25,153 |

Adoption of ASU No. 2014-09

On January 1, 2018, the Company adopted ASU No. 2014-09 using the modified retrospective method. Results for reporting periods beginning after January 1, 2018 are presented under Topic 606, while prior period amounts are not adjusted and continue to be reported in accordance with Topic 605.

Celgene Strategic Alliance

In December 2013, the Company entered into a Master Research and Collaboration Agreement (the “Agreement”) with Celgene pursuant to which the Company and Celgene were to collaborate on research and development programs directed to the discovery and development of novel biologic therapeutic programs, and, if Celgene exercised its option to do so, the discovery, development and commercialization of novel small molecule therapeutics.

The etigilimab program is the last remaining biologic therapeutic program that is currently active under the collaboration agreement with Celgene. Celgene has an option to obtain an exclusive license to develop further and commercialize biologic therapeutics in the etigilimab program, which may be exercised during time periods specified in the collaboration agreement through the earlier of completion of a certain clinical trial or the twelfth anniversary of the date of the collaboration agreement. Pursuant to the agreement, the Company will lead the development of etigilimab prior to Celgene’s exercise of its option for the etigilimab program. The Company is responsible for funding all research and development activities that we choose to undertake for therapeutics in the etigilimab program prior to Celgene’s exercise of the option for the program. Upon option exercise by Celgene, the Company will be required to enter into an agreed form of a license agreement with Celgene, pursuant to which Celgene retains all rights to develop further and commercialize biologic therapeutic products in the etigilimab program on a worldwide basis, with certain support for development from the Company.

The Company is eligible to receive a $35.0 million opt-in payment upon Celgene’s exercise of the option for the etigilimab program. The collaboration also includes milestone payments for achievement of specified development,

regulatory and commercial milestones, paid on a per-product and per-program basis. The option exercise payments and payments for achievement of development, regulatory and commercial milestones under the agreement may total up to $440.0 million, for products in the etigilimab program, including the $35.0 million opt-in payment. The Company previously received a $2.5 million milestone payment for the etigilimab program. Accordingly, the future potential milestone payments for products in the etigilimab program under the collaboration total up to $437.5 million, including the $35.0 million opt-in payment. For the etigilimab program, if the option is

exercised and the program is successfully commercialized by Celgene, the Company is eligible to receive tiered royalties equal to a percentage of net product sales worldwide in the high-single digits to the mid-teens. The Company is not eligible to receive any further research or development milestone payments for etigilimab prior to Celgene's decision regarding option exercise with respect to etigilimab.

The collaboration agreement with Celgene will terminate upon the expiration of all of Celgene's payment obligations under the license agreement entered into with respect to the etigilimab program following Celgene's exercise of an option for such program, or if Celgene's option on the etigilimab program expires without Celgene exercising its option. The collaboration agreement may be terminated by either party for the insolvency of, or an uncured material breach of the collaboration agreement by the other party. In addition, Celgene may terminate the collaboration agreement in its entirety or with respect to the etigilimab program, for any reason, upon 120 days' prior written notice to us and upon 60 days' prior written notice in the event that Celgene reasonably believes that such termination is necessary in order to comply with any antitrust laws. The Company may also terminate the collaboration agreement with respect to the etigilimab program in the event that Celgene challenges the licensed patents with respect to such program.

If Celgene does not exercise its option with respect to the etigilimab program before the option for that program expires, the Company will retain worldwide rights to such program. In addition, under certain termination circumstances, the Company would also have worldwide rights to the etigilimab program.

The collaboration agreement with Celgene previously included the demcizumab, navicixizumab, and rosmantuzumab biologic therapeutic programs. Celgene, however, terminated the collaboration agreement with respect to both demcizumab and navicixizumab, effective January 23, 2019, and terminated the collaboration agreement with respect to rosmantuzumab, effective February 12, 2019. Prior to such terminations, Celgene had options to obtain an exclusive license to develop further and commercialize biologic therapeutics in these programs under the agreement. As a result of these terminations, the Company now has worldwide rights to each of these programs, including navicixizumab. Under certain circumstances, the Company may owe Celgene single-digit percentage royalties on therapeutic products in these programs if we elect to continue to commercialize them and they are successfully commercialized, subject to a cap.

Celgene previously had the right to designate up to two additional biologic therapeutic programs targeting the RSPO-LGR signaling pathway or an undisclosed pathway for inclusion in the collaboration, but this right expired on the fourth anniversary of the date of the collaboration agreement. Celgene also had an additional option, which expired unexercised on the fourth anniversary of the date of the collaboration agreement, that would have permitted Celgene to discover, develop and commercialize small molecule therapeutics directed to targets in an undisclosed pathway under the collaboration.

Under the terms of the collaboration agreement with Celgene, the Company received an upfront cash payment of $155.0 million in December 2013. In addition, Celgene purchased 1,470,588 shares of the Company's common stock at a price of $15.13 per share, resulting in gross proceeds of $22.2 million. The price paid by Celgene for the common stock represented a premium over the closing price of the Company's common stock on the date of the collaboration. The Company accounted for the $1.7 million premium as additional consideration under the Agreement and the common stock was recorded at its fair market value of $20.5 million. As of December 31, 2018, the Company is not eligible to receive any milestone payments under its collaboration with Celgene prior to the point that Celgene exercises its remaining option. The Company is eligible to receive up to approximately $35.0 million of contingent consideration if Celgene exercises its options for the etigilimab program. Following Celgene's exercise of its option for the etigilimab program, Celgene will have exclusive development and commercialization rights worldwide, with the Company eligible to receive milestones and tiered royalties equal to a percentage of net product sales worldwide in the high-single digits to the mid-teens. If Celgene successfully develops and commercializes product candidates in the

etigilimab program, the Company could receive additional contingent consideration of up to $402.5 million for the achievement of post-option exercise development, regulatory events and sales milestones.

The Company assessed its collaboration agreement with Celgene in accordance with Topic 606 and concluded that Celgene is a customer. The Company determined that its performance obligation under the arrangement with Celgene is research and development services. As part of the promised research and development services, the

Company may provide the resultant data to Celgene to assist Celgene in determining whether or not to exercise its options. Under the arrangement, Celgene has options to further develop and commercialize biologic therapeutics in each program under the collaboration, which may be exercised during time periods specified in the agreement. Upon Celgene's exercise of its option for certain programs, the Company may, at its discretion, gain co-development and co-commercialization rights and corresponding obligations. The Company determined that the exclusive option(s) provided to Celgene is not a material right under Topic 606 and thus it is not a performance obligation. Based on its assessment, the Company has identified the research and development services as the only performance obligation at the inception of the collaboration agreement.

Prior to recognizing revenue, the Company estimates the transaction price, including variable consideration that is subject to a constraint. Amounts of variable consideration are included in the transaction price to the extent that it is probable that a significant reversal in the amount of cumulative revenue recognized will not occur when the uncertainty associated with the variable consideration is subsequently resolved. Variable consideration includes payments based upon the achievement of specified milestones, and royalty payments based on product sales derived from the collaboration. Under the collaboration agreement, the Company determined that the non-refundable upfront cash payment of $155.0 million and stock premium of $1.7 million received in December 2013 constitute consideration to be included in the transaction price. The Company also included in the transaction price the $70.0 million demcizumab (anti-DLL4, OMP-21M18) safety milestone that was achieved in December 2015 and the two designation milestone payments of $2.5 million each for the designation of rosmantuzumab and etigilimab as clinical candidates in 2014 and 2015, respectively. The total consideration received of $231.7 million constitutes the transaction price at the transition date for Topic 606. Through December 31, 2017, the Company also received a total of $2.5 million in the aggregate from Celgene to reimburse the costs of research and development services performed by the Company; these reimbursements have historically been recorded as other revenue. As the performance of these research and development services was at the Company's discretion and is not a commitment or performance obligation pursuant to the Celgene collaboration agreement, the reimbursement paid to the Company has been excluded from the transaction price. None of the remaining development and regulatory milestone amounts have been included in the transaction price, as all milestone amounts were fully constrained as of January 1, 2018 and December 31, 2018. As part of the Company's evaluation of the constraint, the Company considered numerous factors, including that receipt of the milestone amounts is outside the control of the Company and contingent upon success in future clinical trials. Any consideration related to sales milestones and royalties on net product sales will be recognized at the later of when the related sales occur or the performance obligation to which some or all of the sales milestone or royalty has been allocated is satisfied (in whole or in part) and therefore have also been excluded from the transaction price. The Company will re-evaluate the transaction price in each reporting period and as uncertain events are resolved or other changes in circumstances occur.

The impact of adopting Topic 606 on the accounting treatment of the Company's collaboration agreement with Celgene primarily relates to the change in the timing of revenue recognition of the transaction price. The Company's deferred revenue associated with its Celgene collaboration agreement as of December 31, 2017 under Topic 605 was $143.8 million. Upon adoption of Topic 606 as of January 1, 2018, the Company recognized a cumulative catch up adjustment of $98.3 million, which was recorded as a decrease to the opening balance of accumulated deficit, and a corresponding decrease in the deferred revenue balance from the Company's collaboration with Celgene.

Following the adoption of Topic 606, the Company recognizes collaboration revenue by measuring the progress toward complete satisfaction of the performance obligation using an input measure. The Company concluded the method that best correlates with progress of the services provided to Celgene is the input method, based on actual costs incurred to date compared to the overall total expected costs to satisfy the performance obligation. The Company will evaluate the estimate of expected costs to satisfy the performance obligation each reporting period and make adjustments for any significant changes. Under Topic 606, collaboration revenue under the Company's collaboration agreement with Celgene was $44.4 million for the year ended December 31, 2018 and deferred revenue balance was

$1.1 million as of December 31, 2018. Upon adoption of Topic 606, the Company initially estimated that the performance obligation under the contract would be substantially completed by the third quarter of 2019. At December 31, 2018, the Company evaluated the development program status of the etigilimab program, the only program remaining under the collaboration agreement with Celgene, and determined that the performance obligation will be completed by the first quarter of 2019. The change in the timing of revenue

recognition resulted in an increase in revenue and corresponding decreases in net loss of $7.7 million and net loss per common share, basic and diluted, of $0.20 per share for the year ended December 31, 2018.

As of December 31, 2018, the Company was eligible to receive in its collaboration with Celgene up to approximately $35.0 million of contingent consideration if Celgene exercises its options on the etigilimab program. If Celgene successfully develops and commercializes the etigilimab program, the Company could receive additional contingent consideration of up to approximately $402.5 million for the achievement of post-option exercise development, regulatory events and sales milestones. As all contingent consideration is based solely on the performance of Celgene, the Company would recognize the contingent payments upon receipt immediately as collaboration revenue if the Company had no further performance obligations under the agreement with Celgene.

In the fourth quarter of 2018, the Company recorded a receivable and a deferred revenue of $2.6 million for the sale of a tumor bank to Celgene. The Company recognized the receivable as of December 31, 2018 because the right to the consideration is considered unconditional. Subsequently, in January 2019, the Company recognized the revenue upon delivery of the tumor bank to Celgene. The sale is not considered a commitment or performance obligation pursuant to the Celgene collaboration agreement, hence is excluded from the collaboration transaction price.

Bayer Strategic Alliance

On June 15, 2010, the Company entered into a Collaboration and Option Agreement with Bayer. The agreement sets forth an alliance to discover, develop and market novel biologic and small molecule therapeutics affecting targets within the Wnt signaling pathway. The Company received an upfront payment of $40.0 million upon execution of the collaboration agreement in 2010 and a $5.0 million milestone payment in 2012. The Company initially recognized the payments as deferred revenue and amortized to revenue on a ratable basis through the second quarter of 2017, as permitted by the legacy revenue recognition guidance.

Effective June 16, 2017, Bayer terminated all biologic therapeutic programs under the collaboration. The Company is no longer eligible to receive any payments under its collaboration with Bayer with respect to biologic therapeutic candidates.

With respect to the Wnt pathway small molecule program, the Company and Bayer under the collaboration agreement agreed to jointly conduct research to discover potential new small molecule therapeutics targeting the Wnt pathway. Bayer may, within a specified time period, elect to advance such small molecule therapeutics into further development, and obtain an exclusive license to commercialize such therapeutics. Bayer leads discovery, development, and commercialization of such small molecule therapeutics. As of December 31, 2018, the Company remains eligible to receive up to $27.0 million in development milestone payments for each small molecule candidates. If Bayer successfully develops and commercializes small molecule candidates for more than one indication, the Company could receive contingent consideration payments for each small molecule candidate of up to $15.0 million for the achievement of certain regulatory events and up to $70.0 million upon the achievement of specified future product sales. As all such contingent consideration is based solely on the performance of Bayer, the Company would recognize the contingent payments upon receipt immediately as collaboration revenue.

The Company evaluated the agreement under Topic 606, and determined that the small molecule therapeutic program remaining as of December 31, 2017 is immaterial in the context of the collaboration agreement relative to the biologics therapeutic programs that was terminated during 2017. Further, the Company’s performance obligations under the small molecule therapeutic program were substantially complete at December 31, 2017, and any future receipts in the form of milestones or royalties are contingent upon the achievement of specified development, commercial and/or sales targets by Bayer.

GSK Strategic Alliance

On December 7, 2007, the Company entered into a Collaboration and Option Agreement with GSK. The agreement was formed to discover, develop and market novel antibody therapeutics to target CSCs. The agreement gave GSK the option to obtain an exclusive license for certain product candidates targeting the Notch signaling pathway.

In 2007, the Company received an initial payment of $35.0 million, with half in the form of an equity investment by GSK in the Company's Series B-2 convertible preferred stock and the other half as an up-front cash payment which was initially recorded as deferred revenue. The 1,441,396 shares of Series B-2 convertible preferred stock sold by the Company to GSK were issued at a premium of $4.3 million above the estimated fair value of convertible preferred stock at the time of issuance. This premium was considered an additional up-front payment and was added to the $17.5 million deferred revenue and was amortized to revenue on a ratable basis through the first quarter of 2017, as permitted by the legacy revenue recognition guidance.

Effective October 28, 2017, GSK terminated the agreement in its entirety. As a result of such termination, the Company is no longer eligible to receive any payments under the collaboration agreement with GSK and the Company has no remaining performance obligations. As the GSK collaboration was terminated in its entirety on October 28, 2017, this arrangement is outside the scope of Topic 606 as of the adoption date.

10. Lonza Sales AG Agreement

In August 2012, the Company entered into a multi-product license agreement with Lonza Sales AG ("Lonza"). This agreement relates to the process development and manufacturing of the Company's biologics portfolio with Lonza. Under the multi-product license agreement, the Company receives licenses to utilize Lonza's glutamine synthetase gene expression system and related technologies for commercial production of the Company's product candidates. Under this license agreement, the Company paid an upfront payment of $488,000 which was recorded to research and development expense during 2012 and is obligated to pay Lonza certain payments up to £200,000 (approximately $254,000) per licensed product on achievement of specified milestones, and royalties up to the very low single digits on sales of its licensed products. There has been no further payment made by the Company to Lonza pursuant to the license agreement for the years ended December 31, 2018, 2017 and 2016.

The multi-product license agreement shall remain in force on a product by product and country by country basis until expiration of the Company's obligation to make payments to Lonza with respect to such product in such country. The agreement can otherwise be terminated by the Company for any reason or no reason upon advance written notice to Lonza, or by either the Company or Lonza upon the other party's material breach of the agreement, or if the other party ceases to carry on business. Lonza may also terminate the licenses granted under the agreement if the Company challenges any of the Lonza patent rights.

11. Stockholder's Equity

Stock Incentive Plans

2004 Plan

The Company granted options under its 2004 Stock Incentive Plan (the "2004 Plan") until July 2013 when it was terminated as to future awards, although it continues to govern the terms of options that remain outstanding under the 2004 Plan. The 2004 Plan provided for the award of restricted shares, grants of incentive and nonstatutory stock options, and sales of shares of the Company's common stock. Awards can be made to employees, outside directors, and consultants of the Company. Stock options granted generally vest over a period of five years from the date of

grant, with 20% of the total grant vesting on the first anniversary of the option vesting commencement date and 1/48 of the remaining grant vesting each month thereafter. Restricted stock issuances and early exercise of stock options were subject to the Company's right of repurchase at the original issuance price, which right lapses over the vesting period of the stock. In connection with the Board of Directors' and stockholders' approval of the 2013 Plan, all remaining shares available for future award under the 2004 Plan were transferred to 2013 Plan, and the 2004 Plan was terminated as to future awards.

2013 Plan

In July 2013, the Company's Board of Directors and stockholders approved the 2013 Equity Incentive Award Plan (the "2013 Plan"). Under the 2013 Plan, the Company initially reserved 500,000 shares of common stock for issuance as of its effective date of July 17, 2013, plus 90,125 shares which were then available for issuance under the Company's 2004 Plan. The number of shares reserved for issuance under the 2013 Plan will increase by the

number of shares represented by awards outstanding under the 2004 Plan that are forfeited or lapse unexercised and which following July 17, 2013 are not issued under the 2004 Plan. Additionally, on the first day of each calendar year, beginning in 2014 and ending in 2023, the number of shares in the reserve will increase by the least of 1,500,000 shares, 4% of the shares of the Company's common stock outstanding (on an as-converted basis) on the last day of the immediately preceding fiscal year or such smaller number of shares of stock as determined by the Company's Board of Directors. The 2013 Plan authorizes discretionary grants of incentive stock options, nonqualified stock options, restricted stock, restricted stock units, performance awards, dividend equivalents, stock payments, deferred stock, deferred stock units, and stock appreciation rights to employees and consultants of the Company, or any of its qualifying affiliates, and to members of the Board of Directors. The exercise price per share subject to each option shall not be less than 100% of the fair value of the common stock on the date of grant. In addition, in the case of incentive stock options granted to a greater than 10% stockholder, such price shall not be less than 110% of the fair value on the date the option is granted. The term of the options shall not be more than 10 years from the grant date, or 5 years from the date an incentive stock option is granted to a greater than 10% stockholder. Stock options granted generally vest over a period of four years from the date of grant, with 25% of the total grant vesting on the first anniversary of the option vesting commencement date and 1/48th of the original grant vesting each month thereafter for stock options granted upon hiring, and with 1/48th of the total grant vesting each month after the option vesting commencement date for any stock options granted after the hiring date.

