

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, DC 20549

FORM 10-K

☒ ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934
For the fiscal year ended December 31, 2019

☐ 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: 001-36070

Five Prime Therapeutics, Inc.

(Exact name of registrant as specified in its charter)

Delaware
(State or other jurisdiction of
incorporation or organization)

26-0038620
(IRS Employer
Identification No.)

111 Oyster Point Boulevard
South San Francisco, California 94080
(415) 365-5600

(Address, including zip code, and telephone number, including area code, of registrant's principal executive offices)

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

<u>Title of Each Class</u>	<u>Trading Symbol(s)</u>	<u>Name of Each Exchange on Which Registered</u>
Common Stock, par value \$0.001 per share	FPRX	The Nasdaq Stock Market LLC

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 15(d) of the Act. Yes ☐ No ☒

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

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted and posted 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 and post such files): Yes ☒ No ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or a smaller reporting 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. (Check one):

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 Act). Yes ☐ No ☒

As of June 28, 2019, the last business day of the registrant's most recently completed second fiscal quarter, the aggregate market value of the registrant's common stock held by non-affiliates of the registrant was approximately \$205 million, based on the closing price of the registrant's common stock on The Nasdaq Global Select Market LLC on June 28, 2019 of \$6.03 per share. Shares of the registrant's common stock held by each officer and director and stockholders that the registrant has concluded are affiliates of the registrant have been excluded in that such persons may be deemed affiliates of the registrant. This determination of affiliate status is not a determination for other purposes.

As of February 26, 2020, the registrant had 36,391,980 shares of common stock, par value \$0.001 per share, outstanding.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the definitive proxy statement, or the Proxy Statement, for the 2020 Annual Meeting of Stockholders of the registrant are incorporated by reference into Part III of this Annual Report on Form 10-K. The Proxy Statement will be filed with the Securities and Exchange Commission within 120 days of the registrant's fiscal year ended December 31, 2019.

	<u>Page</u>
<u>SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS AND INDUSTRY DATA</u>	iii
 <u>PART I</u>	
Item 1 <u>Business</u>	1
Item1A <u>Risk Factors</u>	24
Item1B <u>Unresolved Staff Comments</u>	59
Item 2 <u>Properties</u>	59
Item 3 <u>Legal Proceedings</u>	59
Item 4 <u>Mine Safety Disclosures</u>	59
 <u>PART II</u>	
Item 5 <u>Market for Registrant’s Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities</u>	60
Item 6 <u>Selected Financial Data</u>	62
Item 7 <u>Management’s Discussion and Analysis of Financial Condition and Results of Operations</u>	63
Item 7A <u>Quantitative and Qualitative Disclosures About Market Risk</u>	79
Item 8 <u>Financial Statements and Supplementary Data</u>	79
Item 9 <u>Changes in and Disagreements With Accountants on Accounting and Financial Disclosure</u>	80
Item 9A <u>Controls and Procedures</u>	80
Item 9B <u>Other Information</u>	82
 <u>PART III</u>	
Item 10 <u>Directors, Executive Officers and Corporate Governance</u>	83
Item 11 <u>Executive Compensation</u>	83
Item 12 <u>Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters</u>	83
Item 13 <u>Certain Relationships and Related Transactions, and Director Independence</u>	83
Item 14 <u>Principal Accountant Fees and Services</u>	83
 <u>PART IV</u>	
Item 15 <u>Exhibits, Financial Statement Schedules</u>	84

Signatures

In this report, unless otherwise stated or the context otherwise indicates, references to “Five Prime,” “the company,” “we,” “us,” “our” and similar references refer to Five Prime Therapeutics, Inc. The Five Prime logo is our registered trademark. This report also contains registered marks, trademarks and trade names of other companies. All other trademarks, registered marks and trade names appearing in this report are the property of their respective holders.

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS AND INDUSTRY DATA

This Annual Report on Form 10-K, or our Annual Report, contains forward-looking statements. In some cases you can identify these statements by forward-looking words such as “believe,” “may,” “will,” “estimate,” “continue,” “anticipate,” “intend,” “could,” “would,” “project,” “plan,” “expect,” or similar expressions, or the negative or plural of these words or expressions. These forward-looking statements include statements concerning the following:

- our estimates regarding our expenses, revenues, anticipated capital requirements and our needs for additional financing;
- our receipt of future milestone payments and/or royalties, and the timing of such payments;
- our or our partners’ ability to timely advance drug candidates into and through clinical data readouts and successful completion of clinical trials;
- the timing of the initiation, progress and results of preclinical studies and research and development programs;
- our expectations regarding the potential safety, efficacy or clinical utility of our product candidates;
- the implementation, timing and likelihood of success of our plans to develop companion diagnostics for our product candidates;
- our ability to establish and maintain collaborations and necessary licenses;
- the implementation of our business model and strategic plans for our business, product candidates and technology;
- the scope of protection we establish and maintain for intellectual property rights covering our product candidates and technology;
- the size of patient populations targeted by products we or our partners develop and market adoption of such products by physicians and patients;
- the timing or likelihood of regulatory filings and approvals;
- the ability to negotiate pricing, coverage and adequate reimbursement for our drug candidates with third parties and government authorities;
- developments relating to our competitors’ and our industry;
- our expectations regarding licensing, acquisitions and strategic operations; and
- political, social and economic instability, natural disasters or public health epidemics in countries where we or our collaborators do business.

These statements are only current predictions and are subject to known and unknown risks, uncertainties and other factors that may cause our or our industry’s actual results, levels of activity, performance or achievements to be materially different from those anticipated by the forward-looking statements. We discuss many of these risks in this report in greater detail under the heading “Risk Factors” and elsewhere in this Annual Report. You should not rely upon forward-looking statements as predictions of future events.

Although we believe that the expectations reflected in these forward-looking statements are reasonable, we cannot guarantee future results, levels of activity, performance, or achievements. Except as required by law, we are under no duty to update or revise any of these forward-looking statements, whether as a result of new information, future events or otherwise, after the date of this Annual Report.

We obtained the industry, market and competitive position data in this Annual Report from our own internal estimates and research as well as from industry and general publications and research surveys and studies conducted by third parties. While we believe that each of these studies and publications is reliable, we have not independently verified market and industry data from third-party sources. While we believe our internal company research is reliable and the market definitions we use are appropriate, neither such research nor these definitions have been verified by any independent source.

Item 1. Business.

Our Company

We are a clinical-stage biotechnology company focused on developing immune modulators and precision therapies to improve the lives of patients with solid tumor cancers. Our primary focus is on developing immuno-oncology and targeted cancer therapies. Each of our product candidates has an innovative mechanism of action and addresses patient populations for which better therapies are needed. In addition, we use companion diagnostics where appropriate to allow us to select patients most likely to benefit from treatment with our product candidates. The most advanced product candidates that we or our partners are developing are identified below.

- **Bemarituzumab (FPA144)** is an antibody that inhibits fibroblast growth factor receptor 2b, or FGFR2b, and that induces antibody-dependent cellular cytotoxicity that we are studying in a clinical trial in combination with 5-fluorouracil (5-FU), leucovorin and oxaliplatin, a standard-of-care chemotherapy regimen known as mFOLFOX6, as front-line treatment of patients with gastric (stomach) or gastroesophageal junction, or GEJ, cancer that overexpresses FGFR2b. In December 2017, we granted Zai Lab (Shanghai) Co., Ltd., or Zai Lab, an exclusive license to develop and commercialize bemarituzumab in China, Hong Kong, Macau and Taiwan.
- **FPA150** is an antibody that targets B7-H4 that we are studying in a clinical trial to treat patients with cancers that overexpress B7-H4.
- **FPT155** is a soluble CD80 fusion protein that enhances co-stimulation of T cells through CD28 that we are studying in a clinical trial in multiple cancers.
- **BMS-986258** is an anti-T cell immunoglobulin and mucin domain-3, or TIM-3, antibody that our partner, BMS, is studying in a clinical trial in combination with *Opdivo* in patients with advanced malignant tumors.

Our product candidates are typically only-in-class, first-in-class or meaningfully differentiated from other in-class therapeutics. We generally look for single-agent activity or clear activity in, for example, tumor types that are rarely sensitive to checkpoint inhibitors.

Historically, we leveraged our differentiated discovery capabilities and protein therapeutic generation and engineering capabilities to identify and validate targets that we believed could be useful in oncology, and we generated and preclinically tested therapeutic proteins, including antibodies and fusion proteins, directed to or containing the targets we identified and validated. In October 2019, we began a corporate restructuring, pursuant to which we are eliminating most of our in-house target discovery and validation and protein therapeutic generation and engineering capabilities by the first quarter of 2020. We currently have three late-stage research programs that arose from our work with our discovery capabilities. We plan to advance lead therapeutic antibodies for one of these programs into IND-enabling studies in the second quarter of 2020. Due to our significantly reduced scope of in-house research and preclinical capabilities following our October 2019 restructuring, we expect to advance each of our late-stage research programs through preclinical development relying mostly on out-sourced and contracted capabilities. In addition, as part of our corporate restructuring, we shifted our focus from in-house discovery and research to supplementing our development pipeline by looking to selectively acquire or license, on an exclusive basis, rights to product candidates from biotechnology and pharmaceutical companies.

Strategy

Our goal is to build a leadership position in the development and commercialization of oncology therapeutics. The key elements of our strategy to achieve this goal are:

- **Focus on oncology therapeutics.** Oncology therapeutics accounted for nearly \$150 billion in global sales in 2018. However, there continues to be significant medical need for innovative and effective cancer therapies. With the significant experience and expertise of our clinical scientists in the field of oncology, we believe we are well positioned to develop and clinically evaluate effective and innovative protein therapeutics.

- **Continue to advance and expand our pipeline.** We have a robust pipeline that addresses multiple cell types in the tumor microenvironment. We and our partners are currently advancing bemarituzumab, FPA150, FPT155, and BMS-986258 through clinical development, and we have three late-stage research programs, one of which we expect to advance into IND-enabling studies in the second quarter of 2020. We plan to focus our resources on the further development of these product candidates, advancing our late-stage research programs into preclinical and clinical development and supplementing our ongoing development by looking to selectively acquire or in-license, on an exclusive basis, rights to develop product candidates from biotechnology and pharmaceutical companies.
- **Establish strategic license agreements and product and clinical collaborations to supplement our development capabilities and generate funding.** From time to time, we plan to establish additional product and clinical collaborations. These collaborations will allow us to supplement our development, manufacturing, regulatory and commercialization capabilities to broaden and accelerate clinical development and potential commercialization of our product candidates, provide us with significant funding to advance our pipeline and validate our technology.
- **Build a U.S.-focused commercial enterprise by retaining rights for products in targeted specialty markets.** As our product candidates near commercialization, we plan to build sales and marketing capabilities in selected specialty markets in the United States that we can adequately serve as we work toward becoming a focused commercial organization. We currently have global rights to all our product candidates, except that we granted Zai Lab an exclusive license to develop and commercialize bemarituzumab in China, Hong Kong, Macau and Taiwan, and granted BMS exclusive global rights to develop and commercialize cabiralizumab.

Our Pipeline

The following table shows the stage of development of the most advanced product candidates that we are developing or that have come from our pipeline and are being developed or supported by our collaborators:



* Partnered with Zai Lab – see “Part I—Item 1. Collaborations” of this Annual Report for a description of our China collaboration agreement with Zai Lab.

** Partnered with BMS – see “Part I—Item 1. Collaborations” of this Annual Report for a description of our collaboration agreements with BMS.

† Development is being conducted exclusively by BMS.

†† Development is being conducted exclusively by Seattle Genetics.

Clinical Programs

Bemarituzumab (FPA144)

Bemarituzumab is an antibody that inhibits FGFR2b that we are developing to treat a subset of gastric (stomach) and GEJ cancer patients whose tumors overexpress FGFR2b. This subset of patients is associated with lower overall survival. We are working with third parties specializing in companion diagnostic development to develop immunohistochemistry, or IHC, and circulating tumor DNA, or ctDNA, blood-based companion diagnostics to identify gastric and GEJ cancer patients who have FGFR2b overexpressing tumors or *FGFR2* gene amplification and who would be most likely to benefit from treatment with bemarituzumab.

We believe that bemarituzumab acts on tumor cells in two ways:

- bemarituzumab binds to FGFR2b and blocks certain FGFs from binding to FGFR2b, preventing these FGFs from promoting the growth of the tumor cells; and
- once bemarituzumab binds to FGFR2b on the surface of the tumor cell, bemarituzumab recruits natural killer immune cells into the tumor microenvironment to kill the tumor cell in a process called antibody-dependent cell-mediated cytotoxicity, or ADCC.

Clinical Development of Bemarituzumab

We are currently dosing patients in a global Phase 3 clinical trial of bemarituzumab in combination with mFOLFOX6 as front-line treatment of patients with advanced gastric or GEJ cancer that overexpresses FGFR2b, which we refer to as our FIGHT trial. We are conducting the trial in China in collaboration with Zai Lab. We paused enrollment in the FIGHT trial in the fourth quarter of 2019, except for sites in Japan where we plan to enroll up to six patients while the remainder of the FIGHT trial remains closed for enrollment.

We are identifying patients for inclusion in the Phase 3 FIGHT trial using both an IHC test, which allows us to detect FGFR2b overexpression on the tumor tissue in a biopsy specimen, and a ctDNA blood-based test, which allows us to detect *FGFR2* gene amplification from DNA shed by tumor cells in blood plasma. *FGFR2* gene amplification is a cause of FGFR2b overexpression, and measuring *FGFR2* gene amplification in the blood is an indirect way of identifying tumors that overexpress FGFR2b that we may otherwise not identify using an IHC test. The FIGHT trial is designed to enroll patients that test positive for (a) FGFR2b overexpression, as detected by the IHC test alone, (b) *FGFR2* gene amplification, as detected by the ctDNA test alone, and (c) both FGFR2b overexpression, as detected by the IHC test, and *FGFR2* gene amplification, as detected by the ctDNA test. We believe that patients with tumors that meet the criteria in any of these subgroups may benefit from the addition of bemarituzumab to front-line chemotherapy.

Initially, we expected that approximately 10% of the previously untreated, advanced gastric and GEJ cancer patients that we pre-screened in the FIGHT trial would test positive for FGFR2b overexpression or *FGFR2* gene amplification, as detected by the IHC and ctDNA tests we are using to identify patients eligible for enrollment in the trial. We also expected that the majority of patients that test positive for FGFR2b overexpression by IHC would also test positive for *FGFR2* gene amplification by ctDNA.

As of the time we paused enrollment in the trial, approximately 30% of the patients that we pre-screened for possible enrollment in the trial tested positive for FGFR2b overexpression, as measured by the IHC test alone. This was significantly higher than we expected at the time we started the trial. In addition, contrary to our initial expectations, the vast majority of patients that tested positive for FGFR2b overexpression did not test positive for *FGFR2* gene amplification. These results suggest that the FIGHT trial may enroll a greater proportion of patients whose tumors overexpress FGFR2b due to a reason other than *FGFR2* gene amplification. We believe all patients enrolled in the FIGHT trial may benefit from the addition of bemarituzumab to front-line chemotherapy, as bemarituzumab targets FGFR2b that is overexpressed on the cell surface regardless of the cause of overexpression. However, the composition of the patient population in our FIGHT trial differs from the composition of the patient population for which we designed the FIGHT trial. This represents an additional unknown because we have limited clinical data from patients who overexpress FGFR2b in the absence of *FGFR2* gene amplification, and these patients represent a vast majority of the patients we have enrolled. These patients may be less responsive to the combination of bemarituzumab and mFOLFOX6 than the population of patients we originally sought to enroll, which increases the risk that we do not achieve the primary endpoints of the FIGHT trial with statistical significance and increases

the risk that the FIGHT trial will not enable registration of bemarituzumab in combination with mFOLFOX6 as front-line treatment for patients with advanced gastric or GEJ cancer that overexpresses FGFR2b.