As of December 31, 2018, a total of 8,217,239 shares of common stock have been authorized under the 2013 Plan. As of December 31, 2018, a total of 4,140,554 shares are subject to options and restricted stock units ("RSUs") outstanding under the 2013 Plan. There are 310,453 shares subject to options outstanding under the 2004 Plan as of December 31, 2018, which will become available for issuance under the 2013 Plan to the extent the options are forfeited or lapse unexercised without issuance of such shares under the 2004 Plan. On January 1, 2018, an additional 1,500,000 shares of the Company's common stock became available for future issuance as a result of the annual increase provision in the 2013 Plan.

Shares Reserved for Future Issuances

The following table summarizes the Company's common stock reserved for future issuance:

| (In thousands) | December 31, 2018 |
|---|---|
| Outstanding stock options and RSUs | 4,451 |
| Reserved for future equity award grants | 3,350 |
| Reserved for future ESPP issuances | 1,510 |
| Total common stock reserved for future issuances | 9,311 |

Stock Options

The following table summarizes the stock option activity for the year ended December 31, 2018:

| | Stock Option Outstanding | | | |
|---|---|---|---|---|
| (In thousands, except exercise price and contractual life) | Number of shares | Weighted Average Exercise Price per Share | Weighted Average Remaining Contractual Life | Aggregate Intrinsic Value |
| Balances at December 31, 2017 | 5,217 | 10.70 | 5.6 | $ 913 |
| Granted | 1,744 | 3.34 | | |
| Exercised | — | — | | |
| Forfeited | (2,816) | 8.69 | | |
| Balances at December 31, 2018 | 4,145 | 8.96 | 6.4 | — |
| Options vested and expected to vest— December 31, 2018 | 3,945 | $ 8.88 | 7.0 | — |
| Options exercisable— December 31, 2018 | 2,542 | $ 11.44 | 5.2 | — |

The total fair value of options vested were $5.5 million, $7.1 million and $9.2 million for the years ended December 31, 2018, 2017 and 2016, respectively. There were no options exercised during the year ended December 31, 2018. The aggregate intrinsic value of options exercised were $1.4 million and $0.8 million for the years ended December 31, 2017, and 2016, respectively. The stock options outstanding have no intrinsic value as of December 31, 2018.

The weighted-average grant date estimated fair value of options granted during the years ended December 31, 2018, 2017 and 2016 were $2.32, $3.66 and $8.23 per share, respectively.

Restricted Stock Units

The following table summarizes the RSU activity for the year ended December 31, 2018:

| | Restricted Stock Units Outstanding | | | |
|---|---|---|---|---|
| (In thousands, except grant date fair value and contractual life) | Number of shares | Weighted Average | Weighted Average | Aggregate Intrinsic |

| | | Grant Date Fair Value per Share | Remaining Contractual Life | Value |
|---|---|---|---|---|
| Balances at December 31, 2017 | 880 | 5.33 | 1.3 | $ 3,606 |
| Awarded | 70 | 2.29 | | |
| Released | (402) | 4.57 | | |
| Forfeited | (242) | 5.60 | | |
| Balances at December 31, 2018 | 306 | 5.41 | 1.0 | $ 229 |

The total fair value of RSUs vested was $1.8 million, $6.4 million and $2.2 million for the years ended December 31, 2018, 2017 and 2016, respectively. The aggregate intrinsic value of the non-vested RSUs was $0.2 million as of December 31, 2018.

Employee Stock Purchase Plan

The Company’s Employee Stock Purchase Plan (the “ESPP”) allows eligible employees to purchase shares of the Company’s common stock at a discount through payroll deductions of up to 15% of their eligible compensation,

subject to any plan limitations. The ESPP provides for six-month offering periods, and at the end of each offering period, employees are able to purchase shares at 85% of the lower of the fair market value of the Company's common stock on the first trading day of the offering period or on the last day of the offering period.

On January 1, 2018, as a result of the annual increase provision in the ESPP plan, an additional 350,000 shares of the Company's common stock became available for future issuance. As of December 31, 2018, a total of 1,893,620 shares of common stock have been authorized and 1,510,518 shares of common stock are available for future issuance under the Company's ESPP.

In accordance with the terms of the Merger Agreement (see Note 16 Potential Business Combination with Mereo BioPharma), on February 23, 2019, the Board of Directors determined that the offering period ending on February 28, 2019 would be the final offering period under the ESPP and that, contingent upon the consummation of the Merger, the ESPP would terminate immediately prior to the effective time of the Merger.

During the years ended December 31, 2018, 2017 and 2016, employees purchased an aggregate of 45,352 shares, 88,982 shares and 111,633 shares under the Company's ESPP, respectively, at a weighted-average price per share of $1.97, $7.16 and $8.21, respectively. During the years ended December 31, 2018, 2017 and 2016, the weighted-average fair value per share granted under the Company's ESPP were $1.54, $3.39 and $5.06, respectively.

Stock-Based Compensation

Employee stock-based compensation expense was calculated based on awards expected to vest and has been reduced for estimated forfeitures. Forfeitures are estimated at the time of grant and revised, if necessary, in subsequent periods if actual forfeitures differ from those estimates.

Stock-based compensation expense recognized was as follows:

| | Year Ended December 31, | | |
|---|---|---|---|
| (In thousands) | 2018 | 2017 | 2016 |
| Research and development | $3,380 | $4,886 | $5,892 |
| General and administrative | 3,397 | 4,522 | 5,239 |
| Restructuring charges | 65 | 6 | — |
| Total | $6,842 | $9,414 | $11,131 |

As of December 31, 2018, the Company had $4.3 million, $0.8 million and $2,000 of unrecognized compensation expense related to unvested stock options, RSUs and ESPP, respectively, which are expected to be recognized over an estimated weighted-average period of 2.5 years, 1.0 years and 0.2 years, respectively.

Fair Value Disclosures

The fair value of stock options granted and purchases under the Company's ESPP is estimated using the Black-Scholes option pricing model.

The fair value of stock options granted was estimated as of the grant date using the following assumptions:

| | Year Ended December 31, | | |
|---|---|---|---|
| | 2018 | 2017 | 2016 |
| Weighted-average volatility | 78.1% | 75.8% | 71.9% |
| Weighted-average expected term (years) | 6.2 | 6.2 | 5.8 |
| Risk-free interest rate | 2.6% | 2.2% | 1.5% |
| Expected dividend yield | — | — | — |

The fair value of stock purchase rights granted under the Company's ESPP was estimated using the following assumptions:

| | Year Ended December 31, | | |
|---|---|---|---|
| | 2018 | 2017 | 2016 |
| Weighted-average volatility | 66.5%–93.7% | 54.8%–93.7% | 45.4%–104.5% |
| Weighted-average expected term (years) | 0.5 | 0.5 | 0.5 |
| Risk-free interest rate | 1.10%–2.28% | 0.77%–1.10% | 0.26%–0.50% |
| Expected dividend yield | — | — | — |

Volatility

Since the Company has limited information on the volatility of its common stock due to no significant trading history, the expected stock price volatility was calculated based on a blend of the historical volatilities of the Company's own stock and of the common stock of comparable publicly traded biopharmaceutical companies over a period equal to the expected term of the stock option grants. The comparable companies were chosen based on their similar size, stage in the life cycle, and financial leverage to the Company.

Expected Term

The Company has very limited historical information to develop reasonable expectations about future exercise patterns and post-vesting employment termination behavior for its stock-option grants. As such, the expected term was estimated using the simplified method.

Risk-Free Rate

The risk-free interest rate assumption is based on the zero-coupon U.S. Treasury instruments on the date of grant with a maturity date consistent with the expected term of the Company's stock option grants.

Expected Dividend Yield

To date, the Company has not declared or paid any cash dividends and does not have any plans to do so in the future. Therefore, the Company used an expected dividend yield of zero.

Common Stock Issuance under At-the-Market Agreement

Pursuant to a sales agreement (the "ATM Agreement") with Cantor Fitzgerald & Co. ("Cantor Fitzgerald"), the Company sold 355,821 and 388,166 shares for the years ended December 31, 2017 and 2016, respectively, at a weighted average price per share of $4.93 and $12.59, respectively. The Company received net proceeds of $1.7 million and $4.7 million, net of offering costs, for the years ended December 31, 2017 and 2016, respectively. The shares were issued under the Company's shelf registration statement on Form S-3 (File No. 333-204914) filed with the SEC in June 2015.

In May 2018, the Company filed a new shelf registration statement on Form S-3 (File No. 333-225225) which permits the issuance and sale of up to a maximum aggregate offering price of $30.0 million of the Company's common stock that may be issued and sold under the ATM Agreement with Cantor Fitzgerald in one or more at-the-market offerings.

Following the effectiveness of the new shelf registration statement on Form S-3 (File No. 333-225225) in June 2018, no additional securities covered by the prior shelf registration statement on Form S-3 (File No. 333-204914) shall be offered or sold. For the year ended December 31, 2018, the Company has not sold any securities under the new shelf registration statement.

Public Offering of Common Stock

On August 23, 2016, the Company closed the sale of an aggregate of 6,325,000 shares of its common stock, at a public offering price of $10.00 per share. The shares were issued pursuant to a prospectus supplement filed with the SEC on August 17, 2016, and related prospectus, pursuant to the Company's shelf registration statement on Form S-3 filed on June 12, 2015. The Company received net offering proceeds of approximately $59.2 million, net of underwriting discounts and commissions and offering costs.

12. Restructuring Charges

2018 Restructuring

In connection with the proposed Merger, on December 1, 2018, the Company's Board of Directors approved a restructuring plan to reduce the Company's workforce by 75%. Under the 2018 restructuring plan, the Company recorded $1.9 million of restructuring charges consisting of one-time severance payments and other employee related costs, and other charges during the fourth quarter of 2018. Restructuring charges are included in operating expenses in the statement of operations. The restructuring plan is ongoing and the Company expects to complete the actions associated with the restructuring in the first quarter of 2019.

The following table provides a summary of restructuring activity during the fourth quarter of 2018 and the related liabilities recorded in the accrued liabilities in the balance sheet. The Company expects to pay out its restructuring liability by the first quarter of 2019.

| (In thousands) | Employee Severance and Other Costs |
|---|---|
| Balance as of December 31, 2017 | $ 6 |
| Costs incurred | 1,851 |
| Less cash payments | (572) |
| Less non-cash settlements | (65) |
| Balance as of December 31, 2018 | $ 1,220 |

2017 Restructuring

On April 24, 2017, the Company's Board of Directors approved a restructuring plan to reduce operating costs and better align its workforce with the needs of its business following the Company's announcements that its Phase II "YOSEMITE" clinical trial of demcizumab did not meet its primary endpoint and would be discontinued, its Phase II "PINNACLE" clinical trial of tarextumab did not meet its endpoints, its partner Bayer had decided not to exercise its option to license vantictumab and ipafricept, and enrollment would be discontinued in the Phase Ib clinical trial of brontictuzumab. The restructuring plan provided for a 48% reduction in the Company's workforce. Under the 2017 restructuring plan, the Company recorded $2.5 million in restructuring charges consisting of one-time severance payments and other employee related costs, and other charges during the year ended December 31, 2017. Restructuring charges are included in operating expenses in the statement of operations. The Company has substantially completed this plan and paid the restructuring cost at the end of the fourth quarter of 2017. No charges were recorded in the periods after December 31, 2017.

13. Income Taxes

For the year ended December 31, 2018, the Company recorded an income tax benefit of $0.4 million in the statement of operations as a result of a lapse of statute of limitations on uncertain tax positions. For the year ended December 31, 2017, the Company recorded an income tax benefit of $1.1 million due to an Alternative Minimum Tax (“AMT”) refundable credit as a result of the Tax Cuts and Jobs Act (“Tax Act”), enacted on December 22, 2017. For the year ended December 31, 2016, the Company recorded an income tax provision of $14,000 due to interest on uncertain tax positions.

Loss before income taxes for the years ended December 31, 2018, 2017 and 2016 was from the United States.

The components of the income tax provision (benefit) are as follows:

| | Year Ended December 31, | | |
|---|---|---|---|
| (In thousands) | 2018 | 2017 | 2016 |
| Current: | | | |
| Federal | $(383) | $(1,084) | $ 13 |
| State | 1 | 1 | 1 |
| Total | (382) | (1,083) | 14 |
| Deferred: | | | |
| Federal | — | — | — |
| State | — | — | — |
| Total | — | — | — |
| Income tax provision (benefit) | $(382) | $(1,083) | $ 14 |

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

| | Year Ended December 31, | | |
|---|---|---|---|
| | 2018 | 2017 | 2016 |
| Tax at statutory federal rate | 21 % | 35 % | 35 % |
| State tax—net of federal benefit | 9 % | 1 % | 1 % |
| Tax credits | 18 % | 12 % | 8 % |
| Stock compensation | (25)% | (7 )% | (2 )% |
| Change in valuation allowance | (13)% | 90 % | (42 %) |
| Transaction costs | (4 )% | — | — |
| Impact of corporate rate change on deferred taxes | — | (129)% | — |
| Other | (1 )% | 1 % | — |
| Income tax (provision) benefit | 5 % | 3 % | — % |

Net deferred tax assets as of December 31, 2018 and 2017 consist of the following:

| | Year Ended December 31, | |
|---|---|---|
| (In thousands) | 2018 | 2017 |
| Deferred tax assets: | | |
| Net operating loss carryforwards | $63,011 | $54,931 |
| Accruals | 733 | 643 |
| Tax credit carryovers | 65,719 | 63,406 |

| | | |
|---|---|---|
| Deferred revenue | 778 | 30,259 |
| Other | 3,049 | 3,643 |
| Gross deferred tax assets | 133,290 | 152,882 |
| Deferred tax liability | — | — |
| Valuation allowance | (133,290) | (152,882) |
| Net deferred tax assets | $— | $— |

The valuation allowance decreased by $19.6 million and $32.1 million for the years ended December 31, 2018 and 2017, respectively. The tax benefit of deductible temporary differences or carryforwards is recorded as a deferred tax asset to the extent that management assesses the realization is “more likely than not.” Future realization of the tax benefit ultimately depends on the existence of sufficient taxable income within the period available under the tax law. At December 31, 2018 and 2017, the Company has set up valuation allowances against all federal and state deferred tax assets because based on all available evidence, these deferred tax assets are not more likely than not to be realizable.

On December 22, 2017, the Tax Act was signed into law making significant changes to the Internal Revenue Code. Changes included the reduction of the federal corporate income tax rate from 35% to 21% and the repeal of corporate AMT. The Company recorded $1.1 million as income tax benefit in the fourth quarter of 2017, the period in which the legislation was enacted. The company expects a portion of the AMT to be refunded in the following 12 months.

On December 22, 2017, SEC Staff Accounting Bulletin No. 118 (SAB 118) was issued to address the application of US GAAP in situations when a registrant does not have the necessary information available, prepared, or analyzed (including computations) in reasonable detail to complete the accounting for certain income tax effects of the Act. The impact of the Act was finalized during the year ended December 31, 2018, and no change was made from the previously reported provisional amount.

At December 31, 2018, the Company had federal net operating loss carryforwards related to the 2018 tax year, amounting to $39.1 million which carryforward indefinitely and $228.6 million which begin to expire in 2023. At December 31, 2018, the Company had state net operating loss carryforwards of $97.2 million, which begin to expire in 2028, if not utilized. At December 31, 2018, the Company also had federal and California research and development credit carryforwards aggregating approximately $25.4 million and $19.8 million, respectively. The federal credits will expire in 2025, if not utilized. California research and development credits have no expiration date. At December 31, 2018, the Company also had federal orphan drug credit and AMT carryforwards of approximately $39.3 million and $1.5 million, respectively. The federal orphan drug credits will begin to expire in 2034, if not utilized.

Under Sections 382 and 383 of Internal Revenue Code of 1986, as amended (Code), if a corporation undergoes an “ownership change,” the corporation’s ability to use its pre-change net operating loss carryforwards and other pre-change tax attributes, such as research tax credits, to offset its post-change income and taxes may be limited. In general, an “ownership change” occurs if there is a cumulative change in our ownership by “5% shareholders” that exceeds 50 percentage points over a rolling three-year period. Similar rules may apply under state tax laws. The Company in the past experienced an ownership change which has impacted its ability to fully realize the benefit of these net operating loss carryforwards. If the Company experiences additional ownership changes as a result of future transactions in its stock, then the Company may be further limited in its ability to use its net operating loss carryforwards and other tax assets to reduce taxes owed on the net taxable income that the Company earns. Any such limitations on the ability to use its net operating loss carryforwards and other tax assets could adversely impact our business, financial condition and operating results.

The Company recognizes the financial statements effects of a tax position when it is more likely than not, based on technical merits, that the position will be sustained upon examination.

A reconciliation of the Company’s unrecognized tax benefits is as follows:

| | December 31, | | |
|---|---|---|---|
| (In thousands) | 2018 | 2017 | 2016 |
| Balance at beginning of year | $16,658 | $14,260 | $10,022 |
| Increase related to current year tax provision | 628 | 2,398 | 4,238 |
| Increase related to prior year tax provision | — | — | — |
| Decrease related to prior year tax provision | (297) | — | — |
| Balance at end of year | $16,989 | $16,658 | $14,260 |

The unrecognized tax benefits, if recognized and in absence of full valuation allowance, would impact the income tax provision by $16.2 million and $15.9 million as of December 31, 2018 and 2017, respectively. As of December 31, 2018, the Company does not believe that it is reasonably possible that its unrecognized tax benefits would significantly change in the following 12 months.

The Company has elected to include interest and penalties as a component of tax expense. The Company recorded $15,000 and $14,000 of interest and penalties for the years ended December 31, 2017 and 2016, respectively. The Company recorded an income tax benefit of $86,000 as a result of lapse of statute of limitations for the year ended December 31, 2018. The Company recorded a liability for interest and penalties of $86,000 as of December 31, 2017. There is no liability recorded for interest and penalties as of December 31, 2018.

The Company files federal and state income tax returns in the U.S. and California. Tax years from 2004 forward remain open to examination due to the carryover of net operating losses and other tax attributes.

14. Net Loss per Common Share

The following outstanding common stock equivalents were excluded from the computation of diluted net loss per common share for the periods presented because including them would have been antidilutive:

| | Year Ended December 31, | | |
|---|---|---|---|
| (In thousands) | 2018 | 2017 | 2016 |
| Options to purchase common stock | 4,145 | 5,217 | 4,325 |
| RSUs | 306 | 880 | 576 |
| | 4,451 | 6,097 | 4,901 |

15. Selected Quarterly Financial Data (Unaudited)

Selected quarterly results from operations for the years ended December 31, 2018 and 2017 are as follows:

| | 2018 Quarter Ended | | | |
|---|---|---|---|---|
| (In thousands, except per share amounts) | March 31 | June 30 | September 30 | December 31 |
| Total revenue | $7,849 | $6,870 | $ 19,518 | $ 10,184 |
| Operating expenses | 13,781 | 11,758 | 13,727 | 15,200 |
| Net income (loss) | (5,574 ) | (3,976 ) | 6,115 | (4,666 ) |
| Basic and diluted net income (loss) per common share | $(0.15 ) | $(0.10 ) | $ 0.16 | $ (0.12 ) |

| | 2017 Quarter Ended |
|---|---|
| (In thousands, except per share amounts) | June 30 |

| | March 31 | | September 30 | December 31 |
|---|---|---|---|---|
| Total revenue | $6,213 | $6,195 | $5,106 | $20,640 |
| Operating expenses | 28,971 | 21,630 | 16,131 | 12,395 |
| Net loss | (22,608) | (15,225) | (10,692) | 9,463 |
| Basic and diluted net income (loss) per common share | $(0.61) | $(0.40) | $(0.28) | $0.25 |

16. Potential Business Combination with Mereo BioPharma

On December 5, 2018, the Company entered into an Agreement and Plan of Merger and Reorganization (the “Merger Agreement”) with Mereo BioPharma Group plc, a public limited company incorporated under the laws of England and Wales (“Mereo”), Mereo US Holdings Inc., a Delaware corporation and a wholly-owned subsidiary of Mereo (“HoldCo”), and Mereo MergerCo One Inc., a Delaware corporation and an indirect wholly-owned subsidiary of Mereo (“Merger Sub”), pursuant to which, among other matters, and subject to the satisfaction or waiver of the conditions set forth in the Merger Agreement, Merger Sub will merge with and into OncoMed, with OncoMed surviving the merger as a wholly owned subsidiary of HoldCo, and an indirect wholly-owned subsidiary of Mereo (the “Merger”). The respective boards of directors of OncoMed and Mereo have each unanimously approved the Merger Agreement. The parties expect the Merger will be completed in the second quarter of 2019.

17. Subsequent Events

In January 2019, the Company signed an agreement to sublease a specified portion of the Company's office facility located in Redwood City, California. The sublease has a term of 12 months through the end of 2019. The aggregate sublease proceeds for the term of the lease are approximately $0.8 million.

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

Management, with the participation of our principal executive and financial officers, evaluated the effectiveness of our disclosure controls and procedures (as defined in Rule 13a-15(e) or 15d-15(e) under the Securities Exchange Act of 1934 (the "Exchange Act") as of the end of the period covered by this Annual Report on Form 10-K. In designing and evaluating the disclosure controls and procedures, management recognized that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving the desired control objectives. In addition, the design of disclosure controls and procedures must reflect the fact that there are resource constraints and that management is required to apply its judgment in evaluating the benefits of possible controls and procedures relative to their costs.

Based on that evaluation, our principal executive and financial officers concluded that our disclosure controls and procedures were effective as of December 31, 2018 to provide reasonable assurance that information we are required to disclose in reports that we file or submit under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in SEC rules and forms, and that such information is accumulated and communicated to our management, including our principal executive and financial officers, as appropriate, to allow timely decisions regarding required disclosure.

Management's Annual Report on Internal Control over Financial Reporting

Management is responsible for establishing and maintaining adequate internal control over financial reporting, as defined in Rule 13a-15(f) of the Exchange Act. Management conducted an evaluation of the effectiveness of our internal control over financial reporting based on the framework in Internal Control—Integrated Framework (2013) set forth by the Committee of Sponsoring Organizations of the Treadway Commission.

Based on this evaluation, management concluded that our internal control over financial reporting was effective as of December 31, 2018. Management reviewed the results of its assessment with our Audit Committee. The effectiveness of our internal control over financial reporting as of December 31, 2018 has been audited by Ernst & Young LLP, an independent registered public accounting firm, as stated in its report, which appears in this Item under the heading "Report of Independent Registered Public Accounting Firm."

Changes in Internal Control over Financial Reporting

There were no changes in our internal control over financial reporting that occurred during the quarter ended December 31, 2018 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Stockholders and Board of Directors of OncoMed Pharmaceuticals, Inc.

Opinion on Internal Control over Financial Reporting

We have audited OncoMed Pharmaceuticals, Inc.'s internal control over financial reporting as of December 31, 2018, based on criteria established in Internal Control—Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework)(the COSO criteria). In our opinion, OncoMed Pharmaceuticals, Inc. (the Company) maintained, in all material respects, effective internal control over financial reporting as of December 31, 2018, based on the COSO criteria.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the balance sheets of OncoMed Pharmaceuticals, Inc. as of December 31, 2018 and 2017, the related statements of operations, comprehensive loss, stockholders' equity (deficit) and cash flows for each of the three years in the period ended December 31, 2018, and the related notes and our report dated March 7, 2019 expressed an unqualified opinion thereon.

Basis for Opinion

The Company's management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting included in the accompanying Management's Annual Report on Internal Control over Financial Reporting. Our responsibility is to express an opinion on the Company's internal control over financial reporting based on our audit. We are a public accounting firm registered with the 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 audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects.

Our audit included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, testing and evaluating the design and operating effectiveness of internal control based on the assessed risk, and performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

Definition and Limitations of Internal Control Over Financial Reporting

A company's internal control over financial reporting is a process designed 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. A company's internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) 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. Also, 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.

/s/ Ernst & Young LLP

Redwood City, California

March 7, 2019

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Item 9B. Other Information

None.

PART III

Item 10. Directors, Executive Officers and Corporate Governance

Board of Directors

Our Board is divided into three classes. Each class consists, as nearly as possible, of one-third of the total number of directors, and each class has a three-year term. Unless the Board determines that vacancies (including vacancies created by increases in the number of directors) shall be filled by the stockholders, and except as otherwise provided by law, vacancies on the Board may be filled only by the affirmative vote of a majority of the remaining directors. A director elected by the Board to fill a vacancy (including a vacancy created by an increase in the number of directors) shall serve for the remainder of the term of the class of directors in which the vacancy occurred and until such director's successor is elected and qualified.

The Board currently consists of seven seated directors, divided into the following three classes:

- Class I directors: Michael S. Wyzga, Rick E Winningham and Perry A. Karsen, whose current terms will expire at the annual meeting of stockholders to be held in 2020;
- Class II directors: John Lewicki, Ph.D., whose current term will expire at the annual meeting of stockholders to be held in 2021; and
- Class III directors: Jack W. Lasersohn, J.D., Deepa R. Pakianathan, Ph.D. and Jonathan D. Root, M.D., whose current terms will expire at the Annual Meeting.

The following table sets forth information for our board or directors with respect to their position/office held with the Company and their ages as of December 31, 2018.

| Name | Age | Position/Office Held With the Company | Director Since |
|---|---|---|---|
| Class I Directors whose terms expire at the 2020 Annual Meeting of Stockholders | | | |
| Perry A. Karsen[1][3][4] | 63 | Executive Chairman | 2016 |
| Rick E Winningham[2][4] | 59 | Director | 2015 |
| Michael S. Wyzga[1] | 63 | Director | 2013 |
| Class II Directors whose terms expire at the 2021 Annual Meeting of Stockholders | | | |
| John A. Lewicki, Ph.D. | 67 | Director, President and Chief Executive Officer | 2018 |
| Class III Directors whose terms expire at the Annual Meeting of Stockholders | | | |
| Jack W. Lasersohn, J.D.[3][4] | 66 | Director | 2005 |
| Deepa R. Pakianathan, Ph.D.[1][2][4] | 54 | Director | 2008 |
| Jonathan D. Root, M.D.[2] | 59 | Director | 2004 |

(1) Member of the audit committee.
(2) Member of the compensation committee.
(3) Member of the nominating and corporate governance committee.
(4) Member of the business development and strategy committee.

Perry A. Karsen has served as a director on our board of directors since January 2016 and as Executive Chairman of the board of directors since January 2018. Mr. Karsen was the Chief Executive Officer of Celgene Cellular Therapeutics from May 2013 until his retirement from Celgene Corporation at the end of 2015. Mr. Karsen held the position of Executive Vice President and Chief Operations Officer at Celgene Corporation from July 2010 to May 2013 and he served as Senior Vice President and Head of Worldwide Business Development at Celgene and

President of Asia/Pacific Region, from May 2004 until February 2009. Mr. Karsen was the President and Chief Executive Officer of Pearl Therapeutics, a privately held biotechnology company subsequently acquired by AstraZeneca, from February 2009 until July 2010. In addition, Mr. Karsen held executive positions at Human Genome Sciences, Bristol-Myers Squibb, Genentech and Abbott Laboratories earlier in his career. He also was a General Partner at Pequot Ventures from 2000 to 2003, focusing on investments in biotechnology and medical devices. Mr. Karsen currently serves on the Board of Directors of the following publicly listed companies: Jounce Therapeutics since January 2016 where he is a member of the audit, compensation and nominating and governance committees, Voyager Therapeutics since July 2015 where he is a member of the compensation, audit and nominating and governance committees, and Intellia Therapeutics since 2016 where he is a member of the compensation and nominating and governance committees. He also currently serves on the Board of Directors of The Gladstone Foundation, a private company. He is a past member of the Board of Directors of the following publicly listed companies: Agios Pharmaceuticals from 2011 to 2015, Alliqua Biomedical from 2014 to 2015 and Navidea Therapeutics from 2014 to 2015, where he was a member of the audit committee. Mr. Karsen is also a past member of the Board of Directors and the Executive Committee of the Biotechnology Industry Organization (BIO) and the Board of Directors of the Alliance for Regenerative Medicine (ARM), each a private company. Mr. Karsen received a B.S. in Biological Sciences from the University of Illinois, Urbana, a Master of Arts in Teaching Biology from Duke University, and an MBA from the Kellogg School of Management at Northwestern University.

Mr. Karsen has been chosen to serve on our board of directors due to his senior management experience at biopharmaceutical and biotechnology companies and his current and past experience on boards of directors of multiple public and private biotechnology, pharmaceutical and medical device companies.

Rick E Winningham has served as a director on our board of directors since June 2015. Mr. Winningham has served as Chief Executive Officer and Chairman of the board of directors of Theravance Biopharma since August 2014 and as a member of the Theravance Biopharma board of directors since July 2013. He is also a member of Theravance BioPharma's science and technology committee. From 2001 to 2014 he served as Chief Executive Officer of Theravance, Inc., during which time the company formed a transformational alliance with GlaxoSmithKline, completed a successful initial public offering, and advanced a number of products to commercialization before separating into two independent publicly traded companies, Theravance, Inc. (now called Innoviva, Inc.) and Theravance Biopharma. Prior to joining Theravance, Inc., Mr. Winningham served as President, Bristol-Myers Squibb (BMS) Oncology/Immunology/Oncology Therapeutics Network (OTN) from 1997 to 2001, and also as President of Global Marketing from 2000 to 2001. In addition to operating responsibility for U.S. Oncology/Immunology/OTN, Mr. Winningham had full responsibility for Global Marketing in the Cardiovascular, Infectious Disease, Immunology, Oncology/Metabolics and GU/GI/Neuroscience therapeutic areas. Over a fifteen-year period with BMS and its predecessor, Bristol-Myers, Mr. Winningham held various U.S. and global management positions. During his tenure with BMS, he was associated with the development and commercialization of several major pharmaceutical products, such as Taxol®, Paraplatin®, Zerit®, Videx®, Reyataz®, and Abilify®. Mr. Winningham has been a member of the Board of Directors of Jazz Pharmaceuticals PLC, a publicly listed company, since May 2010. He is also a past member of the nominating and governance and compensation committees of Jazz Pharmaceuticals. He is also a member of the Board of Directors of the following private companies: California Life Sciences Association since March 2015 and the Biotechnology Innovation Organization (BIO) since February 2014. He holds an M.B.A. from Texas Christian University and a B.S. from Southern Illinois University.

Mr. Winningham has been chosen to serve on our board of directors due to his senior management experience at biopharmaceutical and biotechnology companies and his experience as a member of the boards of directors of multiple public biopharmaceutical companies.

Michael S. Wyzga has served as a director on our board of directors since October 2013. Mr. Wyzga is currently the President of MSW Consulting, Inc., a private company focused on strategic counseling in the life sciences area. From

December 2011 until November 2013, Mr. Wyzga served as President and Chief Executive Officer and a member of the board of directors of Radius Health, Inc., a publicly traded biopharmaceutical company. Prior to that, Mr. Wyzga served in various senior management positions at Genzyme Corporation, a publicly traded global biotechnology company. Mr. Wyzga joined Genzyme in February 1998 and most recently served as Executive Vice President, Finance from May 2003 until November 2011 and as chief financial officer from July 1999 until November 2011. Since October 2018, Mr. Wyzga has served as a member of the board of directors of LogicBio, a publicly traded company, where he is also the chair of the audit committee. Since February 2015, Mr. Wyzga has also served as a member of the board of directors of Exact Sciences Corporation, a publicly traded

medical technology company, where he is also chair of the audit committee. Since February 2016, Mr. Wyzga has also served as Chairman of the board of directors of GenSight Biologics S.A., a publicly traded biopharmaceutical company. Since October 2018, Mr. Wyzga has also served as Chairman of the board of directors of X4 Pharmaceuticals, a privately-held company. Mr. Wyzga also previously served as a member of the board of directors of Idenix Pharmaceuticals, Inc., a publicly traded biotechnology company that was acquired by Merck in August 2014, where he also served as the chair of the audit committee and a member of the compensation committee, Altus Pharmaceuticals, Inc., a publicly traded biopharmaceutical company that ceased operations in November 2009, as a member of the Supervisory Board of Prosensa Holding B.V., a publicly traded biopharmaceutical company, from June 2014 until the Prosensa acquisition by BioMarin Falcon B.V. in December 2014, and Akebia Therapeutics, Inc., a publicly traded biopharmaceutical company, where he was also a member of the compensation committee and chair of the audit committee, from February 2014 until December 2018. He received an M.B.A. from Providence College and a B.S. from Suffolk University.

Mr. Wyzga has been chosen to serve on our board of directors due to his senior management experience at biopharmaceutical and biotechnology companies, his current and past experience on boards of directors of public companies, including his experience as chair of the audit committee at Idenix Pharmaceuticals and Akebia Therapeutics, and his financial expertise.

John A. Lewicki, Ph.D. has served as our Chief Executive Officer and as a director on our board of directors since March 2018 and as our President since January 2018. Dr. Lewicki previously served as a member of the Office of the President from September 2017 until January 2018, as our Executive Vice President, Research and Development from January 2016 until January 2018, as our Executive Vice President and Chief Scientific Officer from December 2009 until January 2016, and as our Senior Vice President, Research and Development from 2004 until December 2009. From 1983 to 2000, Dr. Lewicki served in various capacities at Scios, Inc., a publicly traded biopharmaceutical company that developed drugs for the treatment of cardiovascular, inflammatory and other diseases, including 12 years as its Vice President of Research, in which capacity he managed the company's research organization across diverse therapeutic areas. Dr. Lewicki has authored or coauthored over 80 published papers and book chapters and is listed as an inventor on over 30 issued U.S. patents. Dr. Lewicki received a Ph.D. in Physiology/Pharmacology from the University of California, San Diego.

Dr. Lewicki has been chosen to serve on our board of directors due to his role as our President and Chief Executive Officer, his many years of experience in management positions at the Company and Scios, Inc., and his significant scientific expertise in biotechnology.

Jack W. Lasersohn, J.D. has served as a director on our board of directors since July 2005 and served as Lead Director from August 2013 until January 2018. Since 1989, Mr. Lasersohn has been a General Partner or Manager of The Vertical Group, a private venture capital firm that is focused on the fields of medical technology and biotechnology. Prior to that time, Mr. Lasersohn was a Vice President and then Director of the venture capital division of F. Eberstadt & Co., Inc., an investment bank and The Vertical Group's predecessor. Mr. Lasersohn has served on the board of directors of over 25 publicly traded and privately held medical or biotechnology companies and served on the Executive Committee of the Board of the National Venture Capital Association until April 2012. From 1995 until May 2016, Mr. Lasersohn served on the board of directors of the Masimo Corporation, a publicly traded medical technology company that develops noninvasive patient monitoring products, where he also served as a member of its compensation committee and as chairman of its nominating and corporate governance committee. Mr. Lasersohn served on the strategic team of the Entrepreneur In Residence program at the U.S. Food and Drug Administration pursuant to an appointment by the Office of the President, and has served as a panel member of the MEDCAC Panel pursuant to appointment by CMS. Mr. Lasersohn received a B.S. in Physics from Tufts University, an M.A. from The Fletcher School of Law and Diplomacy, and a J.D. from the Yale Law School.