Accordingly, we plan to conduct an early futility analysis in mid-2020 after the occurrence of a pre-specified number of events in the trial. As of February 2020, we had enrolled approximately 150 patients in the trial. We believe this should be a sufficient number of patients to allow us to conduct the futility analysis as planned. The futility analysis will allow us to ensure that the FIGHT trial is adequately powered to detect an overall survival benefit at full enrollment in previously untreated, advanced gastric and GEJ cancer patients whose tumors test positive for FGFR2b overexpression. The outcome of the futility analysis will lead to a recommendation from the independent Data Monitoring Committee in the FIGHT trial to continue the trial as is, stop the trial or amend the trial. Stopping or amending the FIGHT trial as a result of our early futility analysis may further delay our development of bemarituzumab in combination with mFOLFOX6 as a treatment for patients with advanced gastric or GEJ cancer that overexpresses FGFR2b.

Even if we pass the futility analysis, given the significant cost of running the FIGHT trial and our current resources and priorities, our ability to restart and continue the FIGHT trial as currently designed will depend on our ability to secure a partner that will pay for all or substantially all of any future development and commercialization expenses for our bemarituzumab program. Based on feedback we have received from potential partners, we believe that it may be difficult to secure a partner for our bemarituzumab program on reasonable terms or at all without data showing the efficacy of the combination of bemarituzumab and mFOLFOX6 in patients with advanced gastric or GEJ cancer that overexpresses FGFR2b. Accordingly, we are considering additional alternatives that will allow us to advance our bemarituzumab program in the event we are unable to secure a partner, including converting the FIGHT trial to a Phase 2 or Phase 2/3 clinical trial in order to generate the data that would potentially support a partnering transaction.

Market Opportunity

Globally, gastric cancer is the fifth most common malignancy with the third highest mortality. In the United States, Europe, Japan, South Korea and China, approximately 789,800 patients are diagnosed with gastric or GEJ cancer each year. We believe approximately 78,980 of these patients have tumors that overexpress FGFR2b or are *FGFR2* gene-amplified and are therefore more likely to respond to bemarituzumab. In addition, we believe approximately 56,870 of these patients currently receive chemotherapy-based treatment and therefore represent the target population for bemarituzumab of patients with advanced, drug-treatable tumors that overexpress FGFR2b.

In June 2016, the U.S. Food and Drug Administration, or the FDA, granted Orphan Drug Designation to bemarituzumab for the treatment of gastric cancer, including GEJ cancer, in patients whose tumors overexpress FGFR2b.

Under our China collaboration agreement, we granted Zai Lab an exclusive license to develop bemarituzumab in China, Hong Kong, Macau and Taiwan. We plan to continue to seek strategic collaborators to develop and commercialize bemarituzumab in other territories. We plan to retain the right to commercialize or co-commercialize bemarituzumab in the United States.

FPA150

FPA150 is a CD8 T cell checkpoint inhibitor antibody that targets B7-H4. B7-H4 is a member of the B7 family of checkpoint inhibitors and shares significant homology with other B7 family members, including PD-L1 and PD-L2. B7-H4 is expressed in several human tumors, including breast, ovarian, endometrial, lung and pancreatic cancers, and its expression correlates with poor prognosis. We designed FPA150 to target tumor cells through two distinct mechanisms of action: (i) by blocking B7-H4 from sending an inhibitory signal to CD8 T cells, and (ii) by enhancing ADCC against B7-H4-expressing tumor cells.

We are conducting a Phase 1a/1b clinical trial to evaluate the safety, tolerability and preliminary efficacy of FPA150 as a potential therapy in patients with a variety of cancers. We are dosing patients in the Phase 1b expansion portion of the trial, in which we are evaluating FPA150 as a monotherapy in HR+/HER2- and triple-negative breast cancer, ovarian cancer and endometrial cancer patients whose tumors overexpress B7-H4 and evaluating FPA150 in combination with *Keytruda*® (pembrolizumab) in patients with advanced ovarian cancer that overexpresses B7-H4 who have not received prior therapy with an anti-PD1 or PD-L1-directed agent.

In June 2019, we presented preliminary safety and pharmacokinetic data from 29 patients from the Phase 1a portion of the Phase 1a/1b clinical trial in a clinical poster at the 2019 American Society of Clinical Oncology Annual Meeting, or the ASCO presentation. As of the March 15, 2019 data cut-off date for the ASCO presentation, we had tested FPA150 in patients with advanced solid tumors, including patients with tumors that overexpress B7-H4, at doses of up to 20 mg/kg given as monotherapy every three weeks. We observed that FPA150 was well tolerated in doses up to 20 mg/kg, with no dose-limiting toxicities and no serious adverse events or treatment-related adverse events greater than Grade 4 that were attributable to FPA150. In addition, we believe the observed trough concentration at a dose of 20 mg/kg achieves greater than 95% occupancy for both B7-H4 and the FcγRIIIa receptor. Based on the safety and pharmacokinetic data, we selected a dose of 20 mg/kg of FPA150 every three weeks for the Phase 1b monotherapy expansion cohorts in our FPA150 trial.

In September 2019, we presented in a clinical poster at the European Society for Medical Oncology 2019 Congress, or the ESMO presentation, preliminary efficacy data from the Phase 1b monotherapy expansion portion of the trial in patients with breast, endometrial and ovarian cancers that overexpress B7-H4 and early safety data from the Phase 1a *Keytruda* combination portion of the trial in patients with advanced ovarian cancer that overexpresses B7-H4.

As of the August 9, 2019 data cut-off date for the ESMO presentation, we had tested FPA150 in the Phase 1b monotherapy expansion portion of the trial in 42 patients with breast, endometrial and ovarian cancers that overexpress B7-H4 at a dose of 20 mg/kg of FPA150 given as monotherapy every three weeks, and 31 of these patients were evaluable for response. We had also tested FPA150 in the Phase 1a *Keytruda* combination portion of the trial in four patients with advanced ovarian cancer that overexpresses B7-H4 at a dose of 20 mg/kg of FPA150 given in combination with 200 mg/kg of pembrolizumab every three weeks. As of the data cut-off date, we observed that FPA150 was well tolerated at the recommended dose of 20 mg/kg as both monotherapy and in combination with *Keytruda*, with no treatment-related serious adverse events. In the Phase 1b monotherapy expansion portion of the trial, we observed a confirmed partial response in two ovarian cancer patients (one in the dose escalation portion of the trial and one at the recommended dose of 20 mg/kg given as monotherapy every three weeks) and, as of the data cut-off date, 11 patients with stable disease remained on therapy. We also observed increased tumor infiltration of T cells and natural killer cells in patients who experienced a partial response or stable disease, which supports an immune-mediated mechanism of action for FPA150 and our ongoing clinical evaluation of FPA150 in combination with an anti-PD1 antibody.

Based on the efficacy data that we have observed in our Phase 1a/1b clinical, including as presented in the ESMO presentation, we do not currently plan to advance the development of FPA150 as a monotherapy. In addition, although we continue to evaluate FPA150 in combination with *Keytruda* in a Phase 1b cohort of patients with ovarian cancer that overexpresses B7-H4, given the costs of advancing this combination through clinical development and our current resources and priorities, we do not plan to advance the clinical development of the combination independently in the near term. Because of the lack of observed off-target toxicity in our clinical trial and the extent of overexpression of B7-H4 in several tumors, we believe that developing our B7-H4 antibodies in other formats, including as a re-directed T-cell bi-specific format or as a chimeric antigen receptor (CAR) T-cell therapy, may benefit patients. We plan to evaluate business development opportunities that would allow us to advance the clinical development of FPA150 or our other B7-H4 antibodies in combination with a PD-L1 antibody or in other formats.

FPT155

FPT155 is a soluble CD80-Fc fusion protein. CD80 is a member of the B7 family of checkpoint inhibitors that is involved in modulating T cell priming and activation. This program came from our *in vivo* screens, which demonstrated that a soluble form of CD80 had potent *in vivo* anti-tumor activity when compared with 500 other immune-related proteins. FPT155 uses the binding interactions of soluble CD80 to (i) block CTLA-4 from competing for endogenous CD80, allowing CD28 signaling to prevail in T cell activation in the tumor microenvironment and (ii) directly engage CD28 to enhance its co-stimulatory T cell activation activity without inducing super agonism.

Clinical Development of FPT155

We are conducting a Phase 1a/1b clinical trial of FPT155 in patients with solid tumors. We are currently in the Phase 1a dose escalation portion of the trial. As of January 2020, we had tested FPT155 in nine dose escalation cohorts (up to 140 mg flat dosing every three weeks) without any observed dose-limiting toxicities and are currently treating patients in the tenth dose cohort at the 280 mg dose level. We have not observed any evidence of super agonism in patients enrolled the trial. We have also initiated enrollment in an exploratory cohort in the Phase 1a portion of the trial that will test FPT155 at dose levels at which we have not observed any dose-limiting toxicities and at which we had observed efficacy in preclinical models. In the exploratory cohort, we will investigate FPT155 monotherapy in patients with solid tumors, with the objective of gaining data on safety, pharmacokinetics and potential preliminary single-agent clinical activity of FPT155. In the Phase 1b expansion portion of the trial, we plan to evaluate FPT155 in various disease-specific cohorts of patients.

In November 2019, we presented in a clinical poster at the 34th Annual Meeting of the Society for Immunotherapy of Cancer, or the SITC presentation, initial safety data from the Phase 1a dose escalation portion of our Phase 1a/1b clinical trial. As of the September 30, 2019 data cut-off date for the SITC presentation, we had tested FPT155 in 15 patients with advanced solid tumors at doses of up to 42 mg given as monotherapy every three weeks. We observed that FPT155 was well tolerated in doses up to 42 mg, with no dose-limiting toxicities and no serious adverse events or treatment-related adverse events greater than Grade 3. There was also no observed evidence of clinical or laboratory cytokine release syndrome.

The pharmacodynamic biomarker data we have observed in the Phase 1a dose escalation portion of the trial also shows expansion of central memory T cells in the blood, which is consistent with the predicted mechanism of action of FPT155 that has been observed in preclinical studies.

Although we anticipate single-agent activity of FPT155, the early pharmacodynamic and safety data we have observed in the trial and preclinical data suggest that the combination of FPT155 and an anti-PD-1 therapy will be synergistic. Accordingly, we plan to add a dose escalation cohort to the trial to evaluate the combination of FPT155 and pembrolizumab in patients with non-small cell lung cancer, which we plan to follow with an expansion cohort evaluating a selected dose of FPT155 in combination with pembrolizumab in the same patient population.

Cabiralizumab (FPA008)

Cabiralizumab is an antibody that inhibits CSF1R. CSF1R is a cell surface protein that controls the survival and function of certain immune response cells called monocytes and macrophages, which are elevated or activated in multiple disease settings. In cancer, certain macrophages suppress the immune system's ability to kill cancer cells, and the presence of these immunosuppressive tumor-associated macrophages, or TAMs, often correlates with poor prognosis in cancer patients. Cabiralizumab blocks the activation and survival of TAMs, thereby facilitating an immune response against tumors. Preclinical data have shown that the combination of cabiralizumab with T cell checkpoint inhibitors, such as PD-1 inhibitors, or immune agonists (e.g., anti-CD40 antibodies) may have synergistic therapeutic effects in treating cancer.

Clinical Development of Cabiralizumab

We have completed enrollment and treatment of patients in our Phase 1a/1b clinical trial to evaluate the safety, tolerability and preliminary efficacy of combining cabiralizumab with *Opdivo* as a potential treatment for a variety of cancers.

Based on data from our Phase 1a/1b clinical trial testing the combination of cabiralizumab with *Opdivo* in patients with late-line pancreatic cancer, our partner BMS advanced the development of cabiralizumab in combination with *Opdivo*, with and without chemotherapy, in second-line patients with pancreatic cancer in a randomized, controlled multi-arm Phase 2 clinical trial (NCT03336216). In February 2020, BMS informed us that the trial did not meet its primary endpoint. BMS informed us that while it has no near-term plans for additional sponsored development of cabiralizumab, it will continue to support the evaluation of cabiralizumab in select, ongoing investigator-sponsored trials and may continue to assess future development opportunities for cabiralizumab. In addition, BMS informed us that no new safety signals were observed in the Phase 2 clinical trial.

BMS-986258

BMS-986258 is a fully human monoclonal antibody against TIM-3, an immune checkpoint receptor that is known to limit the duration and magnitude of T cell responses. BMS-986258 binds to TIM-3 that is expressed on certain T cells, including tumor infiltrating lymphocytes. This abrogates T cell inhibition, activates antigen-specific T lymphocytes and enhances cytotoxic T cell-mediated tumor cell lysis, which together result in decreased tumor growth. BMS-986258 is BMS's first clinical candidate arising from our March 2014 immuno-oncology research collaboration.

Clinical Development of BMS-986258

BMS is conducting a Phase 1/2 clinical trial of BMS-986258 in combination with *Opdivo* and in combination with Halozyme Therapeutics, Inc.'s rHuPH20 in patients with advanced malignant tumors (NCT03446040).

Preclinical and Late-Stage Research Programs

Historically, we leveraged our differentiated discovery capabilities and protein therapeutic generation and engineering capabilities to identify and validate targets that we believed could be useful in oncology, and we generated and preclinically tested therapeutic proteins, including antibodies and fusion proteins, directed to or containing the targets we identified and validated. In October 2019, we began a corporate restructuring pursuant to which we are eliminating most of our in-house target discovery and validation and protein therapeutic generation and engineering capabilities by the first quarter of 2020.

We currently have three late-stage research programs that arose from our work with our discovery capabilities. We plan to advance lead therapeutic antibodies for one of these programs into IND-enabling studies in the second quarter of 2020. Due to our significantly reduced scope of in-house research and preclinical capabilities following our October 2019 restructuring, we expect to advance each of our late-stage research programs through preclinical development relying mostly on out-sourced and contracted capabilities.

Collaborations and License Agreements

A part of our strategy is to establish collaborations with strategic partners. These collaborations allow us to supplement our development, manufacturing, regulatory and commercialization capabilities to broaden and accelerate clinical development and commercialization of our product candidates, provide us with significant funding to advance our pipeline and validate our technology.

In addition, as part of corporate restructuring, we shifted our focus from in-house discovery and research to supplementing our development pipeline by looking to selectively acquire or license, on an exclusive basis, rights to develop product candidates from biotechnology and pharmaceutical companies. We plan to evaluate for potential acquisition or licensing assets that are IND-ready or in early clinical development and that we can leverage our in-house development capabilities to develop to data read-outs in the near- to medium-term. Our primary focus remains on oncology therapeutics.

A summary of our key product, clinical and discovery collaborations and license agreements is set forth below. For information regarding the financial terms of the following agreements, including amounts we have received through December 31, 2019, see “Management’s Discussion and Analysis of Financial Condition and Results of Operations – Financial Overview – Collaboration and License Revenue.”

Collaborations

Zai Lab China License and Collaboration Agreement

In December 2017, we entered into the China collaboration agreement with Zai Lab, pursuant to which we granted Zai Lab an exclusive license to develop and commercialize bemarituzumab, and all fragments, conjugates, derivatives and modifications thereof, or the licensed antibody, in China, Hong Kong, Macau, and Taiwan, each a region, and collectively, the territory.

Under the terms of the China collaboration agreement, Zai Lab will be responsible, at its expense, for (i) developing and commercializing products containing the licensed antibody, each, a licensed product, under a territory development plan, and (ii) performing certain development activities to support our global development and registration of licensed products, including the Phase 3 FIGHT trial, in the territory, under a global development plan. In addition, Zai Lab agreed to reimburse us for certain global development activities, which is limited to a maximum of \$10.0 million, and certain costs for the development of companion diagnostics.

In January 2018, pursuant to the terms of the China collaboration agreement, Zai Lab paid us a \$5 million non-refundable and non-creditable upfront fee (\$4.2 million after netting value-added tax withholdings of \$0.8 million). Additionally, pursuant to the China collaboration agreement, with respect to each licensed product, we will be eligible to receive up to \$39.0 million in specified developmental and regulatory milestone payments.

Zai Lab will also be obligated to pay us a royalty, on a licensed product-by-licensed product and region-by-region basis, in the high teens or low twenties, depending on the number of patients Zai Lab enrolls in the FIGHT trial, subject to reduction in certain circumstances, on net sales of each licensed product in the territory until the latest of (i) 11 years after the first commercial sale of such licensed product in such region, (ii) the expiration of certain patents covering such licensed product in such region, and (iii) the date on which any applicable regulatory, pediatric, orphan drug or data exclusivity with respect to such licensed product expires in such region. We cannot determine the date on which Zai Lab’s potential royalty payment obligations to us would expire because Zai Lab has not yet developed any licensed products under the agreement, and we therefore cannot at this time identify the date of the first commercial sale of or expiration of any related patents covering or regulatory exclusivity periods with respect to any licensed products.