Mr. Lasersohn has been chosen to serve on our board of directors due to his long experience as a venture capital investor and as a member of the boards of directors of multiple public and private medical device and biotechnology companies.

Deepa R. Pakianathan, Ph.D. has served as a director on our board of directors since December 2008. Since 2001, Dr. Pakianathan has been a Managing Member at Delphi Ventures, a venture capital firm focused on biotechnology and medical device investments, and leads the firm's biotechnology investment activities. From 1998 to 2001, Dr. Pakianathan was a senior biotechnology banker at JPMorgan, a global investment bank, from 1997 to 1998, she was a research analyst covering biotech at Genesis Merchant Group and from 1993 to 1997 she was a post-doctoral research scientist at Genentech. Dr. Pakianathan serves on the boards of directors of Alder

Biopharmaceuticals, Inc., a publicly traded biopharmaceutical company, where she serves as a member of its compensation committee, Karyopharm Therapeutics, Inc., a publicly traded biopharmaceutical company, where she serves as a member of its audit committee and chair of its compensation committee, and Calithera Biosciences, Inc., a publicly traded biopharmaceutical company, where she serves as a member of its audit committee and chair of its nominating and governance committee. From 2004 to 2016, Dr. Pakianathan served on the board of directors of Alexza Pharmaceuticals, Inc., a publicly traded biopharmaceutical company, where she also served as a member of its governance, nomination and compensation committee. Dr. Pakianathan received a B.Sc. from the University of Bombay, India, a M.Sc. from The Cancer Research Institute at the University of Bombay, India, and an M.S. and Ph.D. from Wake Forest University.

Dr. Pakianathan has been chosen to serve on our board of directors due to her experience as a venture capital investor in, and director of, multiple biotechnology companies, as well as her experience as a biotechnology investment banker, research analyst and research scientist.

Jonathan D. Root, M.D. has served as a director on our board of directors since August 2004. Since 1998, Dr. Root has been a Managing Member at U.S. Venture Partners, a venture capital firm. Prior to joining U.S. Venture Partners, Dr. Root was on the faculty and clinical staff at The New York Hospital-Cornell Medical Center in New York City, where he served as Assistant Professor of Neurology and Director of the Neurology-Neurosurgery Special Care Unit. Dr. Root currently serves on the boards of directors of several privately held healthcare technology companies. Dr. Root received an A.B. in Economics from Dartmouth College, an M.D. from the University of Florida College of Medicine and an M.B.A. from Columbia University.

Dr. Root has been chosen to serve on our board of directors due to his medical expertise and his clinical experience, and his experience as a venture capital investor in, and director of, multiple biotechnology companies.

Executive Officers

The following table sets forth information for our executive officers with respect to their position/office held with the Company and their ages as of December 31, 2018.

| Name | Age | Position/Office Held With the Company |
|---|---|---|
| John A. Lewicki, Ph.D. | 67 | President and Chief Executive Officer |
| Alicia J. Hager, J.D., Ph.D. | 49 | Senior Vice President and General Counsel |
| Robert Stagg, Pharm.D. | 60 | Senior Vice President, Clinical Research and Development |
| Yvonne Li | 59 | Vice President, Finance, Controller and Administration |

John A. Lewicki, Ph.D. has served as our President since January 2018 and as Chief Executive Officer and director on our board of directors since March 2018. Please see Dr. Lewicki’s biography set forth above in the section entitled “Directors.”

Alicia J. Hager, J.D., Ph.D. has served as our Senior Vice President and General Counsel since January 2017, and previously served as our Vice President and General Counsel from December 2012, our Vice President, Legal Affairs from July 2010 and our Chief Patent Counsel from November 2008. From June 2008 to October 2008, Dr. Hager served as our Senior Patent Counsel. From October 2002 to May 2008, Dr. Hager was an associate at the law firm of Morrison & Foerster LLP, where she served as intellectual property counsel for biotech and pharmaceutical clients. Prior to Morrison & Foerster LLP, Dr. Hager was a patent agent at the law firm of Heller Ehrman White & McAuliffe

LLP. Dr. Hager received an A.B. in Chemistry from Occidental College, an A.M. and Ph.D. in Chemistry from Harvard University and a J.D. from Stanford Law School.

Robert Stagg, Pharm.D. has served as our Senior Vice President, Clinical Research and Development since December 2016. In addition, he previously served as our Vice President of Clinical Research from January 2009 to December 2016, and prior to that as our Vice President of Clinical Research and Regulatory from September 2007 to January 2009. Prior to joining OncoMed, Dr. Stagg served as Vice President of Regulatory and Drug Safety at PDL BioPharma, and he previously served in a variety of clinical research capacities at various pharmaceutical and biotechnology companies. Dr. Stagg received his Pharm.D. from the University of the Pacific, and he subsequently did his residency and Oncology fellowship at the University of California, San Francisco (UCSF). Subsequently, he

joined the faculty at UCSF where he was an Assistant Clinical Professor from July 1983 to January 1991. While at UCSF his primary focus was oncology clinical research.

Yvonne Li has served as our Vice President, Finance, Controller and Administration since March 2014, and previously served as our Vice President, Controller from December 2012, our Senior Director, Controller from January 2010, and our Director, Controller from April 2007. Prior to joining OncoMed, Ms. Li served as Director of Accounting at Anita Borg Institute and held various positions at Actel Corporation. Ms. Li received a Master of Business Administration with a concentration in Finance from San Francisco State University. Ms. Li is a member of the American Institute of Certified Public Accountants.

Changes in Directors and Executive Officers

There following are changes in our directors and executive officers for the year ended December 31, 2018.

- On January 1, 2018, Paul Hastings informed our Board of his decision to resign, effective immediately, as a member and Chairman of the Board and as the Company's President and Chief Executive Officer due to personal reasons. Following Mr. Hastings' resignation, on January 3, 2018, the Board decreased the authorized number of directors on the Board from nine to eight directors, thereby eliminating the vacancy left as a result of Mr. Hastings' resignation. In addition, the Board appointed Perry Karsen as Chairman of the Board, effective immediately. As a result of Mr. Karsen's appointment as Chairman of the Board, the Board also determined that Jack W. Lasersohn would no longer serve as Lead Director of the Board, effective immediately. Mr. Lasersohn will continue to serve as a member of the Board.
- On January 31, 2018, Dr. Lewicki, at that time the Company's Executive Vice President, Research and Development, and a member of the Office of the President, was appointed by our Board as the Company's President. On March 16, 2018, our Board appointed Dr. Lewicki as the Company's President and Chief Executive Officer.
- On January 28, 2018, Sunil Patel, the Company's Executive Vice President and Chief Financial Officer, Principal Accounting Officer, and a member of the Office of the President at the time, notified the Company of his intention to resign from the Company, effective on or about March 9, 2018.
- On March 16, 2018, our Board appointed Ms. Li, the Company's Vice President, Finance, Controller and Administration, as the Company's principal accounting officer and principal financial officer, effective immediately.
- Dr. Lewicki and Denise Scots-Knight, Ph.D., were nominated and elected at the annual meeting of stockholders on June 22, 2018 to serve as Class II directors. Each elected director will hold office from the date of his or her election by the stockholders until the third subsequent annual meeting of stockholders or until his or her successor is elected and has been qualified, or until such director's earlier death, resignation or removal.
- Laurence Lasky did not stand for reelection as a member of our Board of Directors at the 2018 annual meeting of stockholders. As a result, he ceased serving as a non-employee director in June 2018.
- On September 28, 2018, Dr. Scots-Knight informed our Board of her decision to resign, effective immediately, as a member of our Board due to other professional commitments.
- The Company terminated the employment of Austin Gurney, Ph.D., the Company's Chief Scientific Officer and Senior Vice President, Research, effective as of December 21, 2018 in connection with the reduction in force approved by our Board on December 1, 2018.

Committees of the Board

Audit Committee

Our audit committee oversees our corporate accounting and financial reporting process. Among other matters, the audit committee:

- appoints our independent registered public accounting firm;

- evaluates the independent registered public accounting firm's qualifications, independence and performance;
- determines the engagement of the independent registered public accounting firm;
- reviews and approves the scope of the annual audit and the audit fee;
- discusses with management and the independent registered public accounting firm the results of the annual audit and the review of our quarterly financial statements;
- approves the retention of the independent registered public accounting firm to perform any proposed permissible audit and non-audit services;
- monitors the rotation of partners of the independent registered public accounting firm on our engagement team as required by law;
- is responsible for reviewing our financial statements and our management's discussion and analysis of financial condition and results of operations to be included in our annual and quarterly reports to be filed with the SEC;
- reviews our critical accounting policies and estimates;
- reviews related party transactions; and
- annually reviews the audit committee charter and the committee's performance.

During 2018, the members of our audit committee were Messrs. Wyzga and Karsen and Dr. Pakianathan, with Mr. Wyzga serving as the chairperson. Each member of our audit committee meets the requirements for financial literacy under the applicable rules and regulations of the SEC and Nasdaq. Our Board has determined that Mr. Wyzga is an audit committee financial expert as defined under the applicable rules of the SEC and has the requisite financial sophistication as defined under the applicable rules and regulations of Nasdaq. Our Board has determined that each of Messrs. Wyzga and Karsen and Dr. Pakianathan are independent under the applicable rules of Nasdaq and under the applicable rules of the SEC. The audit committee operates under a written charter that satisfies the applicable standards of the SEC and Nasdaq. A copy of the audit committee charter is available to security holders at http://www.oncomed.com/invest/governance.cfm.

Compensation Committee

Our compensation committee reviews and recommends policies relating to compensation and benefits of our officers and employees. The compensation committee reviews and approves corporate goals and objectives relevant to compensation of our Chief Executive Officer and other executive officers, evaluates the performance of these officers in light of those goals and objectives, and sets the compensation of these officers, other than the Chief Executive Officer, based on such evaluations. The Board retains the authority to determine and approve, upon the recommendation of the compensation committee, the compensation of the Chief Executive Officer, unless such authority has been delegated to the compensation committee. Our executive officers submit proposals to the Board regarding our executive and director compensation. The compensation committee also approves grants of stock options and other awards under our stock plans. The compensation committee will review and evaluate, at least annually, the performance of the compensation committee and its members, including compliance of the compensation committee with its charter. During 2018, the members of our compensation committee were Mr. Winningham and Drs. Pakianathan, Scots-Knight and Root, with Mr. Winningham serving as the chairperson. Dr. Scots-Knight left the compensation committee in September 2018 when she resigned from the Board. No current member of our compensation committee has at any time been one of our officers or employees. Each current member of our compensation committee is an independent, outside and non-employee director under the applicable rules and regulations of the SEC, Nasdaq and the Internal Revenue Code of 1986, as amended, relating to compensation committee independence. The compensation committee operates under a written charter that satisfies the applicable standards of the SEC and Nasdaq. A copy of the compensation committee charter is available to security holders at http://www.oncomed.com/invest/governance.cfm.

In 2018, the compensation committee retained Radford, a national executive compensation consulting firm, to conduct market research and analysis on our various executive positions, to assist the committee in developing appropriate incentive plans for our executives on an annual basis, to provide the committee with advice and ongoing

recommendations regarding material executive compensation decisions, and to review compensation proposals of management. In compliance with the disclosure requirements of the SEC regarding the independence of compensation consultants, Radford addressed each of the six independence factors established by the SEC with the compensation committee. Its responses affirmed the independence of Radford on executive compensation matters. Based on this assessment, the compensation committee determined that the engagement of Radford does not raise any conflicts of interest or similar concerns. The compensation committee also evaluated the independence of other outside advisors to the compensation committee, including outside legal counsel, considering the same independence factors and concluded their work for the compensation committee does not raise any conflicts of interest.

Nominating and Corporate Governance Committee

The nominating and corporate governance committee is responsible for making recommendations to our Board regarding candidates for directorships and the size and composition of our Board. In addition, the nominating and corporate governance committee is responsible for overseeing our corporate governance policies and reporting and making recommendations to our Board concerning governance matters. During 2018, the members of our nominating and corporate governance committee were Drs. Lasky and Scots-Knight and Messrs. Lasersohn and Karsen, with Mr. Lasersohn serving as the chairperson of the committee. Dr. Lasky ceased serving as a member of the nominating and corporate governance committee in June 2018 when he ceased serving as a director. Dr. Scots-Knight left the nominating and corporate governance committee in September 2018 when she resigned from the Board. Each current member of our nominating and corporate governance committee is an independent director under the applicable rules and regulations of Nasdaq relating to nominating and corporate governance committee independence. The nominating and corporate governance committee operates under a written charter. A copy of the nominating and corporate governance committee charter is available to security holders at http://www.oncomed.com/invest/governance.cfm.

In recommending candidates for election to the Board, the independent members of the nominating and corporate governance committee may consider the following criteria, among others: diversity of personal and professional background, perspective and experience; personal and professional integrity, ethics and values; experience in corporate management, operations or finance, such as serving as an officer or former officer of a publicly held company, and a general understanding of marketing, finance and other elements relevant to the success of a publicly traded company in today’s business environment; experience relevant to the Company’s industry and with relevant social policy concerns; experience as a board member of another publicly held company; relevant academic expertise or other proficiency in an area of the Company’s operations; practical and mature business judgment, including ability to make independent analytical inquiries; promotion of a diversity of business or career experience relevant to the success of the Company. The Board evaluates each individual in the context of the Board as a whole, with the objective of assembling a group that can best maximize the success of the business and represent stockholder interests through the exercise of sound judgment using its diversity of experience in these various areas.

The nominating and corporate governance committee will consider director candidates recommended by stockholders. For a stockholder to make any recommendation or nomination for election to the Board at an annual meeting, the stockholder must provide notice to the Company, which notice must be delivered to, or mailed and received at, the Company’s principal executive offices not less than 90 days and not more than 120 days prior to the one-year anniversary of the preceding year’s annual meeting; provided, that if the date of the annual meeting is more than 30 days before or more than 60 days after such anniversary date, the stockholder’s notice must be delivered, or mailed and received, not later than 90 days prior to the date of the annual meeting or, if later, the 10th day following the date on which public disclosure of the date of such annual meeting is made. Further updates and supplements to such notice may be required at the times, and in the forms, required under our bylaws. As set forth in our bylaws, submissions must include the name and address of the proposed nominee, information regarding the proposed nominee that is required to be disclosed in a proxy statement or other filings in a contested election pursuant to Section 14(a) under the Exchange Act of 1934, as amended (the “Exchange Act”), information regarding the proposed

nominee's indirect and direct interests in shares of the Company's common stock, and a completed and signed questionnaire, representation and agreement of the proposed nominee. Our bylaws also specify further requirements as to the form and content of a stockholder's notice. We recommend that any stockholder wishing to make a nomination for director review a copy of our bylaws, as amended and restated to date, which is available, without charge, from our General Counsel, at 800 Chesapeake Drive, Redwood City, California 94063.

Business Development and Strategy Committee

On March 1, 2018, the Board designated a special business development and strategy committee of the Board. The business development and strategy committee is responsible for identifying, reviewing, evaluating, and negotiating strategic transactions and other business development opportunities consistent with the Company's corporate strategy. The business development and strategy committee will recommend appropriate strategic transactions and other business development opportunities to the Board. Entry into any such strategic transaction or other business development opportunity will require the review and approval of the Board. During 2018, the members of our business development and strategy committee were Drs. Pakianathan and Scots-Knight and Messrs. Karsen, Lasersohn, and Winningham, with Dr. Pakianathan serving as the chairperson of the committee. Dr. Scots-Knight left the Business Development and Strategy Committee when she resigned from the Board in September 2018.

Code of Ethics and Related Policies

We have adopted a Code of Business Conduct and Ethics that applies to our officers, directors and employees which is available on our website at www.oncomed.com. The Code of Business Conduct and Ethics is intended to qualify as a "code of ethics" within the meaning of Section 406 of the Sarbanes-Oxley Act of 2002 and Item 406 of Regulation S-K. In addition, we intend to promptly disclose (1) the nature of any amendment to our Code of Business Conduct and Ethics that applies to our principal executive officer, principal financial officer, principal accounting officer or controller or persons performing similar functions and (2) the nature of any waiver, including an implicit waiver, from a provision of our code of ethics that is granted to one of these specified officers, the name of such person who is granted the waiver and the date of the waiver on our website in the future.

Section 16(a) Beneficial Ownership Reporting Compliance

Section 16(a) of the Exchange Act requires the Company's directors and executive officers, and persons who own more than 10% of a registered class of the Company's equity securities, to file with the SEC initial reports of ownership and reports of changes in ownership of common stock and other equity securities of the Company. Officers, directors and greater than 10% beneficial owners are required by SEC regulations to furnish the Company with copies of all Section 16(a) forms they file.

To our knowledge, based solely on a review of the copies of such reports furnished to us and written representations that no other reports were required, during the fiscal year ended December 31, 2018, none of our directors, officers or greater than 10% beneficial owners failed to file on a timely basis any reports required by Section 16(a) of the Exchange Act, except with respect to the transactions reported on the Form 5 filed by Dr. Lewicki on February 13, 2019 and Form 5 filed by Ms. Li on February 13, 2019.

Item 11. Executive Compensation

Director Compensation

We have adopted a non-employee director compensation policy, which was last amended on March 1, 2018. We do not provide directors who are our employees with additional compensation for their service as directors.

Under our non-employee director compensation policy, each non-employee director receives an annual retainer of $40,000. Non-employee directors receive additional annual retainers of $10,000 for serving on the audit committee (or $15,000 for serving as the chair of the audit committee), $7,000 for serving on the compensation committee (or $10,000 for serving as the chair of the compensation committee), $5,000 for serving on the nominating and corporate governance committee (or $8,000 for serving as the chair of the nominating and corporate governance committee), and $10,000 for serving on the business development and strategy committee (or $15,000 for serving as the chair of the business development and strategy committee). In addition, for fiscal year 2018, Dr. Lasky received an annual retainer of $7,000 for assuming certain additional responsibilities relating to our scientific strategy (which was pro-rated to $4,000 for his partial service in 2018) and Mr. Karsen received an annual retainer of $7,000 for assuming certain additional responsibilities relating to our business development strategy (which was pro-rated to $583 for his partial service in 2018), in each case as requested by the Board. Retainers are

paid to our non-employee directors quarterly in arrears and are pro-rated for any partial quarter of service. Each non-employee director is granted an annual option under our 2013 Equity Incentive Award Plan (or the "2013 Plan") to purchase 15,000 shares of our common stock on the date of each annual meeting of stockholders, and such option will vest as to 100% of the shares subject thereto upon the earlier of one year following the grant date or the date of the subsequent year's annual meeting of stockholders, subject to the director's continued service to OncoMed through the vesting date. In addition, upon a director's initial appointment or election to our Board, he or she is granted an option under our 2013 Plan to purchase that number of shares equal to 0.1% of our then-outstanding capital stock, and the option vests in three equal annual installments, subject to the director's continued service to OncoMed through the applicable vesting date. The policy also provides that upon a "Change in Control" of OncoMed (as defined in our 2013 Plan), all outstanding equity awards granted under the 2013 Plan or any other equity incentive plan maintained by OncoMed that are held by a non-employee director will become fully vested and/or exercisable. Members of our board of directors are also reimbursed for reasonable travel and other out-of-pocket expenses.

In addition, in February 2018 the Board approved compensation to Mr. Karsen in connection with his appointment as Executive Chairman, effective January 3, 2018, in addition to his existing compensation under our non-employee director compensation policy, consisting of a monthly retainer of $25,000 (or $30,000 for any month in which Mr. Karsen provides more than 85 hours of service). In connection with this appointment, Mr. Karsen was also granted an option to purchase 120,000 shares of our common stock at an exercise price of $2.29 per share and 48,000 restricted stock units ("RSUs"), in each case vesting monthly over six months from January 3, 2018, subject to Mr. Karsen's continued service as Executive Chairman through each vesting date, as well as 22,500 RSUs, which were fully vested at grant.

The following table sets forth information concerning the compensation earned by our non-employee directors during the year ended December 31, 2018.

| Name | Fees Earned or Paid in Cash ($) | Option Awards[1][2] ($) | Stock Awards[1] ($) | Total ($) |
|---|---|---|---|---|
| Perry A. Karsen[3] | 364,750 | 218,142 | 161,445 | 744,337 |
| Jack W. Lasersohn, J.D. | 57,167 | 26,682 | — | 83,849 |
| Laurence Lasky, Ph.D.[4] | 24,857 | 29,621 | — | 54,478 |
| Deepa R. Pakianathan, Ph.D. | 70,750 | 26,682 | — | 97,432 |
| Jonathan D. Root, M.D. | 47,000 | 26,682 | — | 73,682 |
| Denise Scots-Knight, Ph.D.[5] | 45,667 | 26,682 | — | 72,349 |
| Rick E Winningham | 59,167 | 26,682 | — | 85,849 |
| Michael S. Wyzga | 55,000 | 26,682 | — | 81,682 |

(1) Amount reflects the aggregate grant date fair value of restricted stock units and stock options granted during 2018 computed in accordance with ASC Topic 718. The assumptions used in the valuation of these awards are set forth in Note 11 to our Financial Statements included in Part II, Item 8 of this Annual Report on Form 10-K. The grant date fair value of these awards is determined for financial statement reporting purposes and does not correspond to the actual value that the directors will receive from the awards.

(2) The following options held by our non-employee directors were outstanding as of December 31, 2018, no other equity awards held by our non-employee directors were outstanding as of December 31, 2018:

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| Name | Shares Subject to Outstanding Options |
|---|---|
| Perry A. Karsen | 195,189 |
| Jack W. Lasersohn, J.D. | 75,000 |
| Laurence Lasky, Ph.D. | — |
| Deepa R. Pakianathan, Ph.D. | 75,000 |
| Jonathan D. Root, M.D. | 75,000 |
| Denise Scots-Knight, Ph.D. | — |
| Rick E Winningham | 75,000 |
| Michael S. Wyzga | 102,853 |

(3) On February 26, 2018, our board of directors approved the appointment of Perry Karsen, at that time the chairman of our board of directors, as Executive Chairman, effective January 3, 2018. In addition to his existing compensation under our non-employee director compensation policy, as Executive Chairman Mr. Karsen will receive a monthly retainer of $25,000 (or $30,000 for any month in which Mr. Karsen provides more than 85 hours of service). In connection with this appointment, Mr. Karsen was granted an option to purchase 120,000 shares of our common stock at an exercise price of $2.29 per share and 48,000 restricted stock units (RSUs), in each case vesting monthly over six months from January 3, 2018, subject to Mr. Karsen's continued service as Executive Chairman through each vesting date, as well as 22,000 RSUs, which were fully vested at grant.

(4) Mr. Lasky did not stand for reelection as a member of our Board of Directors at the 2018 annual meeting of stockholders. As a result, he ceased serving as a non-employee director in June 2018.

(5) On September 28, 2018, Dr. Scots-Knight informed the Board of her decision to resign, effective immediately, as a member of the OncoMed Board due to other professional commitments.

Executive Compensation

The following is a discussion and analysis of compensation arrangements of our named executive officers ("NEOs").

We seek to ensure that the total compensation paid to our executive officers is reasonable and competitive. Compensation of our executives is structured around the achievement of individual performance and near-term corporate targets as well as long-term business objectives.

Our NEOs for fiscal year 2018 were as follows:

- John A. Lewicki, Ph.D., President and Chief Executive Officer;
- Robert Stagg, Pharm.D., Senior Vice President, Clinical Research and Development;
- Alicia Hager, J.D., Ph.D., Senior Vice President and General Counsel;
- Paul Hastings, former Chairman, Chief Executive Officer and President;
- Sunil Patel, former Executive Vice President and Chief Financial Officer; and
- Austin Gurney, Ph.D., former Chief Scientific Officer, Senior Vice President, Research.

2018 Summary Compensation Table

The following table sets forth total compensation paid to our NEOs, who are comprised of (1) the three individuals who served as our principal executive officer in fiscal year 2018, (2) our next two highest compensated executive officers who were serving as executive officers as of December 31, 2018, other than the principal executive officers, and (3) an additional individual for whom disclosure would have been provided but for the fact that the individual was not serving as an executive officer as of December 31, 2018.

| Name and Principal Position | Year | Salary ($) | Bonus[1] ($) | Option Awards[2] ($) | Stock Awards[2] ($) | Non-Equity Incentive Plan Compensation ($) | Other[3][4] ($) | Total ($) |
|---|---|---|---|---|---|---|---|---|
| John A. Lewicki, Ph.D., President and Chief Executive Officer | 2018 | 459,986 | 158,000 | 729,900 | — | 115,593 | — | 1,463,479 |
| | 2017 | 419,777 | — | 967,675 | 192,925 | 167,911 | — | 1,748,288 |
| Robert Stagg Senior Vice President , Clinical Research and Development | 2018 | 407,227 | 79,000 | 193,095 | — | 130,313 | — | 809,635 |
| | 2017 | | | | | | | |
| Alicia Hager Senior Vice President and General Counsel | 2018 | 359,091 | 79,000 | 193,095 | — | 143,636 | — | 774,822 |
| | 2017 | 347,619 | — | 804,964 | 154,536 | 125,143 | — | 1,432,262 |
| Paul Hastings, Former Chairman, President and Chief Executive Officer[5] | 2018 | 21,053 | — | — | — | — | 856,652 | 877,706 |
| | 2017 | 551,127 | — | 1,857,110 | 169,650 | 60,624 | — | 2,638,511 |
| Sunil Patel, Former Executive Vice President and Chief Financial Officer[6] | 2018 | 108,561 | — | 275,850 | — | — | — | 384,411 |
| | 2017 | 406,117 | — | 939,700 | 183,600 | 167,780 | — | 1,697,197 |
| Austin Gurney, Ph.D., Former Chief Scientific Officer, and Senior Vice President, Research[7] | 2018 | 383,033 | — | 193,095 | — | — | 693,402 | 1,269,530 |
| | 2017 | 365,612 | — | 804,964 | 154,536 | 116,996 | — | 1,442,108 |

(1) Represents amounts paid pursuant to certain retention bonuses in order to encourage continued service to the company, which where payable to the NEOs if they were employed by the company through December 31, 2018.

(2) Amounts reflect the aggregate grant date fair value of restricted stock units and stock options computed in accordance with ASC Topic 718. The assumptions used in the valuation of these awards are set forth in Note 11 to our Financial Statements included in Part II, Item 8 of this Annual Report on Form 10-K. The grant date fair value

of these awards is determined for financial statement reporting purposes and does not correspond to the actual value that the NEOs will receive from the awards.

(3) Represents amount paid under our cash incentive programs which are earned by our NEOs pursuant to the achievement of certain performance objectives. For fiscal year 2018, these amounts were paid to our NEOs in December 2018. Please see the descriptions of the annual bonuses paid to our NEOs in "Narrative to 2018 Summary Compensation Table and Outstanding Equity Awards at 2018 Fiscal Year End—Terms and Conditions of Performance-Based Annual Bonus Program" below.

(4) Represents for Mr. Hastings (i) $549,007 for continued payment of Mr. Hastings' base salary through December 31, 2018, (ii) $4,525 for continued health care coverage, and (ii) $303,120, which represents Mr. Hastings' target bonus for fiscal year 2018; and for Dr. Gurney (i) $79,000 which represents the amount of his retention bonus had he remained employed through December 31, 2018, (ii) $527,212 which represents 12 months of Dr. Gurney's base, which has been accrued, and 12 months of Dr. Gurney's target bonus for fiscal year 2018, which was paid in December 2018, (iii) $75,316, which represents a pro-rated portion of his annual performance bonus earned for the year of termination and (iv) $11,874 which has been accrued for continued health care coverage. For more details regarding the severance received by Mr. Hastings and Dr. Gurney, please see "Narrative to 2018 Summary Compensation Table and Outstanding Equity Awards at 2018 Fiscal Year End—Terms and Conditions of Offer Letter and Severance Agreement for Paul Hastings" and "Narrative to 2018 Summary Compensation Table and Outstanding Equity Awards at 2018 Fiscal Year End—Terms and Conditions of Separation Agreement for Austin Gurney" below.

(5) Mr. Hastings resigned from OncoMed on January 1, 2018.

(6) Mr. Patel resigned from OncoMed on March 9, 2018. He did not receive any severance payments in connection with his resignation.

(7) Dr. Gurney's employment with the Company terminated effective as of December 21, 2018 in connection with the reduction in force approved by our board of directors on December 1, 2018.

Outstanding Equity Awards at 2018 Fiscal Year End

The following table lists all outstanding equity awards held by our NEOs as of December 31, 2018.

| | | OPTION AWARDS | | | | STOCK AWARDS | |
|---|---|---|---|---|---|---|---|
| NAME | VESTING COMMENCEMENT DATE | NUMBER OF SECURITIES UNDERLYING UNEXERCISED OPTIONS (#) EXERCISABLE | NUMBER OF SECURITIES UNDERLYING UNEXERCISED OPTIONS (#) UNEXERCISABLE | EXERCISE PRICE ($) | OPTION EXPIRATION DATE | NUMBER OF SHARES OR UNITS OF STOCK THAT HAVE NOT VESTED (#) | MARKET VALUE OF SHARES OR UNITS OF STOCK THAT HAVE NOT VESTED ($)[5] |
| John A. Lewicki, Ph.D. | 12/18/2009 | 59,409 | — | 4.11 | 12/18/2019 | — | — |
| | 7/17/2013 | 14,000 | — | 17.00 | 7/17/2023 | — | — |
| | 12/18/2014[1] | 50,000 | — | 21.18 | 12/17/2024 | — | — |
| | 12/27/2015[1] | 52,500 | 17,500 | 21.43 | 12/26/2025 | — | — |
| | 10/9/2016[2] | — | — | — | — | 6,250 | 4,688 |
| | 1/3/2017[1] | 31,144 | 33,856 | 7.66 | 1/2/2027 | — | — |
| | 4/23/2017[1] | 28,125 | 39,375 | 3.73 | 4/22/2027 | — | — |
| | 4/23/2017[3] | — | — | — | — | 11,250 | 8,438 |
| | 10/7/2017[1] | 14,583 | 35,417 | 4.36 | 10/6/2027 | — | — |
| | 10/7/2017[2] | — | — | — | — | 18,750 | 14,063 |
| | 1/4/2018[1] | 22,916 | 77,084 | 3.98 | 1/3/2028 | — | — |
| | 2/21/2018[1] | 28,645 | 96,355 | 2.23 | 2/20/2028 | — | — |
| | 3/16/2018[1] | 23,437 | 101,563 | 2.98 | 3/15/2028 | — | — |
| Robert Stagg, Pharm.D. | 7/17/2013 | 5,000 | — | 17.00 | 7/17/2023 | — | — |
| | 12/18/2014[1] | 35,000 | — | 21.18 | 12/17/2024 | — | — |
| | 12/27/2015[1] | 22,500 | 7,500 | 21.43 | 12/26/2025 | — | — |
| | 10/9/2016[2] | — | — | — | — | 5,000 | 3,750 |
| | 1/3/2017[1] | 26,353 | 28,647 | 7.66 | 1/2/2027 | — | — |
| | 4/23/2017[1] | 25,000 | 35,000 | 3.73 | 4/22/2027 | — | — |
| | 4/23/2017[3] | — | — | — | — | 10,000 | 7,500 |
| | 10/7/2017[1] | 10,694 | 25,972 | 4.36 | 10/6/2027 | — | — |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | 10/7/2017[2] | — | — | — | — | 13,751 | 10,313 |
| | 1/4/2018[1] | 16,041 | 53,959 | 3.98 | 1/3/2028 | — | — |
| Alicia J. Hager, J.D., Ph.D. | 3/15/2013[4] | 107,667 | — | 8.55 | 3/15/2023 | — | — |
| | 7/17/2013 | 10,000 | — | 17.00 | 7/17/2023 | — | — |
| | 12/18/2014[1] | 35,000 | — | 21.18 | 12/17/2024 | — | — |
| | 12/27/2015[1] | 30,000 | 10,000 | 21.43 | 12/26/2025 | — | — |
| | 10/9/2016[2] | — | — | — | — | 6,250 | 4,688 |
| | 1/3/2017[1] | 26,353 | 28,647 | 7.66 | 1/2/2027 | — | — |
| | 4/23/2017[1] | 25,000 | 35,000 | 3.73 | 4/22/2027 | — | — |
| | 4/23/2017[3] | — | — | — | — | 10,000 | 7,500 |
| | 10/7/2017[1] | — | — | — | — | 13,751 | 10,313 |
| | 10/7/2017[2] | 10,694 | 25,972 | 4.36 | 10/6/2027 | — | — |
| | 1/4/2018[1] | 16,041 | 53,959 | 3.98 | 1/3/2028 | — | — |
| Paul Hastings[6] | 12/18/2009 | 84,929 | — | 4.11 | 12/17/2019 | — | — |
| | 7/17/2013 | 160,000 | — | 17.00 | 7/16/2023 | — | — |
| | 12/18/2014[1] | 140,000 | — | 21.18 | 12/17/2024 | — | — |
| | 12/28/2015[1] | 127,500 | — | 22.10 | 12/27/2025 | — | — |
| | 1/3/2017[1] | 84,332 | — | 7.66 | 1/2/2027 | — | — |
| | 4/24/2017[1] | 56,250 | — | 3.77 | 4/23/2027 | — | — |
| Austin Gurney, Ph.D.[7] | 12/18/2009 | 59,409 | — | 4.11 | 12/17/2019 | — | — |
| | 7/17/2013 | 14,000 | — | 17.00 | 7/16/2023 | — | — |
| | 12/18/2014[1] | 50,000 | — | 21.18 | 12/17/2024 | — | — |
| | 12/27/2015[1] | 40,000 | — | 21.43 | 12/26/2025 | — | — |
| | 1/3/2017[1] | 55,000 | — | 7.66 | 1/2/2027 | — | — |
| | 4/23/2017[1] | 60,000 | — | 3.73 | 4/22/2027 | — | — |
| | 10/7/2017[1] | 36,666 | — | 4.36 | 10/6/2027 | — | — |
| | 1/4/2018[1] | 70,000 | — | 3.98 | 1/3/2028 | — | — |

(1) These options vest and become exercisable as to 1/48th of the shares on each monthly anniversary of the vesting commencement date, such that all shares subject to an option will be vested and exercisable on the fourth anniversary of the vesting commencement date, subject to the holder continuing to provide services to us through the applicable vesting date.
(2) 25% of the restricted stock units ("RSUs") vest on each of the first and second anniversaries of the vesting commencement date, and 50% of the RSUs vest on the third anniversary of the vesting commencement date, subject to the holder continuing to provide services to us through the applicable vesting date.
(3) 50% of the RSUs vest on the first anniversary of the vesting commencement date and 50% of the RSUs vest on the second anniversary of the vesting commencement date, subject to the holder continuing to provide services to us through the applicable vesting date.
(4) The option vests and becomes exercisable as to 1/60$^{th}$ of the shares on each monthly anniversary of the vesting commencement date, such that all shares subject to the option will be vested and exercisable on the fifth anniversary of the vesting commencement date, subject to the holder continuing to provide services to us through the applicable vesting date.
(5) Amount shown is based on market value per share of our common stock of $0.75, which represents the closing price of our common stock on the Nasdaq Global Select Market on December 31, 2018.
(6) Mr. Hastings resigned from OncoMed on January 1, 2018. In connection with such resignation, we entered into a letter agreement with Mr. Hastings which provided, among other things, for (a) accelerated vesting of the portion of Mr. Hastings' outstanding stock options and restricted stock units that would have otherwise vested through December 31, 2018 had Mr. Hastings' employment continued, and (b) each vested stock option held by Mr. Hastings, after giving effect to such accelerated vesting, to remain exercisable until the earlier of the original expiration date of such stock option or December 31, 2018. The terms of this letter agreement are described below in "Narrative to 2018 Summary Compensation Table and Outstanding Equity Awards at 2018 Fiscal Year End—Terms and Conditions of Offer Letter and Severance Agreement for Paul Hastings."
(7) Dr. Gurney's employment was terminated effective December 21, 2018. In connection with such termination, we entered into a separation agreement with Mr. Gurney which provided, among other things, for accelerated vesting of all of Mr. Gurney's outstanding stock options and restricted stock units as of December 21, 2018. The terms of this separation agreement are described below in "Narrative to 2018 Summary Compensation Table and Outstanding Equity Awards at 2018 Fiscal Year End— Terms and Condition of Separation Agreement for Austin Gurney."