Under the China collaboration agreement, provided that Zai Lab enrolls and treats a specified number of patients in the FIGHT trial in China, Zai Lab is eligible to receive a low single-digit percentage royalty, on a licensed product-by-licensed product basis, on net sales of a licensed product outside the territory until 10 years after the first commercial sale of each such licensed product outside the territory.

Unless earlier terminated by either party, the China collaboration agreement will expire on a licensed product-by-licensed product and region-by-region basis upon the expiration of Zai Lab’s payment obligations with respect to each licensed product under the agreement. Zai Lab may terminate the agreement in its entirety at any time with advance written notice. Either party may terminate the agreement in its entirety with written notice for the other party’s material breach if such party fails to cure the breach. We may terminate the agreement in its entirety with written notice for Zai Lab’s material breach of its diligence obligations with respect to development and obtaining marketing approval, and may terminate the agreement on a region-by-region basis for Zai Lab’s breach of its diligence obligations with respect to timely commercialization of a licensed product in a region following marketing approval. We may terminate the agreement in its entirety if Zai Lab or its affiliates or sublicensees commences a legal action challenging the validity, enforceability or scope of any of our patents in the territory. Either party also may terminate the agreement in its entirety upon certain insolvency events involving the other party.

BMS Immuno-oncology Research Collaboration

In March 2014, we entered into a research collaboration and license agreement, or the immuno-oncology research collaboration, with BMS pursuant to which we and BMS are collaborating to carry out a research program to (i) discover novel interacting proteins in two undisclosed immune checkpoint pathways using our target discovery platform, (ii) further the understanding of target biology with respect to targets in these checkpoint pathways, and (iii) discover and pre-clinically develop compounds suitable for development for human therapeutic uses against targets in these checkpoint pathways. Based on data arising from our initial screens, in January 2016, we amended the immuno-oncology research collaboration to add an additional undisclosed checkpoint pathway to the research program, for a total of three immune checkpoint pathways.

In December 2017, we earned a \$5 million milestone payment under the discovery collaboration agreement in connection with BMS's filing of an IND for BMS-986258, BMS's anti-TIM-3 antibody. This antibody is BMS's first clinical candidate arising from the collaboration.

The initial three-year research term of the immuno-oncology research collaboration ended in March 2017. BMS exercised its option to extend the research term to March 2018 and then again to extend the research term for an additional year to March 2019. BMS agreed to provide us with funding for our additional research during the extended term. BMS does not have the right to extend the research term beyond March 2019.

In connection with entering into the immuno-oncology research collaboration, BMS paid us an upfront payment of \$20.0 million. We are eligible to receive up to \$240.0 million per collaboration target in specified developmental-, regulatory- and commercialization-related contingent payments comprising aggregate developmental-related contingent payments of up to \$53.0 million, aggregate regulatory-related contingent payments of up to \$74.0 million and aggregate commercialization-related contingent payments of up to \$113.0 million. We are also eligible to receive up to \$60.0 million in sales-based contingent payments per collaboration product.

For each commercialized product under the immuno-oncology research collaboration that is directed toward a target in a checkpoint pathway, BMS is also obligated to pay us tiered mid-single digit to low double-digit percentage royalties, subject to reduction in certain circumstances, on net sales of such product for the longer of (i) 12 years after the first commercial sale of such product, (ii) the life of certain licensed patents covering such product or (iii) the date on which any applicable regulatory, pediatric, orphan drug or data exclusivity with respect to such product expires. We cannot determine the date on which BMS's potential royalty payment obligations to us would expire because BMS has not yet commercialized any products under the immuno-oncology research collaboration, and we therefore cannot identify the date of the first commercial sale of or expiration of any related patents covering such product.

Unless earlier terminated by either party, the immuno-oncology research collaboration will expire on a product-by-product and country-by-country basis upon the expiration of all of BMS's payment obligations under the immuno-oncology research collaboration agreement. BMS may terminate the immuno-oncology research collaboration agreement in its entirety or on a collaboration target-by-collaboration target basis at any time with advance written notice. Either party may terminate the immuno-oncology research collaboration agreement in its entirety or on a collaboration target-by-collaboration target basis with written notice for the other party's material breach if such other party fails to timely cure the breach. Either party also may terminate the immuno-oncology research collaboration agreement in its entirety upon certain insolvency events involving the other party.

License Agreements

License Agreement with Galaxy

In December 2011, we entered into a license agreement with Galaxy Biotech LLC, or Galaxy, pursuant to which Galaxy granted us an exclusive worldwide license to develop and commercialize FGFR2b antibodies, including bemarituzumab. Under the license agreement, we are obligated to use commercially reasonable efforts to develop and commercialize at least one licensed product in at least one tumor indication.

In May 2016, we amended the license agreement to revise certain milestone definitions, reduce certain milestone payments and add certain development-related milestone payments that were triggered by dosing of certain patients in the Phase 1 clinical trial of bemarituzumab, which milestones were deemed achieved as of December 31, 2016. In May 2017, we further amended the license agreement to align the net sales definition under the agreement to the net sales definition under any sublicense we may grant under the agreement and to amend the termination provisions to allow for a direct license between Galaxy and any sublicensee upon termination of the agreement.

Through December 31, 2019, we made milestone payments to Galaxy totaling \$14.6 million. We are obligated to pay Galaxy additional milestone payments of up to \$77.4 million, comprising aggregate intellectual property-related milestone payments of up to \$3.0 million, aggregate development-related milestone payments of up to \$17.5 million for development in two indications, aggregate regulatory-related milestone payments of up to \$41.5 million for two indications and aggregate commercial-related milestone payments of up to \$30.0 million. We are also obligated to pay tiered royalties on net sales of bemarituzumab from the high-single digits to the low-double digits.

Our license agreement with Galaxy will remain in effect until the expiration of our royalty obligations in all countries. For each licensed product, we are obligated to pay Galaxy royalties on net sales of such product on a country-by-country basis for the longer of the life of the licensed patents covering such licensed product in such country or 10 years after the first commercial sale of such licensed product in such country. We cannot determine the date on which our royalty payment obligations to Galaxy would expire because no commercial sales of bemarituzumab have occurred and the last-to-expire relevant patent covering bemarituzumab in a given country may change in the future. Galaxy currently has issued patents, which we have licensed, covering bemarituzumab in the United States, Europe, China, Japan and other countries that expire in 2029. Further patents may issue from pending patent applications in these and other countries and these patents would expire in 2029. These patent expiration dates do not reflect any patent term adjustments or extensions that may be available.

We may terminate the license agreement for convenience in its entirety or on a country-by-country basis upon prior written notice to Galaxy. Either party may terminate the license agreement in its entirety or with respect to certain countries after the first commercial sale of a licensed product in certain circumstances in the event of an uncured material breach by the other party. Either party may terminate the license agreement in the event of the other party's filing or institution of bankruptcy, reorganization, liquidation or receivership proceedings or upon an assignment of a substantial portion of its assets for the benefit of creditors. Galaxy may terminate the license agreement if we or any of our affiliates challenge the validity or enforceability of any patent licensed to us by Galaxy under the license agreement or if we aid or assist any affiliate or third party in such a challenge other than as required by law.

Non-Exclusive License with BioWa-Lonza

In February 2012, we entered into a license agreement with BioWa, Inc. and Lonza Sales AG, or BioWa-Lonza, pursuant to which BioWa-Lonza granted us a non-exclusive license to use their Potelligent® CHOK1SV technology, including the CHOK1SV cell line, and a non-exclusive license to related know-how and patents. This license is necessary to produce our bemarituzumab antibody.

Under the agreement, we made milestone payments to BioWa-Lonza totaling \$1.5 million through December 31, 2019. We are obligated to pay BioWa-Lonza additional milestone payments of up to \$24.5 million for regulatory and commercialization milestones achieved in our bemarituzumab antibody program. We are also obligated to pay BioWa-Lonza tiered royalties on net sales of bemarituzumab up to mid-single digit percentages of the proceeds of such sales.

Our license agreement with BioWa-Lonza will remain in effect until the expiration of our royalty obligations. For each licensed product, we are obligated to pay BioWa-Lonza royalties on net sales of such licensed product on a country-by-country basis for the longer of the life of the licensed patents covering such licensed product in such country or 10 years after the first commercial sale of such licensed product in a major market country, which includes the United States. However, because we believe the last-to-expire patents currently licensed to us under the license agreement would expire in less than 10 years, we believe the date on which our royalty payment obligations to BioWa-Lonza would expire in any country would be 10 years after the first commercial sale of such product in a major market country.

We may terminate the license agreement for convenience subject to our continuing obligation to pay royalties. BioWa-Lonza may terminate the license agreement in the event of our uncured material breach, if we oppose or dispute the validity of patents licensed to us under the license agreement or if we are declared insolvent, make an assignment for the benefit of creditors, are the subject of bankruptcy proceedings or have a receiver or trustee appointed for substantially all our property.

Intellectual Property

Our intellectual property is critical to our business and we strive to protect it, including by obtaining and maintaining patent protection in the United States and internationally for our product candidates and other biological discoveries relating to new targets, pathways and relevant inventions and technologies that are important to our business. For our product candidates, we generally initially pursue patent protection covering both compositions of matter and methods of use.

Throughout the development of our product candidates, we seek to identify additional means of obtaining patent protection that would potentially enhance commercial success, including through additional methods of use, combination therapy, biomarker and companion diagnostic related claims. We also rely on trade secrets relating to our product candidates and seek to protect and maintain the confidentiality of proprietary information to protect aspects of our business that are not amenable to, or that we do not consider appropriate for, patent protection.

Our success will also depend significantly on our ability to obtain rights to intellectual property held by third parties that may be necessary or useful to our business, including for the discovery, development and commercialization of our product candidates. We generally obtain rights to third-party intellectual property through exclusive or non-exclusive licenses. For example, we entered into a non-exclusive license with BioWa-Lonza to use their proprietary protein expression and cell line technology, which is necessary to produce certain of our product candidates. If we are not able to obtain rights to intellectual property held by third parties that are necessary or useful to our business, our business could be harmed, possibly materially.

The patent positions of biotechnology companies like ours are generally uncertain and involve complex legal, scientific and factual questions. In addition, the coverage claimed in a patent application can be significantly limited before the patent is issued, and its scope can be reinterpreted after issuance. Consequently, we may not obtain or maintain adequate patent protection for any of our product candidates. We cannot predict whether the patent applications we are currently pursuing will issue as patents in any particular jurisdiction or whether the claims of any issued patents will provide sufficient proprietary protection from competitors. Any patents that we hold may be challenged, circumvented or invalidated by third parties. For a more comprehensive discussion of the risks related to our intellectual property, please see “Risk Factors – Risks Related to Our Intellectual Property.”

The patent portfolios for our most advanced programs are summarized below:

Bemarituzumab

Our bemarituzumab patent portfolio includes patents and patent applications we exclusively licensed from Galaxy, as well as U.S. and foreign patents and patent applications wholly owned by us. The patent portfolio covers compositions of matter, methods of use, companion diagnostics, combination therapies and formulations relating to bemarituzumab. The issued U.S. patents and issued foreign patents, covering compositions of matter and methods of use, expire between 2029 and 2034. Patents that may issue from the pending U.S. and foreign applications would expire between 2029 and 2039.

FPA150

Our patent portfolio for FPA150 includes pending U.S. and foreign patent applications wholly owned by us. Those pending applications cover compositions of matter, methods of use, companion diagnostics, combination therapies and formulations relating to FPA150. Patents that may issue from the pending U.S. and foreign applications would expire between 2038 and 2039.

FPT155

Our patent portfolio for FPT155 includes pending U.S. and foreign patent applications wholly owned by us. Those pending applications cover compositions of matter, methods of use, combination therapies, biomarkers and formulations relating to FPT155. The issued U.S. patent covering compositions of matter and methods of use, expires in 2036. Patents that may issue from the pending U.S. and foreign applications would expire between 2036 and 2040.

Manufacturing

We currently have process development capabilities. Historically, we generally performed cell line and process development for our product candidates and manufactured quantities of our product candidates necessary to conduct preclinical studies of those product candidates. We expect to increasingly rely on third-party service providers and may in the foreseeable future out-source all or a portion of the cell line and process development activities that we currently conduct, as well as the manufacturing of quantities of our product candidates for use in preclinical studies. We do not have and do not currently plan to acquire or develop the facilities or capabilities to manufacture bulk drug substance or filled drug product for use in human clinical trials or commercialization. We rely on third-party manufacturers to produce bulk drug substance required for our clinical trials and expect to continue to rely on third parties to manufacture clinical trial drug supplies for the foreseeable future. We also contract with additional third parties for the filling, labeling, packaging, storage and distribution of investigational drug products. We have personnel with significant technical, manufacturing, analytical, quality and project management experience to oversee our third-party manufacturers and to manage manufacturing and quality data and information for regulatory compliance purposes.

We must manufacture drug product for clinical trial use in compliance with current Good Manufacturing Practices, or cGMP. cGMP regulations include requirements relating to organization of personnel, buildings and facilities, equipment, control of components and drug product containers and closures, production and process controls, packaging and labeling controls, holding and distribution, laboratory controls, records and reports and returned or salvaged products. The manufacturing facilities for our products must meet cGMP requirements and FDA satisfaction before any product is approved. Our third-party manufacturers and their facilities are also subject to periodic inspections by the FDA and other authorities to assess our and their compliance with applicable regulations, including inspection and review of the procedures and operations used in the testing and manufacture of our products. Failure to comply with statutory and regulatory requirements subjects a manufacturer to possible legal or regulatory action, including warning letters, the seizure or recall of products, injunctions, consent decrees placing significant restrictions on or suspending manufacturing operations and civil and criminal penalties. These actions could have a material impact on the availability of our products. Contract manufacturers often encounter difficulties involving production yields, quality control and quality assurance, as well as shortages of qualified personnel.

Commercialization

We have not yet established sales, marketing or product distribution operations. We generally expect to retain some commercial rights in the United States for our product candidates in specialty markets.

Competition

The biotechnology and pharmaceutical industries are characterized by continuing technological advancement and significant competition. While we believe that our product candidates, technology, knowledge, experience and scientific resources provide us with competitive advantages, we face competition from major pharmaceutical and biotechnology companies, academic institutions, governmental agencies and public and private research institutions, among others. Any product candidates that we successfully develop and commercialize will compete with existing therapies and new therapies that may become available in the future. Key product features that would affect our ability to effectively compete with third-party therapeutics include the efficacy, safety and convenience of our products and the ease of use and effectiveness of any companion diagnostics. The level of generic competition and the availability of reimbursement from government and other third-party payors will also significantly affect the pricing and competitiveness of our products. Our competitors also may obtain FDA or other regulatory approval for their products more rapidly than we may obtain approval for ours, which could result in our competitors establishing a strong market position before we are able to enter the market.

The acquisition and licensing of pharmaceutical product candidates is also very competitive. More established companies that have strategies to license or acquire products may have competitive advantages over us, as may other emerging companies that take similar or different approaches to product acquisitions and licensing.

Many of the companies against which we may compete have significantly greater financial resources and expertise in development, manufacturing, preclinical testing, conducting clinical trials, obtaining regulatory approvals and marketing approved products than we do. Smaller or early-stage companies may also prove to be significant competitors, particularly through collaborative arrangements with large and established companies. These competitors also compete with us in recruiting and retaining qualified scientific, clinical and management personnel and establishing clinical trial sites and patient registration for clinical trials, as well as in acquiring technologies complementary to, or necessary for, our programs.

Government Regulation and Product Approval

In the United States, the FDA regulates protein therapeutics like bemarituzumab, FPA150, FPT155 and our other product candidates as biological drug products, or biologics, under the Federal Food, Drug, and Cosmetic Act, the Public Health Service Act and related regulations. Biologics are also subject to other federal, state and local statutes and regulations. Failure to comply with the applicable United States regulatory requirements at any time during the product development or approval process or after approval may subject an applicant to administrative or judicial actions. These actions could include the suspension or termination of clinical trials by the FDA or an Institutional Review Board, or IRB, the FDA's refusal to approve pending applications or supplements, revocation of a biologics license, warning letters, product recalls, product seizures, total or partial suspension of production or distribution, import detention, injunctions, civil penalties or criminal prosecution. Any administrative or judicial action involving us or our product candidates could have a material adverse effect on us.