Mr. Patel resigned from OncoMed on March 9, 2018 and, in connection with such resignation, he forfeited all unvested shares subject to his equity awards. Mr. Patel had until June 9, 2018 to exercise the vested shares subject to his options. No shares were exercised by Mr. Patel hence all vested shares subject to his options were cancelled on June 9, 2018.

Narrative to 2018 Summary Compensation Table and Outstanding Equity Awards at 2018 Fiscal Year End

Terms and Conditions of Offer Letter and Severance Agreement for Paul Hastings

On November 12, 2005, we entered into an offer letter agreement with Mr. Hastings (the "Hastings Offer Letter"), as last amended in October 2015, to serve as our Chief Executive Officer and President, providing for an annual base salary, an annual target bonus of up to a certain percentage of such base salary, upon achievement of specific corporate and individual goals and objectives to be established by our board of directors and certain severance payments. The Hastings Offer Letter terminated effective January 1, 2018 following Mr. Hastings' entry into the Hastings Severance Agreement (as defined below).

In connection with Mr. Hastings' resignation on January 1, 2018, we entered into a letter agreement with Mr. Hastings (the "Hastings Severance Agreement"). The Hastings Severance Agreement provides for, among other things, (a) continued payment of Mr. Hastings' base salary through December 31, 2018, (b) up to 12 months of continued health care coverage, (c) $303,120, which represents Mr. Hastings' target bonus for fiscal year 2018, less required withholding taxes, and (d) accelerated vesting of the portion of Mr. Hastings' outstanding stock options and

restricted stock units that would have otherwise vested through December 31, 2018 had Mr. Hastings' employment continued. In addition, each vested stock option held by Mr. Hastings (after giving effect to vesting acceleration pursuant to the Hastings Severance Agreement) will remain exercisable until the earlier of the original expiration date of such stock option or December 31, 2018. Pursuant to the terms of the Hastings Severance Agreement, Mr. Hastings has provided us with a general release of claims against us.

Terms and Conditions of Offer Letters for John A. Lewicki, Ph.D., Robert Stagg, Pharm.D., Alicia J. Hager, J.D., Ph.D., Austin Gurney, Ph.D., and Sunil Patel

We have entered into standard offer letters with each of Mr. Patel and Drs. Lewicki, Stagg, Gurney, and Hager that provided for annual base salary, annual target bonus and certain benefits, which may be changed in the discretion of the Company. All other obligations under the offer letters have been satisfied. Mr. Patel's and Dr, Gurney's offer letters terminated upon his resignation from OncoMed on March 9, 2018 and December 21, 2018, respectively.

Terms and Conditions of Change in Control and Severance Agreements for John A. Lewicki, Ph.D., Robert Stagg, Pharm.D., Alicia J. Hager, J.D., Ph.D., Austin Gurney, Ph.D., and Sunil Patel

We entered into a Change in Control and Severance Agreement with Dr. Lewicki, as last amended in October 2018 (the "Lewicki Change in Control and Severance Agreement"), which provides that in the event of (a) a termination of his employment with us other than for "cause" (as defined in the Lewicki Change in Control and Severance Agreement), or (b) his resignation for "good reason" (as defined in the Lewicki Change in Control and Severance Agreement), if he signs and does not revoke a standard form of release of claims, then Dr. Lewicki shall be entitled to receive (i) a severance amount equal to the sum of 12 months of base salary and 12 months target bonus, and (ii) up to 12 months of continued healthcare coverage. If such qualifying termination or resignation occurs within 18 months following a "change in control" (as defined in the Lewicki Change in Control and Severance Agreement) of the Company, and he signs and does not revoke a standard form of release of claims, Dr. Lewicki will instead receive (i) a severance amount equal to the sum of 24 months of base salary and 24 months target bonus, (ii) up to 24 months of continued healthcare coverage, and (iii) 100% vesting acceleration of outstanding equity awards, including, without limitation, his stock options and restricted stock units. In the event of a change in control, the vesting of any equity awards will automatically accelerate as to 25% of the total number of shares subject thereto.

We also entered into Change in Control and Severance Agreements with Mr. Patel and Drs. Stagg, Gurney, and Hager, as last amended in October 2015 (collectively, the "Change in Control and Severance Agreements"), each of which provides that in the event of (a) a termination of his/her employment with us other than for "cause" (as defined in the applicable Change in Control and Severance Agreement), or (b) his/her resignation for "good reason" (as defined in the applicable Change in Control and Severance Agreement), if he/she signs and does not revoke a standard form of release of claims, then Mr. Patel or Drs. Stagg, Gurney, and Hager shall be entitled to receive (i) a severance amount equal to the sum of nine months of base salary and nine months target bonus, and (ii) up to nine months of continued healthcare coverage. If such qualifying termination or resignation occurs within 12 months following a "change in control" (as defined in the applicable Change in Control and Severance Agreement) of the Company, and he/she signs and does not revoke a standard form of release of claims, Mr. Patel or Drs. Stagg, Gurney, and Hager will instead receive (i) a severance amount equal to the sum of 12 months of base salary and 12 months target bonus, (ii) up to 12 months of continued healthcare coverage, and (iii) 100% vesting acceleration of outstanding equity awards, including, without limitation, his/her stock options and restricted stock units. In the event of a change in control, the vesting of any equity awards will automatically accelerate as to 25% of the total number of shares subject thereto.

Mr. Patel's Change in Control and Severance Agreement terminated upon his resignation from OncoMed on March 9, 2018. Mr. Patel was not entitled to any severance payments in connection with his resignation of employment.

Upon termination of Dr. Gurney's employment in December 2018 in connection with the company's reduction in force, Dr. Gurney became eligible to receive severance under his Change in Control and Severance Agreement and the Company approved certain enhanced severance benefits in addition to those provided under this Change in Control and Severance Agreement, in exchange for providing a general release of claims against the

company and its affiliates. The total severance payments and benefits actually provided to Dr. Gurney in connection with his termination are described in the section below entitled “Terms and Conditions of Separation Agreement for Austin Gurney, Ph.D.”.

In addition, in connection with the company’s reduction in force, the employment of Drs. Lewicki, Stagg and Hager will terminate effective as of immediately prior to the closing of the Merger, which is anticipated to occur later this year. Upon Drs. Lewicki’s, Stagg’s and Hager’s termination of employment, in exchange for providing a general release of claims against the company and its affiliates, he or she will be entitled to receive (i) a severance amount equal to the sum of 12 months of base salary and 12 months target bonus (24 months for each in the case of Dr. Lewicki), (ii) up to 12 months of continued healthcare coverage (24 months in the case of Dr. Lewicki), and (iii) 100% vesting acceleration of outstanding equity awards, including, without limitation, his or her stock options and restricted stock units.

Terms and Conditions of Separation Agreement for Austin Gurney, Ph.D.

In connection with the company’s reduction in force, the Company terminated Dr. Gurney’s employment effective as of December 21, 2018. We entered into a separation agreement with Dr. Gurney (the “Gurney Separation Agreement”), which provides for, among other things, (i) a severance amount equal to $527,212, which represents the sum of 12 months of Dr. Gurney’s base salary and 12 months of Dr. Gurney’s target bonus, (ii) up to 12 months of continued health care coverage, (iii) $79,000, which represents Dr. Gurney’s retention bonus he would have received if he remained employed through December 31, 2018, (iv) a prorated performance-based annual bonus equal to $75,316 for 2018, and (v) accelerated vesting of all of Dr. Gurney’s outstanding stock options and restricted stock units. Pursuant to the terms of the Gurney Separation Agreement, Dr. Gurney has provided us with a general release of claims against us.

Terms and Conditions of Retention Bonuses

On January 26, 2018, the Company entered into retention bonus agreements with each of its NEOs, besides Messrs. Hastings and Patel, in order to encourage continued service to the company. Pursuant to the agreements, each NEO would receive a cash retention bonus should he or she remain employed by the company through December 31, 2018. The retention bonuses would not be earned and will not be paid if the NEO voluntarily terminates employment or is terminated by the company for “cause” prior to December 31, 2018. If the NEO is terminated by the company without “cause” prior to December 31, 2018, he or she will be eligible to receive the full retention bonus payment as a severance amount. Dr. Lewicki’s retention bonus amount of $158,000 and Drs. Stagg’s and Hager’s retention bonus amount was $79,000, which were paid in early January 2019. Dr. Gurney was terminated prior to December 31, 2018, but pursuant to his retention bonus agreement and the Gurney Separation Agreement, he received the full payment of his retention amount of $79,000.

Terms and Conditions of Merger Performance Bonus for John Lewicki, Ph.D.

The Company has agreed to pay a performance bonus of $50,000 to Dr. Lewicki upon achievement of the closing of the Merger to the extent the final net cash held by the company at the time of closing exceeds $37 million.

Terms and Conditions of Performance-Based Annual Bonus Program

For fiscal year 2018, all of our NEOs were eligible for performance-based cash incentives pursuant to the achievement of certain performance objectives. The performance goals for these annual performance cash incentives are reviewed and approved annually by our compensation committee. The determination of the amount of bonuses paid to our NEOs generally reflects a number of considerations, including revenue and operational goals.

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Target Bonus Opportunity

Each NEO's target bonus opportunity is expressed as a percentage of base salary which can be achieved by meeting corporate and divisional goals and may be increased or decreased based on individual performance. For each of our NEOs, their target bonus opportunity is originally set in their offer letters with us as described above. Our compensation committee reviews these target percentages to ensure they are adequate. While reviewing these target percentages the compensation committee does not follow a formula but rather uses multiple factors as general background information prior to determining the target bonus opportunity rates for our participating NEOs. The compensation committee sets these rates based on each participating executive's experience in her or his role with the company and the level of responsibility held by each executive, which the compensation committee believes directly correlates to her or his ability to influence corporate results. For fiscal year 2018, the compensation committee initially used a guideline target bonus opportunity of 45% for Dr. Lewicki and Mr. Patel and 40% for Drs. Gurney, Stagg and Hager. In connection with his appointment as our President in February 2018, Dr. Lewicki's target bonus opportunity was increased to 50% by the compensation committee. Since Mr. Hastings's resignation was effective as of January 1, 2018, he was not eligible for an annual performance bonus in 2018. Following the resignation of Mr. Patel on March 9, 2018, he was also no longer eligible to receive any annual performance bonus.

Performance Goals and Weighting

When determining the performance bonus amounts for our NEOs, the compensation committee sets certain performance goals, using a mixture of financial and operational performance objectives after receiving input from our Chief Executive Officer. These performance goals are not expected to be attained based on average or below average performance. Corporate goals and performance targets are reviewed and approved by the compensation committee prior to any allocation of the bonus. After determining performance targets, each performance target is given a different weight when determining the overall bonus amount based on the importance to the success of the Company for each performance target. For fiscal year 2018, the financial performance targets were weighted at 10% and the operational targets were weighted at 90%.

Achievement Level

For each of these performance goals under the annual cash incentive program, the compensation committee sets a target achievement level. There is no minimum or maximum achievement for each performance target, instead the compensation committee weighs the achievement, partial achievement or non-achievement for each performance target when deciding the overall achievement level.

In early fiscal year 2018, the compensation committee established a corporate performance target for financial and operational goals. Our operational performance goals include business development, research and development, achievement of certain milestones in discovery and drug development, and clinical and intellectual property performance goals during the fiscal year. These operational performance goals are internal goals and are not publicly disclosed in any form. We keep the target levels for these operational goals confidential for both operational and competitive reasons, but generally the compensation committee intended for the operational goals to require significant effort on the part of our NEOs and, therefore, set these targets at levels they believed would be difficult to achieve, such that average or below average performance would not satisfy these targets. In December 2018, the Board reviewed our fiscal year 2018 company-wide performance with respect to determining bonuses for executive officers. Based on the achievement of the financial goal and the achievement of most of the operational goals, the Board determined the corporate performance achievement of 80%. In December 2018, following its review and determinations, the Board awarded 2018 cash bonuses to the NEOs of 25% (for Dr. Lewicki), 26% (for Dr. Gurney), 32% (for Dr. Stagg), and 40% (for Dr. Hager) of the executives' respective base salaries, which was equal to 50%, 65%, 80%, and 100% of Drs. Lewicki's, Gurney's, Stagg's and Hager's target bonus amounts, respectively. Dr. Gurney's

performance bonus was also prorated due to his termination on December 21, 2018 and paid pursuant to the Gurney Separation Agreement described above. Each of Messrs. Hastings and Patel did not receive any annual bonus because each was no longer employed for the entire 2018 fiscal year. The NEOs' 2018 bonuses are set forth in the "2018 Summary Compensation Table" above.

Terms and Conditions of Equity Award Grants

All of our NEOs, except Mr. Hastings, were granted stock options in fiscal year 2018.

In January 2018, our compensation committee approved the grant of an option to purchase 100,000 shares of our common stock to each of Mr. Patel and Dr. Lewicki and an option to purchase 70,000 shares of our common stock to each of Drs. Gurney, Stagg and Hager. The stock options were granted to Mr. Patel and Drs. Lewicki, Gurney, Stagg and Hager on January 4, 2018, with an exercise price of $3.98 per share, which represents the closing trading price of our common stock on the date of grant. Each option vests in equal monthly installments over four years measured from the grant date, subject to the NEO's continued service to us through the applicable vesting date.

On March 16, 2018, our board of directors approved the grant of an option to purchase 125,000 shares of our common stock to Dr. Lewicki in connection with his appoint as Chief Executive Officer. The shares were granted at an exercise price of $2.98 per share, the closing price of our common stock on March 16, 2018. The stock option vests with respect to 1/48 of the shares subject thereto on each monthly anniversary of March 16, 2018, subject to Dr. Lewicki's continued employment with the Company on each such vesting date.

In accordance with the Hastings Severance Agreement, described in "Terms and Conditions of Offer Letter and Severance Agreement for Paul Hastings" above, the portion of Mr. Hastings' outstanding stock options and restricted stock units that would otherwise have vested through December 31, 2018, had Mr. Hastings' employment continued though such date, vested as of January 1, 2018. Mr. Hastings otherwise forfeited his unvested stock options and restricted stock units upon his resignation of employment from OncoMed on January 1, 2018. Mr. Patel forfeited his unvested stock options and restricted stock units upon his resignation of employment from OncoMed on March 9, 2018. In accordance with the Gurney Separation Agreement, described in "Terms and Conditions of Separation Agreement for Austin Gurney, Ph.D." above, all of Dr. Gurney's outstanding stock options and restricted stock units vested as of December 21, 2018.

The table above entitled "Outstanding Equity Awards at 2018 Fiscal Year End" describes the material terms of restricted stock units and other option awards made in past fiscal years to our NEOs.

### Compensation Committee Interlocks and Insider Participation

During 2018, our compensation committee consisted of Mr. Winningham and Drs. Pakianathan, Root and Scots-Knight, until Dr. Scots-Knight's resignation on September 28, 2018. No such member of our compensation committee has at any time been one of our officers or employees. None of our executive officers currently serves, or in the past fiscal year has served, as a member of the board of directors or compensation committee of any entity that has one or more executive officers on our Board or compensation committee.

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

### Security Ownership of Certain Beneficial Owners and Management

The following table presents information as to the beneficial ownership of our common stock as of December 31, 2018 for:

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- each person, or group of affiliated persons, known by us to beneficially own more than five percent of our common stock;
- each named executive officer as set forth in the summary compensation table included in Part III, Item 11 of this Annual Report on Form 10-K;
- each of our directors; and
- all current executive officers and directors as a group.

Beneficial ownership is determined in accordance with the rules of the SEC and generally includes voting or investment power with respect to securities. Unless otherwise indicated below, to our knowledge, the persons and entities named in the table have sole voting and sole investment power with respect to all shares beneficially owned, subject to community property laws where applicable. Shares of our common stock subject to options that are currently exercisable or exercisable within 60 days of December 31, 2018, and restricted stock units that vest within 60 days of December 31, 2018, are deemed to be outstanding and to be beneficially owned by the person holding the

options or restricted stock units for the purpose of computing the percentage ownership of that person, but are not treated as outstanding for the purpose of computing the percentage ownership of any other person.