The FDA and comparable regulatory agencies in state and local jurisdictions and in foreign countries impose substantial requirements on the clinical development, manufacture and marketing of biologics. These agencies and other federal, state and local entities regulate research and development activities and the testing, manufacture, quality control, effectiveness, safety, purity, potency, labeling, storage, distribution, recordkeeping and reporting, approval, import and export, advertising and promotion and post-market surveillance of biologics, including our current and potential future product candidates.

The FDA's and comparable regulatory agencies' policies may change and additional government regulations may be enacted that could prevent or delay regulatory approval of any current or future product candidates or approval of product or manufacturing changes, new disease indications, or label changes. We cannot predict the likelihood, nature or extent of adverse governmental regulation that might arise from future legislative or administrative action, either in the United States or abroad.

Biologics Product Development

The process required by the FDA before biologics may be marketed in the United States generally involves the following:

- Preclinical laboratory and animal testing;
- submission of an Investigational New Drug, or IND, application, which must become effective before clinical trials can begin;
- adequate and well-controlled human clinical trials to establish the safety, purity and potency of the proposed biologic for its intended use or uses;
- pre-approval inspection of manufacturing facilities and clinical trial sites; and
- FDA approval of a BLA, which must occur before a biologic can be marketed or sold.

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

Before testing any compound in human subjects, a company must develop extensive preclinical data. Preclinical testing generally includes laboratory evaluation of product chemistry and formulation as well as toxicological and pharmacological studies in several animal species to assess the quality and safety of the product. Animal studies must be performed in compliance with the FDA's Good Laboratory Practice, or GLP, regulations and the United States Department of Agriculture's Animal Welfare Act and related regulations.

Prior to commencing the first clinical trial in humans, an IND application must be submitted to the FDA. A company must submit preclinical testing results to the FDA as part of the IND, and the FDA must evaluate whether there is an adequate basis for testing the drug in humans. The IND application automatically becomes effective 30 days after receipt by the FDA unless, within the 30-day time period, the FDA raises concerns or questions about the conduct of the clinical trial and places the trial on clinical hold. In such case, the sponsor of the IND application must resolve any outstanding concerns with the FDA before the clinical trial can begin. Further, an independent IRB for each site proposing to conduct the clinical trial must review and approve the clinical trial plan before the trial commences at that site. Informed consent must also be obtained from each trial subject. Regulatory authorities, an IRB, a data safety monitoring board or the study sponsor may suspend or terminate a clinical trial at any time on various grounds, including a finding that the subjects are being exposed to an unacceptable safety risk.

A clinical trial sponsor is required to submit to the National Institutes of Health, or NIH, for public posting on NIH's clinical trial website details about certain active clinical trials and clinical trial results. For purposes of BLA approval, human clinical trials are typically conducted in the following phases, which may overlap:

- Phase 1 — the biologic is initially given to healthy human subjects or patients and tested for safety, dosage tolerance, reactivity, absorption, metabolism, distribution and excretion. These trials may also provide early evidence of effectiveness. During Phase 1 clinical trials, sufficient information about the investigational product's effects may be obtained to permit the design of well-controlled and scientifically valid Phase 2 clinical trials.
- Phase 2 — clinical trials are conducted in a limited number of patients in the target population to identify possible adverse effects and safety risks, to determine the efficacy of the product for specific targeted diseases and to determine dosage tolerance and optimal dosage. Multiple Phase 2 clinical trials may be conducted by the sponsor to obtain information prior to beginning larger and more expensive Phase 3 clinical trials.
- Phase 3 — when Phase 2 clinical trials demonstrate that a dosage range of the product appears effective and has an acceptable safety profile and provide sufficient information for the design of Phase 3 clinical trials, Phase 3 clinical trials are undertaken to provide statistically significant evidence of clinical efficacy and to further test for safety in an expanded patient population at multiple clinical trial sites. Phase 3 clinical trials are performed after preliminary evidence suggesting effectiveness of the drug has been obtained, and are intended to further evaluate dosage, effectiveness and safety, to establish the overall benefit-risk relationship of the investigational drug and to provide an adequate basis for product approval by the FDA.

All clinical trials must be conducted in accordance with Good Clinical Practice, or GCP, requirements in order for the resulting data to be considered reliable for regulatory purposes.

The Biologic License Application Approval Process

In order to obtain approval to market a biologic in the United States, a BLA that provides data establishing to the FDA's satisfaction the safety and effectiveness of the investigational product for the proposed indication must be submitted to the FDA. Each BLA submission requires a substantial user fee payment unless a waiver or exemption applies. The application includes all relevant data available from pertinent nonclinical studies and clinical trials, including negative or ambiguous results as well as positive findings, together with detailed information relating to, among other things, the product's chemistry, manufacturing, controls and proposed labeling. The application may include data from company-sponsored clinical trials intended to test the safety and effectiveness of a use of a product, as well as supplemental data from alternative sources, including studies initiated by investigators.

The FDA will initially review a BLA for completeness before it accepts such BLA for filing. Under the FDA's procedures, the agency has 60 days from its receipt of a BLA, or the filing period, to determine whether the application will be accepted for filing based on the agency's threshold determination that the application is sufficiently complete to permit substantive review. After the BLA submission is accepted for filing, the FDA reviews the BLA to determine, among other things, whether the proposed product is safe, efficacious, pure and potent, which includes determining whether the product is effective for its intended use, and whether the product is being manufactured in accordance with cGMP and in a manner that assures and preserves the product's identity, strength, quality, potency and purity. The FDA may refer applications for novel products or products that present difficult questions of safety or efficacy to an advisory committee, which is typically a panel that includes clinicians and other experts, for review, evaluation and a recommendation as to whether the application should be approved and, if so, under what conditions. The FDA is not bound by the recommendations of an advisory committee, but it considers such recommendations carefully when making decisions.

During the approval process, the FDA will also determine whether a Risk Evaluation and Mitigation Strategy, or REMS, is necessary to assure that the benefits of the biologic outweigh its risks. Depending on what the FDA considers necessary for the safe use of the drug, a REMS may include various elements, ranging from a medication guide or patient package insert to training and certification requirements for prescribers and/or pharmacies to safe use conditions that must be in place before the drug is dispensed. If the FDA concludes that a REMS is needed, the BLA applicant must submit a proposed REMS that the FDA deems satisfactory in order for the FDA to approve the BLA.

The FDA's standard review time for a BLA for a new molecular entity is 10 months from the end of the filing period. Based on pivotal clinical trial results submitted in a BLA, at the discretion of the FDA or upon the request of an applicant, the FDA may grant a priority review designation to a product, which sets the target date for FDA action on the application at six months from the end of the filing period. Priority review is given for a product that treats a serious condition and, if approved, would provide a significant improvement in safety or effectiveness compared to marketed products or offer a therapy where no satisfactory alternative therapy exists. Priority review designation does not change the scientific or medical standard for approval or the quality of evidence necessary to support approval.

After the FDA completes its review of a BLA, it will either communicate to the sponsor that it will approve the product, or issue a complete response letter to communicate that it will not approve the BLA in its current form and to inform the sponsor of changes that the sponsor must make or additional clinical, nonclinical or manufacturing data that must be received before the FDA can complete review and ultimately approve the application, with no implication regarding the ultimate approvability of the application. If a complete response letter is issued, the sponsor may either resubmit the BLA, addressing all deficiencies identified in the letter, or withdraw the application. Resubmitting a BLA in response to a complete response letter can add additional time to the approval process for a product.

Before approving a BLA, the FDA will inspect the facilities at which the product is manufactured. The FDA will not approve the product unless it determines that the manufacturing processes and facilities are in compliance with cGMP requirements and are adequate to assure consistent production of the product within required specifications. Additionally, before approving a BLA, the FDA may inspect one or more clinical trial sites to assure compliance with GCP. If the FDA determines the application, manufacturing process or manufacturing facilities are not acceptable, it typically will outline the deficiencies and often will request additional testing or information. This may significantly delay further review of the application. If the FDA finds that a clinical site did not conduct a clinical trial of the product in accordance with GCP, the FDA may determine the data generated by the site should be excluded from the primary efficacy analyses provided in the BLA. Additionally, notwithstanding the submission of any requested additional data or information, the FDA ultimately may decide that the application does not satisfy the regulatory criteria for approval.

The testing and approval process for a biologic requires substantial time, effort and financial resources and may take several years to complete. Data obtained from clinical activities are not always conclusive and may be susceptible to varying interpretations, which could delay, limit or prevent regulatory approval. The FDA may not grant approval on a timely basis or at all. We may encounter difficulties or unanticipated costs in our efforts to secure necessary governmental approvals, which could delay or preclude us from marketing our products.

The FDA may require, or companies may pursue, additional clinical trials after a product is approved. These additional Phase 4 clinical trials may be made a condition to be satisfied for continuing product approval. The results of Phase 4 clinical trials can confirm the effectiveness of a product candidate and can provide important safety information. Conversely, the results of Phase 4 clinical trials can raise new issues of safety or effectiveness that were not apparent during the original review of the BLA for a product, which may result in product restrictions or even withdrawal of product approval. The FDA has express statutory authority to require sponsors to conduct post-marketing studies or clinical trials to specifically address safety issues identified by the FDA. If any of our products are subject to post-marketing requirements and commitments, there may be resource and financial implications for our business.

Even if a product candidate receives regulatory approval, the approval will be limited to specific disease states, patient populations or dosages, or might contain significant limitations on use in the form of warnings, precautions or contraindications, or in the form of onerous risk management plans, restrictions on distribution, or post-marketing study or clinical trial requirements. Further, even after regulatory approval is obtained, later discovery of previously unknown problems with a product may result in restrictions on the product, requirements to conduct additional studies or trials, or even complete withdrawal of the product from the market. In addition, we cannot predict what adverse governmental regulations may arise from future United States or foreign governmental action.

FDA Post-Approval Requirements

Any products manufactured or distributed by us or on our behalf pursuant to FDA approvals are subject to continuing regulation by the FDA, including requirements for recordkeeping, reporting of adverse experiences with the biologic, and submitting biological product deviation reports to notify the FDA of unanticipated changes in distributed products. Manufacturers are required to register their facilities with the FDA and certain state agencies and are subject to periodic unannounced inspections by the FDA and certain state agencies for compliance with cGMP standards. As a result, we and our third-party manufacturers must implement certain quality processes, and manufacturing controls and comply with documentation requirements in order to ensure that any approved product is safe and has the identity and strength, and meets the quality, purity and potency characteristics, that it purports to have. Certain states also impose requirements on manufacturers and distributors to establish the pedigree of product in the chain of distribution, some of which require manufacturers and others to adopt new technology capable of tracking and tracing product as it moves through the distribution chain. We cannot be certain that we or our present or future suppliers will be able to comply with cGMP and other FDA regulatory requirements. If our present or future suppliers are not able to comply with these requirements, the FDA may halt our clinical trials, refuse to approve any BLA or other application, force us to recall a drug from distribution, shut down manufacturing operations or withdraw approval of the BLA for any affected biologic. Noncompliance with cGMP or other requirements can result in issuance of warning letters, civil and criminal penalties, seizures, and injunctive action.

The FDA and other federal and state agencies closely regulate the labeling, marketing and promotion of drugs. While doctors may prescribe any product approved by the FDA for any use as long as consistent with any REMS restrictions, if applicable, a company can only make claims relating to safety and efficacy of a product that are consistent with FDA approval, and the company is allowed to market a drug only for the particular use and treatment approved by the FDA. In addition, any claims we make relating to our products in advertising or promotion must be appropriately balanced with important safety information and otherwise be adequately substantiated. Failure to comply with these requirements can result in adverse publicity, warning letters, corrective advertising, injunctions, potential civil and criminal penalties, criminal prosecution and agreements with governmental agencies that materially restrict the manner in which we may promote or distribute drug products. Government regulators, including the Department of Justice and the Office of the Inspector General of the Department of Health and Human Services, as well as state authorities, have recently increased their scrutiny of the promotion and marketing of drugs.

Orphan Drug and Orphan Medicinal Product Designation and Exclusivity

The Orphan Drug Act provides incentives for the development of products intended to treat rare diseases or conditions, which are generally diseases or conditions that affect fewer than 200,000 individuals in the United States. If a sponsor demonstrates that a biologic is intended to treat a rare disease or condition, the FDA will grant orphan designation for that product. Orphan designation must be requested before submitting a BLA.

Under the Pediatric Research Equity Act, or the PREA, submission of a pediatric assessment is not typically required for pediatric investigation of a product that has been granted orphan drug designation. However, under the FDA Reauthorization Act of 2017, the scope of the PREA was extended to require pediatric studies for products intended for the treatment of an adult cancer that are directed at a molecular target that the Secretary of Health and Human Services determines to be substantially relevant to the growth or progression of a pediatric cancer.

The benefits of orphan drug designation include research and development tax credits and exemption from FDA user fees. Orphan designation, however, does not convey any advantage in, or shorten the duration of, the regulatory review and approval process. Generally, if a product that receives orphan designation is approved for the orphan indication, it receives orphan drug exclusivity, which prohibits the FDA from approving another product with the same active ingredient for the same use for seven years. Additionally, if a biologic designated as an orphan product receives marketing approval for an indication broader than what is designated, it may not be entitled to orphan drug exclusivity.

Orphan drug exclusivity will not bar approval of another product under certain circumstances, including if a subsequent product with the same active ingredient for the same indication is shown to be clinically superior to the approved product on the basis of greater efficacy or safety, or provides a major contribution to patient care, or if the company with orphan drug exclusivity is not able to meet market demand. Further, the FDA may approve more than one product for the same orphan indication or disease as long as the products contain different active ingredients. As a result, even if one of our product candidates receives orphan drug exclusivity, the FDA can still approve other drugs that have a different active ingredient for use in treating the same indication or disease, which could create a more competitive market for us.

After the FDA grants orphan designation, the FDA publicly discloses the identity of the applicant, as well as the name of the therapeutic agent and its designated orphan use.

Similarly, the European Commission grants orphan medicinal product designation to products intended for the treatment, prevention or diagnosis of a disease that is life-threatening or chronically debilitating affecting not more than five in 10,000 people. In order to receive orphan designation, there must also be no satisfactory method of diagnosis, prevention or treatment of the condition, or if such a method exists, the medicine must be of significant benefit to those affected by the condition. In addition, sponsors are required to submit to the European Medicines Agency's, or EMA's, Pediatric Committee, or the PDCO, and comply with a pediatric investigation plan, or a PIP, in order to initiate pivotal clinical investigation and seek marketing authorization for pediatric use of the product in the EU.

Designated orphan medicinal products are entitled to a range of incentives during the development and regulatory review process, including scientific assistance for study protocols, a partial or total reduction in fees and eligibility for conditional marketing authorization. Once authorized, orphan medicinal products are entitled to 10 years of market exclusivity in all EU member states. However, marketing authorization may be granted to a similar medicinal product with the same orphan indication during the 10-year period with the consent of the marketing authorization holder for the original orphan medicinal product or if the manufacturer of the original orphan medicinal product is unable to supply sufficient quantities of such product. Marketing authorization may also be granted to a similar medicinal product with the same orphan indication if the similar product is established to be safer, more effective or otherwise clinically superior to the original orphan medicinal product. After five years, a member state can request that the period of market exclusivity be reduced to six years if it can be demonstrated the criteria for orphan designation no longer apply and the medicine is sufficiently profitable. The period of market exclusivity may be extended by two years for medicines that have also complied with an agreed PIP.

Biologics Price Competition and Innovation Act of 2009

The Biologics Price Competition and Innovation Act of 2009, or BPCIA, created a licensure framework for biosimilars, which could ultimately subject our biological product candidates to competition from biosimilars. Under the BPCIA, a manufacturer may submit an abbreviated application for licensure of a biologic that is "biosimilar to" a referenced branded biologic. This abbreviated approval pathway is intended to permit a biosimilar to come to market more quickly and less expensively than if a "full" BLA were submitted by relying to some extent on the FDA's previous review and approval of the reference biologic to which the proposed product is similar.

Under the BPCIA, a biosimilar sponsor’s ability to seek or obtain approval through the abbreviated pathway is limited by periods of exclusivity granted to the sponsor of the reference product. No biosimilar application may be submitted until four years after the date of approval of the reference product, and no such application, once submitted, may receive final approval until twelve years after that same date (with a potential six-month extension of exclusivity if certain pediatric studies are conducted and the results are reported to the FDA). Once approved, biosimilar products likely would compete with (and in some circumstances, may be deemed under the law to be “interchangeable with”) the previously approved reference product.

FDA Regulation of Companion Diagnostics

As part of our clinical development plans, we have engaged third-party collaborators to develop companion diagnostics to identify patients most likely to respond to certain of our product candidates. Companion diagnostics are classified as medical devices under the Federal Food, Drug, and Cosmetic Act in the United States. The FDA regulates medical device design and development, preclinical and clinical testing, premarket clearance or approval, registration and listing, manufacturing, labeling, storage, reporting, recordkeeping, advertising and promotion, export and import, sales and distribution and post-market surveillance. Unless an exemption applies, companion diagnostics require marketing clearance or approval from the FDA prior to commercial distribution. The two primary types of FDA marketing authorization applicable to a medical device are premarket notification, also called 510(k) clearance, and premarket approval, or PMA. The use of companion diagnostics with therapeutic products raises important concerns about the safety and effectiveness of both the companion diagnostic devices and the corresponding therapeutic products and, therefore, the companion diagnostic will ordinarily require PMA before it is marketed. Because the companion diagnostic tests that we are developing or may develop in the future are essential for the safety and effective use of certain of our therapeutics, these diagnostic tests would be subject to the PMA approval process.

The PMA process is costly, lengthy and uncertain as to outcome. 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 companion 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, which requires manufacturers to follow design, testing, control, documentation and other quality assurance procedures. FDA review of an initial PMA application is required by statute to take six months. 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 final approval of the PMA. If the FDA’s evaluation of the PMA or manufacturing facilities is not favorable, the FDA will deny 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 secure approval of the PMA. The FDA may also determine that additional clinical trials are necessary, in which case the PMA may be delayed for several months or years while such trials are conducted, after which the data are then submitted in an amendment to the PMA application. Once granted, a PMA may be withdrawn by the FDA if compliance with post-approval requirements, conditions of approval or other regulatory standards are not maintained or problems are identified following initial marketing.

We and any third party collaborator that we engage to develop companion diagnostics will work cooperatively to generate the data required for submission with the PMA application, and will remain in contact with the Center for Devices and Radiological Health, or CDRH, at the FDA to ensure that any changes in requirements are incorporated into the development plans. We anticipate that meetings with the FDA with regard to our drug product candidates, as well as companion diagnostic product candidates, will include representatives from the Center for Drug Evaluation and Research, or the CDER, and CDRH to ensure that the BLA and PMA submissions are coordinated to enable the FDA to conduct a parallel review of both submissions. FDA guidance addresses issues critical to developing companion diagnostics, such as biomarker qualification, establishing clinical validity, the use of retrospective data, the appropriate patient population and whether the FDA will require that the device and the drug be approved simultaneously. According to the guidance, if safe and effective use of a therapeutic product depends on a diagnostic, then the FDA generally will require approval or clearance of the diagnostic contemporaneously with the FDA’s approval of the therapeutic product. We plan to structure our programs for the development of our companion diagnostics to be consistent with this guidance.

In the European Economic Area, or the EEA, *in vitro* medical devices are required to conform with essential requirements by undergoing a conformity assessment procedure. The conformity assessment varies according to the type of medical device and its classification. For low-risk devices, the conformity assessment can be carried out internally, but for higher risk devices it requires the intervention of an accredited EEA Notified Body. If successful, the conformity assessment concludes with the drawing up by the manufacturer of an EC Declaration of Conformity entitling the manufacturer to affix the CE mark to its products and to sell them throughout the EEA. We expect our companion diagnostic will require a conformity assessment through an accredited EEA Notified Body, and that the data generated for the U.S. registration will be sufficient to satisfy the regulatory requirements for the European Union and other countries.

Coverage and Reimbursement

In both domestic and foreign markets, sales of any products for which we may receive regulatory approval will depend in part upon the availability of coverage and reimbursement from third-party payors. Such third-party payors include government health programs, such as Medicare and Medicaid, private health insurers and managed care providers and other organizations. Coverage decisions may depend upon clinical and economic standards that disfavor new drug products when more established or lower cost therapeutic alternatives are already available or subsequently become available. Assuming coverage is granted, the reimbursement rates paid for covered products might not be adequate. Even if favorable coverage status and adequate reimbursement rates are attained, less favorable coverage policies and reimbursement rates may be implemented in the future. The marketability of any products for which we may receive regulatory approval for commercial sale may suffer if the government and other third-party payors fail to provide coverage and adequate reimbursement to allow us to sell such products on a competitive and profitable basis. For example, under these circumstances, physicians may limit how much or under what circumstances they will prescribe or administer our products and patients may decline to purchase such products. This, in turn, could affect our ability to successfully commercialize our products and impact our profitability, results of operations, financial condition and future success.

The market for any product candidates for which we may receive regulatory approval will depend significantly on the degree to which these products are listed on third-party payors' drug formularies or lists of medications for which third-party payors provide coverage and reimbursement. The industry competition to be included on such formularies often leads to downward pricing pressures on pharmaceutical companies. Also, third-party payors may refuse to include a particular branded drug on their formularies or otherwise restrict patient access to a branded drug when a less costly generic equivalent or other alternative is available. In addition, because each third-party payor may individually establish coverage and reimbursement policies, obtaining coverage and adequate reimbursement can be a time-consuming and costly process. We may be required to provide scientific and clinical support for the use of any product to each third-party payor separately with no assurance that approval would be obtained, and we may need to conduct expensive pharmacoeconomic studies in order to demonstrate the cost-effectiveness of our products. We cannot be certain that our product candidates will be considered cost-effective. This process could delay the market acceptance of any product candidates for which we may receive approval and could have a negative effect on our future revenues and operating results. Additionally, companion diagnostic tests that we or our collaborators may develop require coverage and reimbursement separate and apart from the coverage and reimbursement for their companion pharmaceutical or biologics products. Similar challenges to obtaining coverage and reimbursement, applicable to pharmaceutical or biologics products, will apply to companion diagnostic tests.

Anti-Kickback, False Claims, Physician Payments Sunshine and Other Healthcare Laws

In addition to FDA restrictions on marketing, several other types of U.S. state and federal laws are relevant to certain marketing practices in the pharmaceutical and medical device industries, including their interactions with healthcare providers. These laws include the federal Anti-Kickback Statute, false claims statutes, and the federal Physician Payments Sunshine Act and other healthcare laws. We are subject to these laws and they may affect our business. The federal Anti-Kickback Statute prohibits, among other things, any person or entity 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, lease, 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. This statute has been interpreted to apply to arrangements between pharmaceutical manufacturers on the one hand and prescribers, purchasers, formulary managers and other individuals and entities on the other hand. Violations of the federal Anti-Kickback Statute are punishable by imprisonment, criminal fines, civil monetary penalties and

exclusion from participation in federal healthcare programs. The federal Patient Protection and Affordable Care Act, as amended by the Health Care and Education Reconciliation Act of 2010 and subsequent legislation, or collectively, the Affordable Care Act, among other things, amended the intent requirement of the federal Anti-Kickback Statute, such that a person or entity no longer needs to have actual knowledge of this statute or specific intent to violate it in order to have violated the statute. In addition, the Affordable Care Act provides that 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. There are a number of statutory exceptions and regulatory safe harbors protecting certain common activities from prosecution or other regulatory sanctions; however, the exceptions and safe harbors are drawn narrowly, and practices that do not fit squarely within an exception or safe harbor may be subject to scrutiny.

The federal False Claims Act prohibits, among other things, any person from knowingly presenting, or causing to be presented, a false or fraudulent claim for payment to a government program, or knowingly making, or causing to be made, a false record or statement material to a false or fraudulent claim. Many pharmaceutical and other healthcare companies have faced investigations and private lawsuits and, in many cases, have agreed to significant and burdensome settlements under these laws for a variety of allegedly improper promotional and marketing activities, including inflating drug prices they report to pricing services, which in turn were used by the government to set Medicare and Medicaid reimbursement rates; providing free product to customers with the expectation that the customers would bill federal programs for the product; providing consulting fees and other benefits to physicians to induce them to prescribe products; or engaging in promotion for “off-label” uses. Federal False Claims Act violations may result in significant civil monetary penalties, including three times the damages incurred by the government from the violation and exclusion from participation in federal healthcare programs. The majority of U.S. states also have statutes or regulations similar to the federal Anti-Kickback Statute and federal False Claims Act, which apply to items and services reimbursed under Medicaid and other state programs, and in some states, apply regardless of the payor.

The federal Health Insurance Portability and Accountability Act of 1996, as amended by the Health Information Technology for Economic and Clinical Health Act of 2009, and its implementing regulations, or HIPAA, imposes criminal liability for knowingly and willfully executing a scheme to defraud any healthcare benefit program, knowingly and willfully embezzling or stealing from a healthcare benefit program, willfully obstructing a criminal investigation of a healthcare offense, or knowingly and willfully making false statements relating to healthcare matters. HIPAA also imposes obligations on certain covered entities, which include healthcare providers, health plans and healthcare clearinghouses, as well as their business associates that perform certain services involving the use or disclosure of individually identifiable health information, including mandatory contractual terms, with respect to safeguarding the privacy, security and transmission of individually identifiable health information.

The federal Physician Payments Sunshine Act, being implemented as the Open Payments Program, requires certain manufacturers of products for which payment is available under Medicare, Medicaid, or the Children’s Health Insurance Program to track payments and other transfers of value to physicians, as defined by such law, and teaching hospitals, as well as physician ownership and investment interests, and to publicly report such data. Manufacturers subject to the Open Payments Program must submit a report on or before the 90th day of each calendar year disclosing reportable payments made in the previous calendar year. Failure to comply with the reporting obligations may result in civil monetary penalties.

Several states now require pharmaceutical companies to report expenses relating to the marketing and promotion of pharmaceutical products in those states and to report gifts and payments to individual healthcare providers in those states. Some of these states also prohibit certain marketing-related activities, including the provision of gifts, meals, or other items to certain healthcare providers. Some states also require pharmaceutical companies to implement compliance programs or marketing codes and report information on the pricing of certain drugs. Certain state and local laws also require the registration of pharmaceutical sales representatives.

Because of the breadth of these laws and the narrowness of available statutory exceptions and regulatory exemptions, it is possible that some of our business activities could be subject to challenge under one or more of such laws. If our operations are found to be in violation of any of the federal or state laws described above or any other governmental regulations that apply to us, we may be subject to penalties, including significant criminal or civil monetary penalties, damages, fines, imprisonment, exclusion from participation in government programs, injunctions, recall or seizure of products, total or partial suspension of production, denial or withdrawal of pre-marketing product approvals, private “qui tam” actions brought by individual whistleblowers in the name of the government, additional reporting requirements and oversight if we become subject to a corporate integrity agreement or similar agreement to resolve allegations of non-compliance with these laws, and the curtailment or restructuring of our operations, any of which could adversely affect our ability to operate our business and our results of operations.

To the extent that any of our products are sold in a foreign country, we may be subject to similar foreign laws and regulations, which may include, for instance, applicable post-marketing requirements, including safety surveillance, anti-fraud and abuse laws, and implementation of corporate compliance programs and reporting of payments or transfers of value to healthcare professionals.

Healthcare Reform

The United States and some foreign jurisdictions are considering or have enacted a number of legislative and regulatory proposals to change the healthcare system in ways that could affect our ability to sell our product candidates profitably, even if they are approved for sale. Among policy makers and payors in the United States and elsewhere, there is significant interest in promoting changes in healthcare systems with the stated goals of containing healthcare costs, improving quality and expanding access. In the United States, the pharmaceutical and medical device industries have been a particular focus of these efforts and have been significantly affected by major legislative initiatives.

In March 2010, the Affordable Care Act was enacted, which includes measures that have changed the way healthcare is financed by both governmental and private insurers. There remain judicial and Congressional challenges to certain aspects of the Affordable Care Act, as well as recent efforts by the Trump administration to repeal or replace certain aspects of the Affordable Care Act. Since January 2017, President Trump has signed two Executive Orders and other directives designed to delay the implementation of certain provision of the Affordable Care Act or otherwise circumvent some of the requirements for health insurance mandated by the Affordable Care Act. Concurrently, Congress has considered legislation that would repeal or repeal and replace all or part of the Affordable Care Act. While Congress has not passed comprehensive repeal legislation, several bills affecting the implementation of certain taxes under the Affordable Care Act have been signed into law. The Tax Cuts and Jobs Act of 2017, or the Tax Act, includes a provision that became effective January 1, 2019 and repealed the tax-based shared responsibility payment imposed by the Affordable Care Act on certain individuals who fail to maintain qualifying health coverage for all or part of a year, which payment is commonly referred to as the “individual mandate.” In addition, the 2020 federal spending package permanently eliminated, effective January 1, 2020, the Affordable Care Act-mandated “Cadillac” tax on high-cost employer-sponsored health coverage and medical device tax and, effective January 1, 2021, also eliminates the health insurer tax. The Bipartisan Budget Act of 2018, or the BBA, among other things, amended the Affordable Care Act, effective January 1, 2019, to close the coverage gap in most Medicare drug plans, commonly referred to as the “donut hole.” In December 2018, the Centers for Medicare & Medicaid Services, or CMS, published a new final rule permitting further collections and payments to and from certain Affordable Care Act qualified health plans and health insurance issuers under the Affordable Care Act risk adjustment program in response to the outcome of federal district court litigation regarding the method CMS uses to determine this risk adjustment. On December 14, 2018, a Texas U.S. District Court Judge ruled that the Affordable Care Act is unconstitutional in its entirety because the “individual mandate” was repealed by Congress as part of the Tax Act. Additionally, on December 18, 2019, the U.S. Court of Appeals for the 5th Circuit upheld the District Court ruling that the individual mandate was unconstitutional and remanded the case back to the District Court to determine whether the remaining provisions of the Affordable Care Act are invalid as well. It is unclear how this decision, future decisions, subsequent appeals and other efforts to repeal and replace the Affordable Care Act will impact our business.

Other legislative changes have been proposed and adopted since the Affordable Care Act was enacted. These changes include aggregate reductions to Medicare payments to providers of 2% per fiscal year pursuant to the Budget Control Act of 2011, which began in 2013, and due to subsequent legislative amendments to the statute, including the BBA, will remain in effect through 2029 unless additional Congressional action is taken. The American Taxpayer Relief Act of 2012, among other things, further reduced Medicare payments to several providers, including hospitals and cancer treatment centers, and increased the statute of limitations period for the government to recover overpayments to providers from three to five years.

Further, there has been heightened governmental scrutiny in the United States of pharmaceutical pricing practices in light of the rising cost of prescription drugs and biologics. Such scrutiny has resulted in several recent congressional inquiries and proposed and enacted federal 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 products. For example, at the federal level, the Trump administration released a “Blueprint” to lower drug prices and reduce out-of-pocket costs of drugs that contains additional proposals to increase manufacturer competition, increase the negotiating power of certain federal healthcare programs, incentivize manufacturers to lower the list price of their products and reduce the out-of-pocket costs of drug products paid by consumers. The Department of Health and Human Services, or HHS, has solicited feedback on some of these measures and has implemented others under its existing authority. Further, the Trump administration’s budget proposal for fiscal year 2021 includes a \$135 billion allowance to support legislative proposals seeking to reduce drug prices, increase competition, lower out-of-pocket drug costs for patients and increase patient access to lower-cost generic and biosimilar drugs. Although a number of these and other proposals may require additional authorization to become effective, Congress and the Trump administration have each indicated that they will continue to seek new legislative, administrative and executive measures, including the President’s issuance of future executive orders, as applicable, to control drug costs. At the state level, legislatures are also increasingly passing legislation and implementing regulations designed to control pharmaceutical and biologics 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.