Percentage ownership of our common stock in the table is based on 38,660,146 shares of our common stock issued and outstanding on December 31, 2018. Unless otherwise indicated, the address of each of the individuals and entities named below is c/o OncoMed Pharmaceuticals, Inc., 800 Chesapeake Drive, Redwood City, California 94063.

| | Shares of Common Stock Beneficially Owned[1] | | | |
|---|---|---|---|---|
| Name of Beneficial Owner | Common Stock | Securities Exercisable Within 60 Days | Number of Shares Beneficially Owned | Percent |
| 5% Stockholders: | | | | |
| PRIMECAP Management Company[2] | 5,506,300 | — | 5,506,300 | 14.24 % |
| Biotechnology Value Fund, L.P.[3] | 4,042,989 | — | 4,042,989 | 10.46 % |
| Celgene Corporation[4] | 2,970,588 | — | 2,970,588 | 7.68 % |
| Perceptive Advisors LLC[5] | 1,719,111 | — | 1,719,111 | 4.45 % |
| GlaxoSmithKline LLC[6] | 2,607,546 | — | 2,607,546 | 6.74 % |
| Entities Affiliated with Delphi Ventures[7] | 2,010,542 | — | 2,010,542 | 5.20 % |
| Entities Affiliated with HarbourVest[8] | 1,901,106 | — | 1,901,106 | 4.92 % |
| Named Executive Officers and Directors: | | | | |
| John A. Lewicki, Ph.D.[9] | 119,104 | 349,864 | 468,968 | 1.21 % |
| Robert Stagg, Pharm.D.[10] | 11,919 | 151,074 | 162,993 | * |
| Alicia J. Hager, J.D., Ph.D.[11] | 21,753 | 271,658 | 293,411 | * |
| Paul Hastings | 345,528 | — | 345,528 | * |
| Sunil Patel | — | — | — | * |
| Austin Gurney, Ph.D. | 66,807 | 385,075 | 451,882 | 1.17 % |
| Perry A. Karsen[12] | 80,500 | 180,189 | 260,689 | * |
| Jack W. Lasersohn, J.D.[13] | 1,685,913 | 60,000 | 1,745,913 | 4.52 % |
| Deepika R. Pakianathan, Ph.D.[14] | 2,010,542 | 60,000 | 2,070,542 | 5.36 % |
| Jonathan D. Root, M.D.[15] | 121,020 | 60,000 | 181,020 | * |
| Rick E Winningham[16] | — | 60,000 | 60,000 | * |
| Michael S. Wyzga[17] | — | 87,853 | 87,853 | * |
| All directors and current executive officers as a group (9 persons)[18] | 4,100,387 | 1,447,281 | 5,547,668 | 14.35 % |

* Represents beneficial ownership of less than one percent of the issued and outstanding shares of common stock of OncoMed.

(1) Represents shares of OncoMed common stock held and restricted stock units held by such individuals that may vest within 60 days of December 31, 2018, and options held by such individuals that are exercisable within 60 days of December 31, 2018. Includes shares held in the beneficial owner's name or jointly with others, or in the name of a bank, nominee or trustee for the beneficial owner's account. Reported numbers do not include restricted stock units or options that vest more than 60 days after December 31, 2018.

(2) As reported on Schedule 13G/A filed with the SEC on February 8, 2019 by PRIMECAP Management Company. The address of PRIMECAP Management Company is 177 E. Colorado Blvd., 11th Floor, Pasadena, CA 91105.

(3) As reported on Schedule 13G/A filed with the SEC on February 14, 2019 by Biotechnology Value Fund, L.P. ("BVF"), Biotechnology Value Fund II, L.P. ("BVF2"), Biotechnology Value Trading Fund OS LP ("Trading Fund OS"), BVF Partners OS Ltd. ("Partners OS"), BVF Partners L.P. ("Partners"), BVF Inc., and Mark N. Lampert ("Mr. Lampert"). Partners OS as the general partner of Trading Fund OS may be deemed to beneficially own the 322,447 shares of OncoMed common stock beneficially owned by Trading Fund OS. Partners, as the general partner of BVF, BVF2, the investment manager of Trading Fund OS, and the sole

member of Partners OS, may be deemed to beneficially own the 4,042,989 shares of OncoMed common stock beneficially owned in the aggregate by BVF, BVF2, Trading Fund OS, and certain Partners managed accounts (the "Partners Managed Accounts"), including 415,397 shares of OncoMed common stock held in the Partners Managed Accounts. BVF Inc., as the general partner of Partners, may be deemed to beneficially own the 4,042,989 shares of OncoMed common stock beneficially owned by Partners. Mr. Lampert, as a director and officer of BVF Inc., may be deemed to beneficially own the 4,042,989 shares of OncoMed common stock beneficially owned by BVF Inc. Partners OS disclaims beneficial ownership of the OncoMed common stock beneficially owned by Trading Fund OS. Each of Partners, BVF Inc. and Mr. Lampert disclaims beneficial ownership of the OncoMed common stock beneficially owned by BVF, BVF2, Trading Fund OS, and the Partners Managed Accounts. The address for BVF, BVF2, Partners, BVF Inc., and Mr. Lampert is 1 Sansome Street, 30th Floor, San Francisco, California 94104. The address for Trading Fund OS and Partners OS is PO Box 309 Ugland House, Grand Cayman, KY1-1104, Cayman Islands.

(4) As reported on Schedule 13G filed with the SEC on August 24, 2016 by Celgene Corporation. The address of Celgene Corporation is 86 Morris Avenue, Summit, New Jersey 07901.

(5) As reported on Schedule 13G/A filed with the SEC on February 14, 2019 by Perceptive Advisors LLC ("Perceptive Advisors"), Joseph Edelman ("Mr. Edelman"), and Perceptive Life Sciences Master Fund, Ltd. (the "Master Fund"). Perceptive Advisors serves as the investment manager to the Master Fund and may be deemed to beneficially own the securities directly held by the Master Fund. Mr. Edelman is the managing member of Perceptive Advisors and may be deemed to beneficially own the securities directly held by the Master Fund. The address for such entities and persons is 51 Astor Place, 10th Floor, New York, NY 10003.

(6) As reported on Schedule 13G filed with the SEC on February 14, 2014 by GlaxoSmithKline plc, with respect to shares held by GlaxoSmithKline LLC. GlaxoSmithKline plc has sole voting and dispositive power over the shares held by GlaxoSmithKline LLC. The address of GlaxoSmithKline plc is 980 Great West Road, Brentford, Middlesex, TW8 9GS, England.

(7) As reported on Schedule 13G/A filed with the SEC on February 12, 2019 by Delphi Ventures VIII, L.P., a Delaware limited partnership ("DV VIII"), Delphi BioInvestments VIII, L.P., a Delaware limited partnership ("DBI VIII"), Delphi Management Partners VIII, L.L.C., a Delaware limited liability company ("DMP VIII") and the general partner of DV VIII and DBI VIII, and James J. Bochnowski ("Bochnowski"), David L. Douglass ("Douglass"), Douglas A. Roeder ("Roeder") and Deepika R. Pakianathan, Ph.D. ("Pakianathan"), the managing members of DMP VIII. DMP VIII is the general partner of DV VIII and DBI VIII and may be deemed to have sole power to vote and sole power to dispose of shares of the issuer directly owned by DV VIII and DBI VIII. DMP VIII owns 2,010,542 shares, of which 1,991,602 are directly owned by DV VIII and 18,940 are directly owned by DBI VIII. Bochnowski, Douglass, Roeder and Pakianathan are the managing members of DMP VIII and may be deemed to have shared power to vote and shared power to dispose of the shares of the issuer directly owned by DV VIII and DBI VIII. Bochnowski, Douglass, Roeder and Pakianathan disclaim beneficial ownership of the reported securities directly owned by DV VIII and DBI VIII, except to the extent of any pecuniary interest therein. The address for such entities and persons is Delphi Ventures, 160 Bovet Rd., #408, San Mateo, CA 94402.

(8) As reported on Schedule 13G filed with the SEC on February 14, 2019 by HarbourVest Partners, LLC ("HarbourVest"), Dover VII Associates LLC ("Dover LLC"), Dover VII Associates L.P. ("Dover LP") and Dover Street VII L.P. ("Dover Street"). HarbourVest is the managing member of Dover LLC, which is the general partner of Dover LP, which is the general partner of Dover Street. Each of HarbourVest, Dover LLC and Dover LP may be deemed to have a beneficial interest in the shares of OncoMed common stock held by Dover Street. Each of HarbourVest, Dover LLC, Dover LP and the members of the HarbourVest Investment Committee disclaim beneficial ownership of the shares held directly by Dover Street. The address for HarbourVest, Dover LLC, Dover LP and Dover Street is One Financial Center, Boston, MA 02111.

(9) Consists of: (i) 111,181 shares held by John Allan Lewicki and Jenniffer Joan Lewicki, Trustees of the Lewicki Family Trust dated December 6, 2000 ("The Lewicki Trust"), (ii) 7,923 shares directly owned by Dr. Lewicki, and (iii) 349,864 shares that may be acquired pursuant to the exercise of stock options within 60 days of December 31,

2018 by Dr. Lewicki. Dr. Lewicki has shared voting and dispositive power over the shares held by The Lewicki Trust.

(10) Consists of (i) 11,919 shares directly owned by Dr. Stagg, and (ii) 151,074 shares that may be acquired pursuant to the exercise of stock options within 60 days of December 31, 2018 by Dr. Stagg.

(11) Consists of (i) 21,753 shares directly owned by Dr. Hager, and (ii) 271,658 shares that may be acquired pursuant to the exercise of stock options within 60 days of December 31, 2018 by Dr. Hager.
(12) Consists of: (i) 80,500 shares directly owned by Mr. Karsen, and (ii) 180,189 shares that may be acquired pursuant to the exercise of a stock option within 60 days of December 31, 2018 by Mr. Karsen.
(13) Consists of (i) 185,709 shares held directly by Mr. Lasersohn, (ii) 60,000 shares that may be acquired pursuant to the exercise of a stock option within 60 days of December 31, 2018 by Mr. Lasersohn, and (iii) 1,500,204 shares reported on Schedule 13G/A filed with the SEC on January 13, 2017 by Vertical Fund I, L.P. ("VFI") and Vertical Fund II, L.P. ("VFII"). The Vertical Group, L.P., a Delaware limited partnership, is the sole general partner of each of VFI and VFII, and The Vertical Group GP, LLC, a Delaware limited liability company, controls The Vertical Group, L.P. Mr. Lasersohn is a member and manager of The Vertical Group GP, LLC. Mr. Lasersohn disclaims beneficial ownership of such shares except to the extent of his pecuniary interest therein. The address for such entities and persons is 106 Allen Road, Suite 207, Basking Ridge, New Jersey 07920.
(14) Consists of (i) the shares described in Note (7) above, and (ii) 60,000 shares that may be acquired pursuant to the exercise of a stock option within 60 days of December 31, 2018 by Dr. Pakianathan.
(15) Consists of (i) 121,020 shares held directly by Dr. Root, and (ii) 60,000 shares that may be acquired pursuant to the exercise of a stock option within 60 days of December 31, 2018 by Dr. Root.
(16) Consists of 60,000 shares that may be acquired pursuant to the exercise of stock options within 60 days of December 31, 2018 by Mr. Winningham.
(17) Consists of 87,853 shares that may be acquired pursuant to the exercise of a stock option within 60 days of December 31, 2018 by Mr. Wyzga.
(18) Includes: (i) 3,897,975 shares held by OncoMed's non-employee directors and entities affiliated with certain of OncoMed's directors, (ii) 202,412 shares held by OncoMed's current executive officers, and (iii) 1,447,281 shares that may be acquired by OncoMed's current executive officers and directors pursuant to the exercise of stock options within 60 days of December 31, 2018.

Equity Compensation Plan Information

The following table provides certain information as of December 31, 2018, with respect to all of our equity compensation plans in effect on that date.

| Plan Category | Number of Secruties to be Issued upon Exercise of Outstanding Options, Warrants and Rights (a) | | Weighted-Average Exercise price of Outstanding Options, Warrants and Rights (b) | | Number of Securities Remaining Available for Future Issuance Under Equity Compensation Plans (Excluding Securities Reflected in Column (a)) (c) | |
|---|---|---|---|---|---|---|
| Equity compensation plan approved by Stockholders[1][2] | 4,451,007 | [3] | $ 11.44 | [4] | 4,860,360 | [5] |

| | | | | |
|---|---|---|---|---|
| Equity Compensation | — | | — | — |
| Total | 4,451,007 | $ | 11.44 | 4,860,360 |

(1) Includes the OncoMed Pharmaceuticals, Inc. 2013 Equity Incentive Award Plan, 2013 Employee Stock Purchase Plan and 2004 Stock Incentive Plan, as amended.

(2) The 2013 Equity Incentive Award Plan contains an "evergreen" provision, pursuant to which the number of shares of common stock reserved for issuance pursuant to awards under such plan shall be increased on the first day of each year beginning in 2014 and ending in 2023, equal to the least of (A) 1,500,000 shares,

(B) four percent (4.0%) of the shares of stock outstanding (on an as converted basis) on the last day of the immediately preceding fiscal year and (C) such smaller number of shares of stock as determined by our board of directors; provided, however, that no more than 19,634,255 shares of stock may be issued upon the exercise of incentive stock options. The 2013 Employee Stock Purchase Plan contains an "evergreen" provision, pursuant to which the number of shares of common stock reserved for issuance under such plan shall be increased on the first day of each year beginning in 2014 and ending in 2023, equal to the least of (A) 350,000 shares, (B) one percent (1.0%) of the shares of stock outstanding (on an as converted basis) on the last day of the immediately preceding fiscal year and (C) such smaller number of shares of stock as determined by our board of directors.

(3) Represents 4,144,597 shares subject to outstanding options and 306,410 shares that may be issued upon vesting of outstanding RSUs, in each case pursuant to equity awards issued under the OncoMed Pharmaceuticals, Inc. 2013 Equity Incentive Award Plan, 2013 Employee Stock Purchase Plan and 2004 Stock Incentive Plan, as amended.

(4) Shares issuable upon vesting of RSUs have been excluded from the calculation of the weighted average exercise price because they have no exercise price associated with them.

(5) Includes 1,510,518 shares that were available for future issuance as of December 31, 2018 under the 2013 Employee Stock Purchase Plan, which allows eligible employees to purchase shares of common stock with accumulated payroll deductions.

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

We describe below transactions and series of similar transactions, since January 1, 2017, to which we were a party or will be a party, in which:

- the amounts involved exceeded or will exceed $120,000; and
- any of our directors, executive officers or holders of more than 5% of our common stock, or an affiliate or immediate family member thereof, had or will have a direct or indirect material interest.

Relationship with Celgene

In December 2013, we entered into a collaboration agreement with Celgene Corporation ("Celgene"). Celgene acquired its equity interest in the Company in part concurrent with its entry into the collaboration agreement and in part in connection with an underwritten public offering of shares of our common stock in 2016. As of December 31, 2018, Celgene beneficially owns 7.73% of our issued and outstanding common stock. See "Business—Key Collaboration and License Agreements—Strategic Alliance with Celgene" in this Annual Report on Form 10K for additional information about this collaboration, including potential future milestone payments, contingent consideration and royalties we may receive from Celgene, and potential profit-sharing arrangements with Celgene that may arise, under the collaboration

Director and Officer Indemnification Agreements

We have entered into indemnification agreements with each of our directors and executive officers. These agreements, among other things, require us to indemnify each director (and in certain cases their related venture capital funds) and executive officer to the fullest extent permitted by Delaware law, including indemnification of expenses such as attorneys' fees, judgments, fines and settlement amounts incurred by the director or executive officer in any action or proceeding, including any action or proceeding by or in right of us, arising out of the person's services as a director or executive officer.

Policies and Procedures for Related Party Transactions

Our Board has adopted a written related party transaction policy setting forth the policies and procedures for the review and approval or ratification of related party transactions. This policy covers, with certain exceptions set forth in Item 404 of Regulation S-K under the Securities Act, any transaction, arrangement or relationship, or any

series of similar transactions, arrangements or relationships in which we were or are to be a participant, where the amount involved exceeds $120,000 and a related party had, has or will have a direct or indirect material interest, including, without limitation, purchases of goods or services by or from the related party or entities in which the related party has a material interest, indebtedness, guarantees of indebtedness and employment by us of a related party. In reviewing and approving any such transactions, our audit committee is tasked to consider all relevant facts and circumstances, including, but not limited to, whether the transaction is on terms comparable to those that could be obtained in an arm's length transaction and the extent of the related party's interest in the transaction.

Independence of the Board of Directors

As required under Nasdaq rules and regulations, a majority of the members of a listed company's board of directors must qualify as "independent," as affirmatively determined by the Board. The Board consults with the Company's counsel to ensure that the Board's determinations are consistent with all relevant securities and other laws and regulations regarding the definition of "independent," including those set forth in pertinent Nasdaq listing standards, as in effect from time to time.

Consistent with these considerations, our Board has determined that all of our current directors, other than Dr. Lewicki, qualify as "independent" directors in accordance with the Nasdaq listing requirements. Dr. Lewicki is not considered independent because he is an employee of OncoMed. The Nasdaq independence definition includes a series of objective tests, such as that the director is not, and has not been for at least three years, one of our employees and that neither the director nor any of his family members has engaged in various types of business dealings with us. In addition, as required by Nasdaq rules, our Board has made a subjective determination as to each independent director that no relationships exist, which, in the opinion of our Board, would interfere with the exercise of independent judgment in carrying out the responsibilities of a director. In making these determinations, our Board considered information provided by the directors and us with regard to each director's business and personal activities and relationships as they may relate to us and our management. There are no family relationships among any of our directors or executive officers.

As required under Nasdaq rules and regulations, our independent directors meet in regularly scheduled executive sessions at which only independent directors are present. All of the committees of our Board are comprised entirely of directors determined by the Board to be independent within the meaning of Nasdaq and SEC rules and regulations applicable to the members of such committees.

Item 14. Principal Accounting Fees and Services

The following table provides information regarding the fees incurred to Ernst & Young LLP for services rendered during the years ended December 31, 2018 and 2017, based on aggregate fees billed and estimated to be billed. All fees described below were approved by the audit committee.

| | Year Ended December 31, | |
|---|---|---|
| | 2018 | 2017 |
| Audit Fees[(1)] | $1,143,188 | $752,328 |
| Audit-Related Fees | — | — |

| | | |
|---|---|---|
| Tax Fees[2] | — | 12,500 |
| All Other Fees | 1,980 | 1,995 |
| Total Fees | $1,145,168 | $766,823 |

(1) Audit Fees of Ernst & Young LLP for 2018 and 2017 were for professional services rendered for the audits of our financial statements, reviews of our quarterly financial statements, and accounting consultation fees in connection with sales of our common stock in in at-the-market offerings pursuant to our shelf registration statement on Form S-3 (File No. 333-225225) filed in May 2018.