Foreign Regulation

In addition to regulations in the United States, we are and will continue to be subject to a variety of foreign regulations governing our activities outside of the United States, including clinical trials and commercial sales and distribution of our product candidates. Whether or not we obtain FDA approval for a product candidate, we must obtain approval from the comparable regulatory authorities of foreign countries or economic areas, such as the European Union, before we may commence clinical trials or market products in those countries or areas. The approval process and requirements governing the conduct of clinical trials, product licensing, pricing and reimbursement vary greatly across jurisdictions, and the time required to obtain marketing approval in jurisdictions outside of the United States may be longer or shorter than that required for FDA approval.

Other Regulations

We are also subject to numerous federal, state and local laws relating to such matters as safe working conditions, manufacturing practices, environmental protection, fire hazard control, and disposal of hazardous or potentially hazardous substances. We may incur significant costs to comply with such laws and regulations now or in the future.

Corporate Information and Employees

Our principal corporate offices are located at 111 Oyster Point Boulevard, South San Francisco, California 94080 and our telephone number is (415) 365-5600. We were incorporated in December 2001 in Delaware and completed our initial public offering in September 2013.

As of December 31, 2019, we had 87 full-time employees and no part-time employees. Of these employees, 47 were primarily engaged in research and development activities and 21 have an M.D. or a Ph.D. degree.

In October 2019, we implemented a corporate restructuring, pursuant to which we will eliminate approximately 70 positions across all functions through the second quarter of 2020. Seventy percent of these eliminations occurred by December 31, 2019, and the remainder will occur in 2020. In addition, we have initiated activities to reduce our corporate facilities footprint by either subletting a significant portion of our current leased space or subletting our current building and relocating to smaller facilities. Furthermore, we have been reducing our focus on research activities and, as such, have decided to sell the majority of the lab equipment we own through an auction that will be conducted by a third-party vendor during the second quarter of 2020. We expect the restructuring to be completed by the end of 2020.

Available Information

Our website address is www.fiveprime.com. We make available on our website, free of charge, this Annual Report on Form 10-K, our Quarterly Reports on Form 10-Q and our Current Reports on Form 8-K and any amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended, or the Exchange Act, as soon as reasonably practicable after we electronically file such material with, or furnish it to, the Securities and Exchange Commission, or the SEC. The SEC maintains a website that contains reports, proxy and information statements and other information regarding our filings at www.sec.gov. The information found on our website is not incorporated by reference into this Annual Report on Form 10-K or any other report we file with or furnish to the SEC.

Item 1A. Risk Factors

This Annual Report on Form 10-K, or this Annual Report, contains forward-looking information based on our current expectations. Because our business is subject to many risks and our actual results may differ materially from any forward-looking statements made by or on behalf of us, this section includes a discussion of important factors that could affect our business, operating results, financial condition and the trading price of our common stock. You should carefully consider these risk factors, together with all of the other information included in this Annual Report as well as our other publicly available filings with the Securities and Exchange Commission, or SEC.

Risks Related to Our Business and Industry

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

Before obtaining marketing approval from regulatory authorities to sell our product candidates, we or our partners must conduct extensive clinical trials to demonstrate the safety and efficacy of such product candidates in humans. Clinical testing is expensive and difficult to design and implement, generally takes many years to complete and is uncertain as to outcome. A failure of one or more clinical trials can occur at any stage of testing. The outcome of preclinical studies and early clinical trials may not predict the success of later clinical trials and interim results of a clinical trial do not necessarily predict final results. A number of companies in the pharmaceutical and biotechnology industries have suffered significant setbacks in advanced clinical trials due to lack of efficacy or unacceptable safety profiles of their product candidates, notwithstanding promising results in earlier trials. Even though we have already generated results from certain preclinical studies and clinical trials of our product candidates, we do not know whether the clinical trials of our product candidates that we or our partners may conduct will demonstrate adequate efficacy and safety to result in regulatory approval to market any of these product candidates in any particular jurisdiction or jurisdictions. If later-stage clinical trials for one or more of our product candidates do not produce favorable results, we or our partners may be unable to obtain regulatory approval for such product candidates.

For example, in October 2015, we entered into an exclusive license and collaboration agreement, or our cabiralizumab collaboration agreement, with Bristol-Myers Squibb Company, or BMS, pursuant to which we granted BMS an exclusive worldwide license to develop and commercialize cabiralizumab. Based on data from our Phase 1a/1b clinical trial testing the combination of cabiralizumab with *Opdivo*® in patients with late-line pancreatic cancer, BMS advanced the development of cabiralizumab in combination with *Opdivo*, with and without chemotherapy, in second-line patients with pancreatic cancer in a randomized, controlled multi-arm Phase 2 clinical trial (NCT03336216). In February 2020, BMS informed us that the trial did not meet its primary endpoint. BMS informed us that while it has no near-term plans for additional sponsored development of cabiralizumab, it will continue to support the evaluation of cabiralizumab in select, ongoing investigator-sponsored trials and may continue to assess future development opportunities for cabiralizumab. If BMS elects not to pursue further development opportunities for cabiralizumab, we may be unable to complete development of and obtain regulatory approval for cabiralizumab.

If the patients we enroll in our FIGHT trial are less responsive to the combination of bemarituzumab and mFOLFOX6 than the population of patients we originally expected to enroll, we may not achieve the primary endpoints of the FIGHT trial with statistical significance, and the FIGHT trial may not enable registration of bemarituzumab in combination with mFOLFOX6 as front-line treatment for patients with advanced gastric or GEJ cancer that overexpresses FGFR2b.

We are identifying patients for inclusion in our Phase 3 clinical trial evaluating bemarituzumab in combination with 5-fluorouracil, or 5-FU, leucovorin, and oxaliplatin, a standard of care chemotherapy regimen known as mFOLFOX6, as front-line treatment for patients with gastric or gastroesophageal junction, or GEJ, cancer with tumors that overexpress FGFR2b, or our FIGHT trial, using both an immunohistochemistry, or IHC, test, which allows us to detect FGFR2b overexpression on the tumor tissue in a biopsy specimen, and a circulating tumor DNA, or ctDNA, blood-based test, which allows us to detect *FGFR2* gene amplification from DNA shed by tumor cells in blood plasma. *FGFR2* gene amplification is a cause of FGFR2b overexpression, and measuring *FGFR2* gene amplification in the blood is an indirect way of identifying tumors that overexpress FGFR2b that we may otherwise not identify using an IHC test. The FIGHT trial is designed to enroll patients that test positive for (a) FGFR2b overexpression, as detected by the IHC test alone, (b) *FGFR2* gene amplification, as detected by the ctDNA test alone, and (c) both FGFR2b overexpression, as detected by the IHC test, and *FGFR2* gene amplification, as detected by the ctDNA test. We believe that patients with tumors that meet the criteria in any of these subgroups may benefit from the addition of bemarituzumab to front-line chemotherapy.

Initially, we expected that approximately 10% of the previously untreated, advanced gastric and GEJ cancer patients that we pre-screened in the FIGHT trial would test positive for FGFR2b overexpression or *FGFR2* gene amplification, as detected by the IHC and ctDNA tests we are using to identify patients eligible for enrollment in the trial. We also expected that the majority of patients that test positive for FGFR2b overexpression by IHC would also test positive for *FGFR2* gene amplification by ctDNA.

We paused enrollment in the FIGHT trial in the fourth quarter of 2019, except for sites in Japan where we plan to enroll up to six patients while the remainder of the FIGHT trial remains closed for enrollment. As of the time we paused enrollment in the trial, approximately 30% of the patients that we pre-screened for possible enrollment in the trial tested positive for FGFR2b overexpression, as measured by the IHC test alone. This was significantly higher than we expected at the time we started the trial. In addition, contrary to our initial expectations, the vast majority of patients that tested positive for FGFR2b overexpression did not test positive for *FGFR2* gene amplification. These results suggest that the FIGHT trial may be enrolling a greater proportion of patients whose tumors overexpress FGFR2b due to a reason other than *FGFR2* gene amplification. We believe all patients being enrolled in the FIGHT trial may benefit from the addition of bemarituzumab to front-line chemotherapy, as bemarituzumab targets FGFR2b that is overexpressed on the cell surface regardless of the cause of overexpression. However, the composition of the patient population in our FIGHT trial differs from the composition of the patient population for which we designed the FIGHT trial. This represents an additional unknown because we have limited clinical data from patients who overexpress FGFR2b in the absence of *FGFR2* gene amplification, and these patients represent a vast majority of the patients we have enrolled. These patients may be less responsive to the combination of bemarituzumab and mFOLFOX6 than the population of patients we originally sought to enroll, which increases the risk that we do not achieve the primary endpoints of the FIGHT trial with statistical significance and increases the risk that the FIGHT trial will not enable registration of bemarituzumab in combination with mFOLFOX6 as front-line treatment for patients with advanced gastric or GEJ cancer that overexpresses FGFR2b.

Accordingly, we plan to conduct an early futility analysis in mid-2020 after the occurrence of a pre-specified number of events in the trial. As of February 2020, we had enrolled approximately 150 patients in the trial. We believe this should be a sufficient number of patients to allow us to conduct the futility analysis as planned. The futility analysis will allow us to ensure that the FIGHT trial is adequately powered to detect an overall survival benefit at full enrollment in previously untreated, advanced gastric and GEJ cancer patients whose tumors test positive for FGFR2b overexpression. The outcome of the futility analysis will lead to a recommendation from the independent Data Monitoring Committee in the FIGHT trial to continue the trial as is, stop the trial or amend the trial. Amending the FIGHT trial as a result of our early futility analysis may increase the costs of conducting the FIGHT trial. Additionally, stopping or amending the FIGHT trial as a result of our early futility analysis may further delay our development of bemarituzumab in combination with mFOLFOX6 as a treatment for patients with advanced gastric or GEJ cancer that overexpresses FGFR2b and may prevent us from obtaining approval for and commercializing bemarituzumab in a timely manner or at all.

Even if we pass the futility analysis, given the significant cost of running the FIGHT trial and our current resources and priorities, our ability to restart and continue the FIGHT trial as currently designed will depend on our ability to secure a partner that will pay for all or substantially all of any future development and commercialization expenses for our bemarituzumab program. Based on feedback we have received from potential partners, we believe that it may be difficult to secure a partner for our bemarituzumab program on reasonable terms or at all without data showing the efficacy of the combination of bemarituzumab and mFOLFOX6 in patients with advanced gastric or GEJ cancer that overexpresses FGFR2b. Accordingly, we are considering additional alternatives that will allow us to advance our bemarituzumab program in the event we are unable to secure a partner, including converting the FIGHT trial to a Phase 2 or Phase 2/3 clinical trial in order to generate the data that would potentially support a partnering transaction. If we are unable to secure a partner for our bemarituzumab program in accordance with our desired timeframes or at all, we may not be able to obtain approval for and commercialize bemarituzumab.

Delays in clinical testing will delay the commercialization of our product candidates, increase our costs and harm our business.

We do not know whether any of our clinical trials will begin as and when planned, will need to be amended or restructured or will be completed on schedule, or at all. Our product development costs will increase if we experience delays in clinical testing. Significant clinical trial delays also could shorten any periods during which we may have the exclusive right to commercialize our product candidates or could allow our competitors to bring products to market before we do, which would impair our ability to successfully commercialize our product candidates and may harm our business, results of operations and prospects.

Events which may result in a delay in or unsuccessful completion of clinical development include:

- delays in reaching an agreement with or failure to obtain authorization from the U.S. Food and Drug Administration, or FDA, or other comparable regulatory authorities, and institutional review boards, or IRBs;
- imposition of a clinical hold following an inspection of our manufacturing or clinical trial operations, including clinical trial sites, by the FDA or other comparable regulatory authorities, or a decision by the FDA, other comparable regulatory authorities, IRBs or us, or a recommendation by a data safety monitoring board, to suspend or terminate a clinical trial at any time for safety or other reasons;
- delays in reaching, or the inability to reach, agreement on acceptable terms with prospective clinical research organizations, or CROs, clinical trial sites, laboratory service providers, companion diagnostic development partners, contract manufacturing organizations, or CMOs, and other service providers we may engage to support the conduct of our clinical trials or eventual commercialization of our products;
- deviations from the clinical trial protocol by clinical trial sites or investigators or failure to conduct a clinical trial in accordance with regulatory requirements;
- failure of third parties, such as CROs or other service providers, to satisfy their contractual duties or meet expected deadlines;
- delays in the testing, validation and manufacturing of product candidates and the delivery of these product candidates to clinical trial sites;
- in the case of clinical trials testing combination treatment of our product candidates with third-party drug products, delays in procuring such third-party drug products and the delivery of such third-party drug products to clinical trial sites, or the inability to procure such third-party drug products at all;
- for clinical trials in selected patient populations, delays in identifying and auditing central or other laboratories that develop or use assays to identify eligible patients for our clinical trials, delays in the validation of such assays or their transfer to such laboratories, or the failure of the clinical trial, as designed, to enroll the patient population necessary to meet the primary endpoints of such clinical trial;
- with respect to patients in any of our clinical trials, delays in completing their participation in any such clinical trial or returning for post-treatment follow-up, or failure to complete such participation or return for such follow-up at all;

- the occurrence of side effects, disease progression or other events requiring patients to drop out of before completing their participation in our clinical trials;
- withdrawal of one or more clinical trial sites from our clinical trials, including as a result of any investigator ceasing his or her affiliation with any such site, changes to any applicable standard of care or the ineligibility of any such site to participate in our clinical trials;
- administrative actions or changes in government policies, laws or regulations affecting any aspect of the conduct of our clinical trials;
- the impact of public health epidemics, such as the coronavirus currently impacting China and elsewhere; or
- lack of adequate funding to continue our clinical trials.

For example, for the reasons described in the foregoing risk factor in this “Risk Factors” section and elsewhere in this Annual Report, we plan to conduct an early futility analysis for our FIGHT trial in mid-2020 and paused enrollment in the trial in the fourth quarter of 2019, except for sites in Japan where we plan to enroll up to six patients while the remainder of the FIGHT trial remains closed for enrollment. As of February 2020, we have enrolled approximately 150 patients in the trial. We believe this should be a sufficient number of patients to conduct the futility analysis as planned. The outcome of the futility analysis will lead to a recommendation from the independent Data Monitoring Committee in the FIGHT trial to continue the trial as is, stop the trial or amend the trial. Amending the FIGHT trial as a result of our early futility analysis may increase the costs of conducting the FIGHT trial. Additionally, stopping or amending the FIGHT trial as a result of our early futility analysis may further delay our development of bemarituzumab in combination with mFOLFOX6 as a treatment for patients with advanced gastric or GEJ cancer that overexpresses FGFR2b and may prevent us from obtaining approval for and commercializing bemarituzumab in a timely manner or at all.

Even if we pass the futility analysis, given the significant cost of running the FIGHT trial and our current resources and priorities, our ability to restart and continue the FIGHT trial as currently designed will depend on our ability to secure a partner that will pay for all or substantially all of any future development and commercialization expenses for our bemarituzumab program. Based on feedback we have received from potential partners, we believe that it may be difficult to secure a partner for our bemarituzumab program on reasonable terms or at all without data showing the efficacy of the combination of bemarituzumab and mFOLFOX6 in patients with advanced gastric or GEJ cancer that overexpresses FGFR2b. Accordingly, we are considering additional alternatives that will allow us to advance our bemarituzumab program in the event we are unable to secure a partner, including converting the FIGHT trial to a Phase 2 or Phase 2/3 clinical trial in order to generate the data that would potentially support a partnering transaction. If we are unable to secure a partner for our bemarituzumab program, we may not be able to obtain approval for and commercialize bemarituzumab in a timely manner or at all.

Moreover, we are conducting the FIGHT trial in China in collaboration with Zai Lab (Shanghai) Co., Ltd., or Zai Lab. Zai Lab’s ability to conduct the FIGHT trial in China depends on Zai Lab’s and our ability to comply with the government policies, laws and regulations applicable to conducting clinical trials in China. The government policies, laws and regulations in China are evolving rapidly and changes to these policies, laws and regulations are difficult to predict. If any such government policies, laws or regulations in China evolve in a way that makes it more difficult or inefficient for us or Zai Lab to conduct our FIGHT trial in China, we may experience delays in initiating or conducting our FIGHT trial at clinical trial sites in China, which would delay our ability to obtain approval for and commercialize bemarituzumab.

In addition, in order to successfully conduct the FIGHT trial in each country where the trial is taking place, we must obtain sufficient clinical supply of each component of mFOLFOX6 to administer the mFOLFOX6 regimen to patients in each such country. If we experience delays in obtaining or are unable to obtain sufficient supply of any component of the mFOLFOX6 regimen in any country, we may experience delays in conducting our FIGHT trial at clinical trial sites in such country, which would delay our ability to obtain approval for and commercialize bemarituzumab.

Additionally, our and our partners' ability to successfully and timely complete our clinical trials requires that patients be treated with the relevant product candidate in accordance with the clinical trial protocol for the clinical trial testing such product candidate, including the specific dosing schedules and other timelines set forth in such protocol. The impact of public health epidemics, such as the coronavirus currently impacting China and elsewhere, may delay or prevent patients from receiving treatment in accordance with the protocol and the required timelines, which could delay our clinical trials, or prevent us from completing our clinical trials at all, and harm our ability to obtain approval for such product candidate.

If we or our partners are unable to timely complete clinical development for any of our product candidates, we may incur additional costs and our ability to achieve development, regulatory, commercialization or sales milestones or to generate and receive royalties on product sales and product revenues for any such product candidate may be impaired.

If we or our partners are unable to timely enroll patients in our clinical trials, we will be unable to complete these trials on a timely basis.

The timely completion of clinical trials largely depends on the rate of patient enrollment. Many factors affect the rate of patient enrollment, including:

- the size and nature of the patient population;
- the number and location of clinical trial sites;
- competition with other companies for clinical trial sites or patients;
- the eligibility and exclusion criteria for the clinical trial;
- for clinical trials in selected patient populations, the ability and time required to properly identify for inclusion in the clinical trial the population of patients we seek to enroll;
- the design of the clinical trial;
- the ability to obtain and maintain patient consents;
- the failure of enrolled patients to complete their participation in the trial;
- clinicians' and patients' perceptions as to the potential advantages of the product candidate being studied in relation to other available therapies, including any new drugs that may be approved for the indications we are investigating; and
- the impact of public health epidemics, such as the coronavirus currently impacting China and elsewhere.

We currently face and will continue to face significant competition in recruiting patients for our and our partners' current and future clinical trials, and we or our partners may be unable to timely enroll the patients necessary to complete clinical trials on a timely basis or at all.

We may not successfully develop or commercialize our current or future product candidates, which may force us to terminate our development efforts for one or more programs.

The success of our business depends primarily upon our ability to develop and commercialize protein therapeutics. Historically, we leveraged our differentiated discovery capabilities and protein therapeutic generation and engineering capabilities to identify and validate targets that we believed could be useful in oncology, and we generated and preclinically tested therapeutic proteins, including antibodies and fusion proteins, directed to or containing the targets we identified and validated. In October 2019, we began a corporate restructuring pursuant to which we are eliminating most of our in-house target discovery and validation and protein therapeutic generation and engineering capabilities by the first quarter of 2020. We currently have three late-stage research programs that arose from our work with our discovery capabilities. We plan to advance lead therapeutic antibodies for one of these programs into IND-enabling studies in the second quarter of 2020. In addition, as part of our corporate restructuring, we shifted our focus from in-house discovery and research to supplementing our development pipeline by looking to selectively acquire or license, on an exclusive basis, rights to product candidates from biotechnology and pharmaceutical companies.

Our efforts to preclinically develop potential new protein therapeutic candidates may initially show promise, yet fail to yield product candidates for clinical development or candidates that we successfully clinically develop and ultimately commercialize for numerous reasons, including the following:

- our research methodology may not successfully identify potential product candidates;
- product manufacturing difficulties may limit product yield or produce undesirable product characteristics that may increase our costs, cause delays or make our product candidates unmarketable;
- third parties on whom we may rely to generate antibody or other product candidates may fail to produce candidates that we can successfully validate or that have the characteristics necessary to become marketable product candidates;
- we may design one or more of our clinical trials in a way that makes it difficult or impossible to meet the primary endpoints of such trial, which could make further clinical development of the applicable product candidate infeasible, even if that product candidate proves to be efficacious;
- our product candidates may cause adverse effects in patients, even after successful initial toxicology studies or early-stage clinical trials, which may make our product candidates unsuitable for approval or otherwise unmarketable;
- our product candidates may have unacceptable safety profiles or otherwise fail to provide a meaningful benefit to patients; or
- our collaboration partners may change their development profiles or plans for our partnered product candidates or abandon a therapeutic area for or the development of a partnered product candidate.

For example, in February 2020, BMS informed us that its randomized, controlled multi-arm Phase 2 trial testing cabiralizumab with *Opdivo*, with and without chemotherapy, in second-line patients with pancreatic cancer did not meet its primary endpoint. BMS informed us that while it has no near-term plans for additional sponsored development of cabiralizumab, it will continue to support the evaluation of cabiralizumab in select, ongoing investigator-sponsored trials and may continue to assess future development opportunities for cabiralizumab. If BMS elects not to pursue further development opportunities for cabiralizumab, we may be unable to complete development of and obtain regulatory approval for cabiralizumab.

The occurrence of any of these events may force us to abandon our development efforts for one or more programs, which would have a material adverse effect on our business, operating results and prospects and could potentially require us to cease operations.

If we are unable to advance our three late-stage research programs and any future product candidates into and through clinical development, or if we experience significant delays in doing so, our business may be materially harmed.

Our ability to generate product revenues, which we do not expect to occur for many years, if ever, will depend heavily on our and our partners' ability to successfully advance our three late-stage research programs and any future product candidates into and through clinical development. The outcome of preclinical studies of any of our future product candidates may not predict the success of such product candidates in clinical trials. Moreover, preclinical results regarding a product candidate are often susceptible to varying interpretations and analyses and may not translate into similar results when the product candidate is tested clinically in humans. Many companies have believed their product candidates performed satisfactorily in preclinical and early clinical studies, but such product candidates have nonetheless failed during clinical development. Our inability to successfully complete preclinical or clinical development of any of our future product candidates could cause us to incur additional costs, delay or prevent our ability to advance these product candidates into clinical development or commercialization, or impair our ability to receive development, regulatory, commercialization or sales milestone payments from our current or future collaboration partners or to generate and receive royalties on product sales or product revenues from our current or future collaboration partners.

We and our product candidates are subject to a multitude of manufacturing risks, the occurrence of any of which could substantially increase our costs and limit supply of such product candidates.

The process of manufacturing our product candidates is complex and subject to a number of risks, including the following:

- The biologics manufacturing process is susceptible to product loss due to contamination, equipment failure, improper installation or operation of equipment or vendor or operator error leading to manufacturing process deviations. Even minor deviations from specified manufacturing processes could result in reduced production yields, product defects and other supply disruptions. If microbial, viral or other contaminations are discovered in our products or in the manufacturing facilities in which our products are made, such manufacturing facilities may need to be closed for an extended time to investigate and remediate the contamination.
- The manufacturing facilities in which our products are made, and their ability to successfully and timely manufacture our products, could be adversely affected by equipment failures, labor and raw material shortages, natural disasters, power failures and numerous other factors.
- Any adverse developments affecting manufacturing operations for our products may result in shipment delays, inventory shortages, lot failures, product withdrawals or recalls, or other interruptions in the supply of our products to clinical trial sites. If any of our products fail to meet specifications, we may also have to take inventory write-offs and incur other charges and expenses or undertake costly remediation efforts or seek more expensive manufacturing alternatives.

Certain raw materials necessary for the manufacture of our products, such as growth media, resins and filters, are sourced from a single supplier. We do not have agreements in place that guarantee our supply or the price of these raw materials. Any significant delay in the acquisition, decrease in the availability or increase in the price of these raw materials could considerably delay the manufacture of our product candidates, which could adversely impact the timing of any planned clinical trials or the regulatory approval of those product candidates.

We currently have process development capabilities. Historically, we generally performed cell line and process development for our product candidates and manufactured quantities of our product candidates necessary to conduct preclinical studies of those product candidates. We expect to increasingly rely on third-party service providers and may in the foreseeable future outsource all or a portion of the cell line and process development activities that we currently conduct, as well as the manufacturing of quantities of our product candidates for use in preclinical studies. We do not have and we do not have current plans to acquire or develop the facilities or capabilities to manufacture bulk drug substance or filled drug product for use in human clinical trials or commercialization. We rely on third-party manufacturers to produce bulk drug substance required for our clinical trials and expect to continue to rely on third parties to manufacture clinical trial drug supplies for the foreseeable future. We also contract with additional third parties for the filling, labeling, packaging, storage and distribution of investigational drug products.

We have not contracted with alternate suppliers in the event that our third-party manufacturers or other third parties on whom we rely to provide us with clinical trial drug supplies are unable to scale production or if we otherwise experience any problems with these manufacturers or such other third parties. For example, public health epidemics, such as the coronavirus currently impacting China and elsewhere, may impact the ability of our existing or future manufacturers to perform their obligations under our manufacturing agreements with such parties. Any problems we experience with our current manufacturers or these third parties could delay the manufacturing of our product candidates or the progress of our preclinical studies or clinical trials, which could harm our results of operations. In addition, if we are unable to arrange for alternative third-party manufacturing sources, or are unable to do so on commercially reasonable terms or in a timely manner, the development of our product candidates may be delayed.

Our reliance on third-party manufacturers subjects us to risks to which we would not be subject if we manufactured product candidates internally, including potential failure of any such third party to abide by regulatory and quality assurance requirements, breach of the manufacturing agreement by such third party due to factors beyond our control (including the third party's failure to manufacture our product candidates or any products we may eventually commercialize in accordance with our specifications) and termination of or a decision not to renew such agreement by such third party, based on its own business priorities, at a time when our finding and retaining a replacement manufacturer may be costly or damaging to our business.

The regulatory approval processes of the FDA and comparable foreign regulatory authorities are lengthy, time-consuming and inherently unpredictable. Failure to obtain regulatory approval for our product candidates would substantially harm our business.

The FDA and comparable foreign regulatory authorities extensively and rigorously regulate and evaluate the manufacture, testing, distribution, advertising and marketing of drug products prior to granting marketing approvals with respect to such products. This approval process generally requires, at minimum, testing of any product candidate in preclinical studies and clinical trials to establish its safety and effectiveness, and confirmation by the FDA and comparable foreign regulatory authorities that any such product candidate, and any parties involved in its manufacturing, testing and development, complied with current Good Manufacturing Practices, or GMP, current Good Laboratory Practices, or GLP, and current Good Clinical Practices, or GCP, regulations, standards and guidelines during such manufacturing, testing and development. The time required to obtain approval to market a product candidate from the FDA or any comparable foreign regulatory authority is unpredictable but typically takes many years following the commencement of clinical trials and depends on numerous factors, including the conduct of manufacturing, testing and development activities with respect to such product candidate and the substantial discretion of the applicable regulatory authorities. In addition, approval policies, regulations, or the type or amount of preclinical and clinical data necessary to obtain approval may change over the course of a product candidate's development and may vary among jurisdictions. We have not obtained regulatory approval for any of our product candidates and it is possible that none of our existing or potential future product candidates will ever obtain regulatory approval.

Any of our product candidates could fail to receive regulatory approval from the FDA or a comparable foreign regulatory authority for many reasons, including:

- the FDA's or such comparable foreign regulatory authority's disagreement with the design or implementation of our clinical trials testing any such product candidate;
- our failure to demonstrate that a product candidate is effective for its proposed indication and has an acceptable safety profile;
- our failure to demonstrate that a product candidate's clinical and other benefits outweigh its safety risks;
- the failure of our clinical trial data for a product candidate to meet the level of statistical significance required for regulatory approval;
- the FDA's or such comparable foreign regulatory authority's disagreement with our interpretation of data from preclinical studies or clinical trials testing a product candidate;
- the insufficiency of our clinical trial data for a product candidate to support the submission and filing of a Biologic License Application or other regulatory submission or to obtain regulatory approval for such product candidate;

- our failure to obtain approval from the FDA or such comparable foreign regulatory authority for the manufacturing or testing processes or facilities of CMOs or CROs with whom we contract for clinical and commercial product supply or preclinical or clinical testing; or
- changes in the applicable standard of care or the FDA's or such comparable foreign regulatory authority's approval policies or regulations that render our preclinical and clinical data for a product candidate insufficient for regulatory approval.

The FDA or a comparable foreign regulatory authority may require additional information, including preclinical or clinical data, to support approval of a product candidate, which may delay or prevent approval and our commercialization plans, or result in our decision to abandon the development program with respect to such product candidate. For example, given the greater potential patient population in Asia, we expect that a substantial number of the patients in our Phase 3 FIGHT trial will come from clinical trial sites in Asia. However, we are currently unable to provide regulatory authorities with data that demonstrate that patients participating in the FIGHT trial at clinical trial sites in Asia are representative of the general patient population and will respond to bemarituzumab in the same way as other patient populations. If we obtain a significant portion of any positive clinical data from clinical trial sites in Asia as compared to data from clinical trial sites located elsewhere in the world, and an analysis of the data from Asian patients suggest that other patient populations may not have similar outcomes, the FDA and comparable foreign regulatory authorities may determine that the positive data we observe in Asian patients are not sufficient to support regulatory approval for bemarituzumab for the general patient population and may require more clinical data from other patient populations to support regulatory approval for bemarituzumab. This could prevent us from obtaining approval for and commercializing bemarituzumab on a timely basis or at all.

In addition, if we were to obtain approval for any of our product candidates, regulatory authorities may approve any such product candidate for fewer or more limited indications than we request, may grant approval contingent on the performance of costly post-marketing clinical trials or establishment of risk evaluation and mitigation strategy, or REMS, drug safety programs, or may approve a product candidate with a label that does not include the labeling claims necessary or desirable for the successful commercialization of that product candidate.

Our product candidates may cause undesirable side effects that could delay or prevent their regulatory approval, limit their commercial profiles, if approved, or result in significant negative consequences following any marketing approval.

Our product candidates may cause undesirable side effects in patients, which could cause us or regulatory authorities to interrupt, delay or halt clinical trials and could result in a more restrictive label or the delay or denial of regulatory approval by the FDA or other comparable foreign regulatory authority or otherwise limit the commercial potential of any such product candidate. Our clinical trial results could reveal an unacceptable severity or prevalence of side effects. If this were to occur, we may elect to suspend or terminate our clinical trials or the FDA or comparable foreign regulatory authorities could order us to cease our clinical trials or deny approval of our product candidates for any or all targeted indications. Drug-related side effects could negatively affect patient recruitment, cause enrolled patients to drop out of a clinical trial and result in product liability claims. Any of these occurrences may significantly harm our business, financial condition and prospects.

Additionally, if one or more of our product candidates receives marketing approval, and we or others later identify undesirable side effects caused by any such product, numerous potentially significant negative consequences could result, including:

- we may suspend marketing of, or withdraw or recall, such product;
- regulatory authorities may withdraw approvals of such product;
- regulatory authorities may require additional warnings on the label for such product;
- regulatory authorities may issue safety alerts, Dear Healthcare Provider letters, press releases or other communications containing warnings about such product;
- regulatory authorities may require the establishment or modification of a REMS or a similar program that may, for instance, restrict distribution of such product and impose burdensome implementation requirements on us;
- regulatory authorities may require that we conduct post-marketing studies;

- we could be sued and held liable for harm caused to patients; and
- our reputation may suffer.

Any of these events could prevent us from achieving or maintaining marketing approval for or acceptance of a product candidate or otherwise materially harm the commercial prospects for such product, if approved, and could significantly harm our business, results of operations and prospects.

Certain of our product candidates, including bemarituzumab and FPA150, are expected to be effective only in certain selected patient populations. If we are unable to successfully develop and obtain FDA approval for companion diagnostics for these product candidates, or experience significant delays in doing so, we may not obtain marketing approval for such product candidates or realize their full commercial potential.

Certain of our current product candidates, including bemarituzumab and FPA150, may be effective only in selected patient populations. For any such product candidate, we expect that the FDA and comparable foreign regulatory authorities may require the development and regulatory approval of at least one companion diagnostic as a condition to approving such product candidate for use in patients within the selected patient population. We do not have experience in or capabilities for developing or commercializing companion diagnostics and have depended and will continue to depend on the sustained cooperation and effort of our third-party diagnostic development collaborators to perform these functions.