(2) Tax Fees of Ernst & Young LLP for 2017 were for professional services rendered for tax compliance, tax advice and tax planning.

Pre-Approval Policies and Procedures

Before an independent registered public accounting firm is engaged by the Company to render audit or non-audit services, our audit committee must review the terms of the proposed engagement and pre-approve the engagement. The audit committee may delegate authority to one or more of the members of the audit committee to provide such pre-approvals for audit or non-audit services, provided that such person or persons report such pre-approvals to the full audit committee at its next scheduled meeting. Audit committee pre-approval of non-audit services (other than review and attest services) are not required if such services fall within available exceptions established by the SEC.

The audit committee pre-approved all audit, audit-related, tax and other services provided by Ernst & Young LLP for 2018 and 2017 and the estimated costs of those services. Actual amounts billed, to the extent in excess of the estimated amounts, were periodically reviewed and approved by the audit committee.

PART IV

Item 15. Exhibits and Financial Statement Schedules

The following documents are filed as part of this report:

1. Financial Statements

See Index to Financial Statements included in Part II, Item 8 of this Annual Report on Form 10-K.

2. Financial Statement Schedules

All schedules are omitted because they are not applicable or the required information is shown in the financial statements or notes thereto.

3. Exhibits

The following list of exhibits includes exhibits submitted with this Form 10-K as filed with the Securities and Exchange Commission (SEC) and those incorporated by reference to other filings.

| Exhibit Number | Exhibit Description | Incorporated by Reference Form | Date | Number | Filed Herewith |
|---|---|---|---|---|---|
| 2.1* | Agreement and Plan of Merger and Reorganization, dated December 5, 2018, by and among Mereo BioPharma Group plc, Mereo US Holdings Inc., Mereo MergerCo One Inc. and OncoMed Pharmaceuticals, Inc. | 8-K | 12/06/2018 | 2.1 | |
| 3.1 | Amended and Restated Certificate of Incorporation | 8-K | 07/23/2013 | 3.1 | |
| 3.2 | Amended and Restated Bylaws | 8-K | 07/23/2013 | 3.2 | |
| 4.1 | Form of Common Stock Certificate | S-1/A | 07/03/2013 | 4.1 | |
| 4.2(A) | Amended and Restated Investor Rights Agreement, dated October 7, 2008, by and among the registrant and certain stockholders | S-1 | 05/11/2012 | 4.4 | (A) |
| 4.2(B) | Amendment and Consent, dated September 16, 2010, by and among the registrant and certain stockholders | S-1 | 05/11/2012 | 4.4 | (B) |
| 4.3 | Registration Rights Agreement, dated as of December 2, 2013, by and between the registrant and Celgene Corporation | 8-K | 12/03/2013 | 4.1 | |

| | | | | | |
|---|---|---|---|---|---|
| 10.1(A)† | Collaboration and Option Agreement, dated June 15, 2010, by and between the registrant and Bayer Schering Pharma AG | S-1/A | 07/05/2012 | 10.2 | |
| 10.1(B)† | Amendment 1 to the Collaboration and Option Agreement, dated August 1, 2012, by and between the registrant and Bayer Schering Pharma AG | S-1/A | 10/25/2012 | 10.2 | (B) |
| 10.1(C)† | Amendment 2 to the Collaboration and Option Agreement, dated August 27, 2013, by and between the registrant and Bayer Schering Pharma AG | 10-Q | 11/13/2013 | 10.9 | |
| 10.1(D) | Amendment 3 to the Collaboration and Option Agreement, dated November 4, 2015, by and between the registrant and Bayer Pharma AG | 10-K | 03/10/2016 | 10.2 | (D) |

| Exhibit Number | Exhibit Description | Incorporated by Reference Form | Date | Number | | Filed Herewith |
|---|---|---|---|---|---|---|
| 10.1(E)† | Amendment 4 to the Collaboration and Option Agreement, dated July 21, 2016, by and between the registrant and Bayer Pharma AG | 10-Q | 11/01/2016 | 10.1 | | |
| 10.1(F)* | Amendment 5 to the Collaboration and Option Agreement, dated December 15, 2016, by and between the registrant and Bayer Pharma AG | 10-K | 03/09/2017 | 10.2 | (F) | |
| 10.1(G)* | Amendment 6 to the Collaboration and Option Agreement, dated June 13, 2018, by and between the registrant and Bayer Pharma AG | 10-Q | 08/02/2018 | 10.1 | | |
| 10.2(A)† | License Agreement, dated January 5, 2001, by and between the registrant (as successor in interest to Cancer Stem Cell Genomics, Inc.) and the Regents of the University of Michigan | S-1 | 05/11/2012 | 10.4 | (A) | |
| 10.2(B)† | Amendment Number 1 to License Agreement, dated July 21, 2004, by and between the registrant (as successor in interest to Cancer Stem Cell Genomics, Inc.) and the Regents of the University of Michigan | S-1 | 05/11/2012 | 10.4 | (B) | |
| 10.2(C)† | Amendment Number 2 to License Agreement, dated August 13, 2004, by and between the registrant and the Regents of the University of Michigan | S-1 | 05/11/2012 | 10.4 | (C) | |
| 10.2(D) | Amendment No. 3 to License Agreement, dated March 31, 2005, by and between the registrant and the Regents of the University of Michigan | S-1 | 05/11/2012 | 10.4 | (D) | |
| 10.2(E) | Amendment No. 4 to License Agreement, dated December 12, 2005, by and between the registrant and the Regents of the University of Michigan | S-1 | 05/11/2012 | 10.4 | (E) | |
| 10.2(F)† | Amendment No. 5 to License Agreement, dated March 12, 2007, by and between the registrant and the Regents of the University of Michigan | S-1 | 05/11/2012 | 10.4 | (F) | |
| 10.2(G) | Amendment No. 6 to License Agreement, dated October 6, 2008, by and between the registrant and the Regents of the University of Michigan | S-1 | 05/11/2012 | 10.4 | (G) | |
| 10.2(H) | Letter, dated September 4, 2008, from the University of Michigan to the registrant regarding the License Agreement | S-1 | 05/11/2012 | 10.4 | (H) | |
| 10.2(I)† | Memorandum of Understanding, dated May 8, 2009, by and between the registrant and the Regents of the University of | S-1 | 05/11/2012 | 10.4 | (I) | |

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|---|---|---|---|---|---|
| | Michigan | | | | |
| 10.3(A) | Lease, dated May 30, 2006, by and between the registrant and Slough Redwood City, LLC | S-1 | 05/11/2012 | 10.5 | (A) |
| 10.3(B) | First Amendment to Lease, dated November , 2006, by and between the registrant and Slough Redwood City, LLC | S-1 | 05/11/2012 | 10.5 | (B) |

| Exhibit Number | Exhibit Description | Incorporated by Reference Form | Date | Number | | Filed Herewith |
|---|---|---|---|---|---|---|
| 10.3(C) | Second Amendment to Office Lease, dated December 22, 2010, by and between the registrant and HCP LS Redwood City, LLC | S-1 | 05/11/2012 | 10.5 | (C) | |
| 10.3(D) | Third Amendment to Lease, dated November 11, 2016, by and between the registrant and HCP LS Redwood City, LLC | 10-K | 03/09/2017 | 10.5 | (D) | |
| 10.4 | Sublease, dated October 26, 2018, by and between the registrant and Venn Biosciences Corporation | | | | | X |
| 10.5 | Sublease, dated January 16, 2019, by and between the registrant and Revolution Medicines, Inc. | | | | | X |
| 10.6(A)# | 2004 Stock Incentive Plan, as amended | S-1 | 05/11/2012 | 10.6 | (A) | |
| 10.6(B)# | Form of Stock Option Agreement under 2004 Stock Incentive Plan | S-1 | 05/11/2012 | 10.6 | (B) | |
| 10.7(A)# | 2013 Equity Incentive Award Plan | S-1/A | 07/08/2013 | 10.7 | | |
| 10.7(B)# | Form of Stock Option Agreement under 2013 Equity Incentive Award Plan | S-1/A | 07/03/2013 | 10.7 | (B) | |
| 10.7(C)# | Form of Restricted Stock Unit Award Agreement under the OncoMed Pharmaceuticals, Inc. 2013 Equity Incentive Award Plan | S-8 | 03/28/2014 | 10.3 | | |
| 10.8# | Employee Stock Purchase Plan | S-1/A | 07/03/2013 | 10.8 | | |
| 10.9# | Offer Letter, dated November 12, 2005, by and between the registrant and Paul Hastings | S-1 | 05/11/2012 | 10.9 | | |
| 10.9(B)# | Amendment to Employment Agreement, dated July 2, 2013, by and between the registrant and Paul Hastings | S-1/A | 07/03/2013 | 10.9 | (B) | |
| 10.9(C)# | Letter Agreement re: Change in Control and Severance Agreement, dated October 12, 2015, by and between the registrant and Paul Hastings | 10-K | 03/10/2016 | 10.9 | (C) | |
| 10.9(D)# | Letter Agreement re: Your Resignation of Employment and Board Positions, dated January 1, 2018, by and between the registrant and Paul Hastings | 10-K | 03/09/2018 | 10.7 | (D) | |
| 10.9(E)# | Separation Agreement, dated December 5, 2018, by and between the registrant and Austin Gurney | | | | | X |

| | | | | |
|---|---|---|---|---|
| 10.10# | Offer Letter, dated May 27, 2004, by and between the registrant (as successor in interest to Cancer Stem Cell Genomics, Inc.) and John A. Lewicki | S-1 | 05/11/2012 | 10.10 |
| 10.11# | Offer Letter, dated June 18, 2009, by and between the registrant and Sunil Patel | S-1 | 05/11/2012 | 10.12 |
| 10.12# | Offer Letter, dated September 27, 2004, by and between the registrant and Austin Gurney | S-1 | 05/11/2012 | 10.14 |
| 10.13# | Form of Indemnity Agreement for directors and officers | S-1/A | 07/03/2012 | 10.16 |

| Exhibit Number | Exhibit Description | Incorporated by Reference Form | Date | Number | | Filed Herewith |
|---|---|---|---|---|---|---|
| 10.14# | Amended and Restated Form of Change in Control and Severance Agreement for officers | 10-K | 03/10/2016 | 10.16 | | |
| 10.15# | Form of Retention Bonus Agreement for officers | 10-K | 03/09/2018 | 10.13 | | |
| 10.16# | Offer Letter, dated April 24, 2008, by and between the registrant and Alicia J. Hager | S-1/A | 06/15/2012 | 10.19 | | |
| 10.17# | Letter Agreement re: Amended and Restated Change in Control and Severance Agreement, dated October 17, 2018, by and between the registrant and John Lewicki | | | | | X |
| 10.18(A)† | Multi-Product License Agreement, dated August 22, 2012, by and between the registrant and Lonza Sales AG | S-1/A | 10/25/2012 | 10.21 | | |
| 10.18(B)† | Amendment No. 1 to the Multi-Product License Agreement, dated January 22, 2014, by and between the registrant and Lonza Sales AG | 10-K | 03/12/2015 | 10.20 | (B) | |
| 10.18(C)† | Amendment No. 2 to the Multi-Product License Agreement, dated July 23, 2015, by and between the Registrant and Lonza Sales AG | 10-Q | 11/05/2015 | 10.1 | | |
| 10.18(D)† | Amendment No. 3 to the Multi-Product License Agreement, dated August 26, 2016, by and between the registrant and Lonza Sales AG | 10-Q | 11/02/2017 | 10.1 | | |
| 10.19 | Non-Employee Director Compensation Policy, adopted August 28, 2013, as amended October 14, 2013, February 28, 2014, June 24, 2015 and March 1, 2018 | 10-Q | 05/08/2018 | 10.1 | | |
| 10.20† | Master Research and Collaboration Agreement, by and between the registrant and Celgene Corporation | 10-K | 03/18/2014 | 10.23 | | |
| 10.21 | Securities Purchase Agreement, dated as of December 2, 2013, by and between the registrant and Celgene Corporation | 8-K | 12/03/2013 | 10.1 | | |
| 10.22(A) | Form of Stockholder Support Agreement, by and between Mereo BioPharma Group plc and certain stockholders of OncoMed Pharmaceuticals, Inc. | 8-K | 12/06/2018 | 10.1 | | |
| 10.22(B) | Form of Shareholder Support Agreement, by and between OncoMed Pharmaceuticals, Inc. and certain officers and directors of Mereo BioPharma Group plc. | 8-K | 12/06/2018 | 10.2 | | |
| 10.22(C) | Shareholder Support Agreement, by and between OncoMed Pharmaceuticals, Inc. and Novartis Pharma AG. | 8-K | 12/06/2018 | 10.3 | | |

| | | | | |
|---|---|---|---|---|
| 10.22(D) | Shareholder Support Agreement, by and between OncoMed Pharmaceuticals, Inc. and Invesco Asset Management Limited, as agent for and on behalf of its discretionary managed client, Invesco High Income Fund. | 8-K | 12/06/2018 | 10.4 |

| Exhibit Number | Exhibit Description | Incorporated by Reference Form | Date | Number | Filed Herewith |
|---|---|---|---|---|---|
| 10.22(E) | Shareholder Support Agreement, by and between OncoMed Pharmaceuticals, Inc. and Invesco Asset Management Limited, as agent for and on behalf of its discretionary managed client, Invesco Income Fund. | 8-K | 12/06/2018 | 10.5 | |
| 10.22(F) | Shareholder Support Agreement, by and between OncoMed Pharmaceuticals, Inc. and Invesco Asset Management Limited, as agent for and on behalf of its discretionary managed client, Invesco UK Strategic Income Fund. | 8-K | 12/06/2018 | 10.6 | |
| 10.22(G) | Form of CVR Agreement. | 8-K | 12/06/2018 | 10.7 | |
| 23.1 | Consent of Independent Registered Public Accounting Firm | | | | X |
| 24.1 | Power of Attorney (included on signature page to this Annual Report on Form 10-K) | | | | X |
| 31.1 | Certification of Principal Executive Officer Required Under Rule 13a-14(a) and 15d-14(a) of the Securities Exchange Act of 1934, as amended | | | | X |
| 31.2 | Certification of Principal Financial Officer Required Under Rule 13a-14(a) and 15d-14(a) of the Securities Exchange Act of 1934, as amended | | | | X |
| 32.1** | Certification of Principal Executive Officer and Principal Financial Officer Required Under Rule 13a-14(b) of the Securities Exchange Act of 1934, as amended, and 18 U.S.C. §1350 | | | | X |
| 101.INS | XBRL Instance Document | | | | X |
| 101.SCH | XBRL Taxonomy Extension Schema Document | | | | X |
| 101.CAL | XBRL Taxonomy Extension Calculation Linkbase Document | | | | X |
| 101.DEF | XBRL Taxonomy Extension Definition Linkbase Document | | | | X |
| 101.LAB | XBRL Taxonomy Extension Labels Linkbase Document | | | | X |
| 101.PRE | XBRL Taxonomy Extension Presentation Linkbase | | | | X |

† Confidential treatment has been granted for certain information contained in this exhibit. Such information has been omitted and filed separately with the Securities and Exchange Commission.
# Indicates management contract or compensatory plan.

* Portions of this exhibit (indicated by asterisks) have been omitted pursuant to a request for confidential treatment and this exhibit has been filed separately with the Securities and Exchange Commission.

** The certifications attached as Exhibit 32.1 that accompany this Annual Report on Form 10-K are not deemed filed with the Securities and Exchange Commission and are not to be incorporated by reference into any filing of OncoMed Pharmaceuticals, Inc. under the Securities Act of 1933, as amended, or the Securities Exchange Act of 1934, as amended, whether made before or after the date of this Form 10-K, irrespective of any general incorporation language contained in such filing.

ITEM 16. FORM 10-K SUMMARY

None.

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.

ONCOMED
PHARMACEUTICALS, INC.

By: /s/ John Lewicki
John Lewicki, Ph.D.
President

(principal executive officer)

Date: March 7, 2019

POWER OF ATTORNEY

Each person whose individual signature appears below hereby authorizes and appoints John Lewicki and Yvonne Li, and each of them, with full power of substitution and resubstitution and full power to act without the other, as his or her true and lawful attorney-in-fact and agent to act in his or her name, place and stead and to execute in the name and on behalf of each person, individually and in each capacity stated below, and to file any and all amendments to this Annual Report on Form 10-K and to file the same, with all exhibits thereto, and other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorneys-in-fact and agents, and each of them, full power and authority to do and perform each and every act and thing, ratifying and confirming all that said attorneys-in-fact and agents or any of them or their or his substitute or substitutes may lawfully do or cause to be done by virtue thereof.

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.

| Signature | Title | Date |
|---|---|---|
| /s/ John Lewicki<br>John Lewicki, Ph.D. | President<br><br>(principal executive officer) | March 7, 2019 |
| /s/ Yvonne Li<br>Yvonne Li | Vice President of Finance,<br><br>Controller and Administration<br><br>(principal financial and accounting officer) | March 7, 2019 |
| /s/Perry Karsen<br>Perry Karsen | Executive Chairman | March 7, 2019 |

| | | |
|---|---|---|
| /s/ Jack W. Lasersohn<br>Jack W. Lasersohn, J.D. | Director | March 7, 2019 |
| /s/ Deepa R. Pakianathan<br>Deepa R. Pakianathan, Ph.D. | Director | March 7, 2019 |
| /s/ Jonathan D. Root<br>Jonathan D. Root, M.D. | Director | March 7, 2019 |
| /s/ Rick E Winningham<br>Rick E Winningham | Director | March 7, 2019 |
| /s/ Michael S. Wyzga<br>Michael S. Wyzga | Director | March 7, 2019 |