For example, we are developing bemarituzumab to treat a subset of patients with front-line gastric or GEJ cancer whose tumors overexpress FGFR2b. We have developed, in collaboration with third-party diagnostic development partners, both an IHC-based assay and a ctDNA blood-based assay to identify gastric and GEJ cancer patients with FGFR2b overexpression or *FGFR2* gene amplification who may benefit from treatment with bemarituzumab in combination with mFOLFOX6. In addition, we are developing FPA150 to treat patients with tumors that overexpress B7-H4. We have developed, in collaboration with a third-party diagnostic development partner, an IHC-based assay that we are using in our Phase 1a/1b clinical trial of FPA150 to identify patients with B7-H4 overexpression.

For bemarituzumab, we initially expected that approximately 10% of the previously untreated, advanced gastric and GEJ cancer patients that we pre-screened for the FIGHT trial would test positive for FGFR2b overexpression or *FGFR2* gene amplification, as detected by the IHC and ctDNA tests we are using to identify patients eligible for enrollment in the trial. We also expected that the majority of patients that test positive for FGFR2b overexpression by IHC would also test positive for *FGFR2* gene amplification by ctDNA. As of the time we paused enrollment in the trial, approximately 30% of the patients that we pre-screened for possible enrollment in the trial tested positive for FGFR2b overexpression, as measured by the IHC test alone. This was significantly higher than we expected at the time we started the trial. In addition, contrary to our initial expectations, the vast majority of patients that tested positive for FGFR2b overexpression did not test positive for *FGFR2* gene amplification. These results suggest that the FIGHT trial may enroll a greater proportion of patients whose tumors overexpress FGFR2b due to a reason other than *FGFR2* gene amplification. We believe, based on evaluations to date, that our IHC and ctDNA tests are performing properly and that the higher rate of FGFR2b overexpression without *FGFR2* gene amplification is not due to the performance, sensitivity or specificity of our IHC and ctDNA tests. If, however, upon further evaluation we determine that either or both of our IHC or ctDNA tests are not performing properly or otherwise do not select the patient population we originally expected to enroll, we and our partners may be required to redesign such companion diagnostics or may experience delays in obtaining or may fail to obtain regulatory approval for such companion diagnostics, which could delay their development and harm our business.

Companion diagnostics are subject to regulation by the FDA and comparable foreign regulatory authorities as medical devices and may require separate regulatory approval prior to commercialization. For any companion diagnostic that we develop for use with one of our product candidates, we or our collaboration partners may experience delays in obtaining or may fail to obtain regulatory approval for such companion diagnostic, which could delay its development and harm our business. If we or our collaboration partners are unable to obtain necessary regulatory approvals for our companion diagnostics, including those for bemarituzumab or FPA150, or experience delays in doing so, we may suffer significant negative consequences, including:

- the applicable product candidate may not receive marketing approval if its safe and effective use depends on use of a companion diagnostic; or

- we may not realize the full commercial potential of the applicable product candidate if, among other reasons, we are unable to appropriately identify patients that are likely to respond to treatment with such product candidate.

The occurrence of any of these events would harm our business, possibly materially.

Even if our product candidates receive regulatory approval, they may face future development and regulatory difficulties, which may prevent us from commercializing our products and generating revenue.

Even if we obtain regulatory approval for a product candidate in a particular jurisdiction, the product would be subject to ongoing requirements by the FDA or applicable comparable foreign regulatory authorities governing the manufacture, quality control, further development, labeling, packaging, storage, distribution, safety surveillance, import, export, advertising, promotion, recordkeeping and reporting of safety and other post-market information of or with respect to such product. The FDA and comparable foreign regulatory authorities will continue to closely monitor the safety profile of any product after approval. If the FDA or any comparable foreign regulatory authority becomes aware of new safety information after approval of any of our product candidates, it may require labeling changes or establishment of a REMS or similar program, impose significant restrictions on the product's indicated uses or marketing, or impose ongoing requirements for costly post-approval studies or post-market surveillance.

In addition, drug product manufacturers and their facilities are subject to continual review and periodic inspections by the FDA and other regulatory authorities to evaluate compliance with GMP and GLP regulations, standards and guidelines. If we or a regulatory authority discover previously unknown problems with one of our product candidates, such as side effects or adverse events of unanticipated severity or frequency, or problems with the facility where such product candidate is manufactured, a regulatory authority may impose restrictions on that product, the manufacturing facility or us, including requiring recall or withdrawal of such product from the market or suspension of manufacturing. If we, our product candidates or the manufacturing facilities for our product candidates fail to comply with applicable regulatory requirements, a regulatory authority may:

- issue warning letters or untitled letters;
- mandate modifications to promotional materials or require us to provide corrective information to healthcare practitioners;
- require us to enter into a consent decree, which may require payment of various monetary fines and reimbursement for inspection costs, impose due dates for specific actions by us, and impose penalties for non-compliance;
- seek an injunction or bring other court action to impose civil or criminal penalties or monetary fines;
- suspend or withdraw regulatory approval for our product candidates;
- suspend any ongoing clinical trials of our product candidates;
- refuse to approve pending applications or supplements to applications that we have filed with respect to our product candidates;
- suspend or impose restrictions on our or our manufacturing facilities' operations, including costly new manufacturing requirements; or
- seize or detain products, refuse to permit the import or export of products, or require us to initiate a product recall.

The occurrence of any event or penalty described above may limit or prevent our ability to commercialize our products and generate revenue.

Advertising and promotion of any product candidate that obtains approval in the United States will be heavily scrutinized by the FDA, the Department of Justice, the Department of Health and Human Services' Office of Inspector General, state attorneys general, members of Congress and the public. Violations of applicable laws and regulations, including promotion of our products for unapproved or off-label uses, may subject us to enforcement letters, inquiries, investigations and civil and criminal sanctions by the government. Similarly, comparable foreign regulatory authorities will heavily scrutinize advertising and promotion of any product candidate that obtains approval outside of the United States.

In the United States, engaging in the impermissible promotion of products for off-label uses can also subject a company to false claims litigation under federal and state statutes, which can lead to civil and criminal penalties and fines and agreements that materially restrict the manner in which such company promotes or distributes drug products. These false claims statutes include the federal False Claims Act, which allows any individual to bring a lawsuit against a pharmaceutical company on behalf of the federal government alleging submission of false or fraudulent claims or that such company caused another entity or individual to present such false or fraudulent claims for payment by a federal program such as Medicare or Medicaid. If the government prevails in the lawsuit, the individual will receive a portion of any fines or settlement funds. Since 2004, False Claims Act lawsuits against pharmaceutical companies have increased significantly in volume and breadth, leading to several substantial civil and criminal settlements involving fines exceeding \$1.0 billion based on certain sales practices promoting off-label drug uses. This growth in litigation has increased the risk that a pharmaceutical company will have to defend against false claims actions, pay settlement fines or restitution, agree to comply with burdensome reporting and compliance obligations and be excluded from Medicare, Medicaid and other federal and state healthcare programs. If we do not lawfully promote any of our products that may receive marketing approval, we may become subject to such litigation and our inability to successfully defend the company in such litigation may material adversely affect our business, financial condition and results of operations.

The policies of the FDA or any comparable foreign regulatory authority may change, and additional government regulations may be enacted that could prevent, limit or delay regulatory approval of our product candidates. If we are slow or unable to adapt to changes in existing requirements or policies or new requirements or policies that may be adopted, or if we are not able to maintain regulatory compliance, we may lose any marketing approval that we may have obtained, which would adversely affect our business, prospects and ability to achieve or sustain profitability.

Our failure to obtain regulatory approval in international jurisdictions would prevent us from marketing our product candidates outside the United States.

In order to market and sell our products in other jurisdictions, we or our collaboration partners must obtain separate marketing approvals and comply with numerous and varying regulatory requirements in those jurisdictions. The approval procedures vary among countries and can involve additional testing. The time required to obtain approval outside of the United States may differ substantially from that required to obtain FDA approval. The regulatory approval processes outside the United States generally include all the risks associated with obtaining FDA approval and may include additional risks that we cannot predict. In addition, in many countries outside the United States, we or our collaboration partners must secure product reimbursement approvals before regulatory authorities will approve a product for sale in that country. Obtaining foreign regulatory approvals and compliance with foreign regulatory requirements could result in significant difficulties and costs for us and could delay or prevent the introduction of our products in certain countries. We may not obtain foreign regulatory approvals for our product candidates on a timely basis, if at all.

We are conducting certain of our clinical trials in countries outside of the United States and will need to obtain marketing approval for our product candidates in each such country before we can sell our products there. For example, we are conducting our FIGHT trial for bemarituzumab in China in collaboration with Zai Lab and are relying on Zai Lab's ability to obtain approval for bemarituzumab in China, Taiwan, Hong Kong and Macau, or collectively, Greater China, from the China Food and Drug Administration. However, Zai Lab's ability to obtain approval in Greater China depends on Zai Lab's and our ability to comply with the government policies, laws and regulations applicable to conducting clinical trials and obtaining approval for and commercializing drug products in Greater China. The government policies, laws and regulations in China are evolving rapidly and future changes are difficult to predict. If any such government policies, laws or regulations evolve in a way that make it more difficult or inefficient for Zai Lab or us to clinically develop, obtain approval for or commercialize bemarituzumab in China, the conduct of our FIGHT trial may be delayed, which will delay our ability to obtain approval for and commercialize bemarituzumab.

Further, data and results from clinical trials conducted in one country may not be accepted by regulatory authorities in other countries, and regulatory approval in one country or by one regulatory authority outside the United States does not ensure approval by regulatory authorities in any other country or jurisdiction or by the FDA, while a failure or delay in obtaining regulatory approval for any of our product candidates in one country or by one regulatory authority may have a negative effect on the regulatory approval process in other countries or jurisdictions and may significantly diminish the commercial prospects of that product candidate, which may cause our business prospects to decline. Also, regulatory approval for any of our product candidates may be withdrawn in any country or jurisdiction. If we fail to comply with the regulatory requirements in international jurisdictions, we may not receive the necessary marketing approvals for our product candidates in these jurisdictions, our target market for these product candidates will be reduced, we may be unable to realize the full market potential of these product candidates and our business will be adversely affected.

The withdrawal of the United Kingdom from the EU, commonly referred to as Brexit, may adversely impact our ability to obtain regulatory approvals for our product candidates in the EU, result in restrictions or imposition of taxes and duties for importing our product candidates into the EU and may require us to incur additional expenses in order to develop, manufacture and commercialize our product candidates in the EU.

Following the result of a referendum in 2016, the United Kingdom left the EU on January 31, 2020, commonly referred to as Brexit. Pursuant to the formal withdrawal arrangements agreed between the United Kingdom and the EU, the United Kingdom will be subject to a transition period until December 31, 2020, or the Transition Period, during which EU rules will continue to apply. Negotiations between the United Kingdom and the EU are expected to continue in relation to the customs and trading relationship between the United Kingdom and the EU following the expiry of the Transition Period.

Since a significant proportion of the regulatory framework in the United Kingdom applicable to our business and our product candidates is derived from EU directives and regulations, Brexit, following the Transition Period, could materially impact the regulatory regime with respect to the development, manufacture, importation, approval and commercialization of our product candidates in the United Kingdom or the EU. For example, as a result of the uncertainty surrounding Brexit, the European Medicines Agency, or EMA, relocated to Amsterdam from London. Following the Transition Period, the United Kingdom will no longer be covered by the centralized procedures for obtaining EU-wide marketing authorization from the EMA and, unless a specific agreement is entered into, a separate process for authorization of drug products, including our product candidates, will be required in the United Kingdom, the potential process for which is currently unclear. Any delay in obtaining, or an inability to obtain, any marketing approvals, as a result of Brexit or otherwise, would prevent us from commercializing our product candidates in the United Kingdom or the EU and restrict our ability to generate revenue and achieve and sustain profitability. In addition, we may be required to pay taxes or duties or be subjected to other hurdles in connection with the importation of our product candidates into the EU, or we may incur expenses in establishing a manufacturing facility in the EU in order to circumvent such hurdles. If any of these outcomes occur, we may be forced to restrict or delay efforts to seek regulatory approval in the United Kingdom or the EU for our product candidates, or incur significant additional expenses to operate our business, which could significantly and materially harm or delay our ability to generate revenues or achieve profitability of our business. Any further changes in international trade, tariff and import/export regulations as a result of Brexit or otherwise may impose unexpected duty costs or other non-tariff barriers on us. These developments, or the perception that any of them could occur, may significantly reduce global trade and, in particular, trade between the impacted nations and the United Kingdom.

We face substantial competition from third parties that may develop or commercialize products before or more successfully than we do.

The biotechnology industry is intensely competitive and subject to rapid and significant technological change. We face worldwide competition from major pharmaceutical companies, specialty pharmaceutical companies and biotechnology companies with respect to our current product candidates and will face such competition with respect to our future product candidates. Many of our competitors have significantly greater financial, technical and human resources than we do. Smaller and early-stage companies may also prove to be significant competitors, particularly through their collaborative arrangements with large and established companies.

Our competitors may obtain regulatory approval for their products more rapidly than we do or may obtain patent protection or other intellectual property rights that limit our ability to develop or commercialize our product candidates. Our competitors may also develop, acquire or license on an exclusive basis products that are more effective, more convenient, more widely accepted or less costly or have better safety profiles than our product candidates and may also be more successful in manufacturing and marketing such products than we are with respect to our product candidates.

We also currently and will in the future compete with other companies in recruiting and retaining qualified personnel, establishing clinical trial sites and enrolling patients in clinical trials, as well as in acquiring technologies complementary to, or necessary for, our research and development programs.

In addition, as part of our corporate restructuring, we shifted our focus from in-house discovery and research to supplementing our development pipeline by looking to selectively acquire or license, on an exclusive basis, rights to develop product candidates from biotechnology and pharmaceutical companies. We plan to evaluate for potential acquisition or licensing assets that are IND-ready or in early clinical development and that we can leverage our in-house development capabilities to develop to data read-outs in the near- to medium-term. Our primary focus remains on oncology therapeutics. The acquisition and licensing of pharmaceutical product candidates is very competitive, and we expect to compete with third parties seeking to acquire or license product candidates in which we are interested, including more established companies that have strategies to license or acquire products and may have competitive advantages over us, as well as other emerging companies that take similar or different approaches to product acquisitions and licensing.

Although there are no approved therapies that specifically target the signaling pathways that our current product candidates are designed to modulate or inhibit, there are numerous drugs that are currently approved to treat the same diseases or indications for which our current product candidates may be useful and many of these currently-approved therapies act through mechanisms similar to those of our current product candidates. Many of these approved drugs are well-established therapies or products and are widely accepted by physicians, patients and third-party payors. Some of these drugs are branded and subject to patent protection and others are available on a generic basis. Insurers and other third-party payors may also encourage the use of generic products or specific branded products. We expect that if our product candidates are approved, they will be priced at a significant premium over competitive generic, including branded generic, products. This may make it difficult for us to differentiate our products from currently-approved therapies, which may adversely impact our business strategy. In addition, many companies are developing new therapeutics and we cannot predict if and how the applicable standards of care will change as our product candidates progress through clinical development.

If bemarituzumab were approved for the treatment of previously untreated, advanced gastric or GEJ cancer, it could face competition from currently-approved and marketed products, including 5-fluorouracil, S-1, capecitabine, doxorubicin, cisplatin, oxaliplatin, carboplatin, paclitaxel, irinotecan, and docetaxel, as well as antibodies that bind to PD-1/PD-L1, including BMS/Ono Pharmaceutical Co., Ltd.'s, or Ono's, *Opdivo* monotherapy and *Opdivo* in combination with BMS/Ono's *Yervoy*® (ipilimumab) anti-CTLA-4 antibody, Merck & Co., Inc.'s *Keytruda*® (pembrolizumab), AstraZeneca UK Limited/MedImmune, LLC's *Imfinzi*® (durvalumab) anti-PD-L1 antibody, BeiGene Ltd.'s tislelizumab, Innovent Biologics Inc.'s *Tyvyt*® (sintilimab), Incyte Corporation, or Incyte/MacroGenics, Inc./Zai Lab's INCMGA0012 (MGA012), Jiangsu Hengrui Medicine Co., Ltd.'s camrelizumab (SHR-1210), Fudan University Shanghai Cancer Center's apatinib, Astellas Pharma Inc.'s zolbetuximab anti-Claudin 18.2 antibody and AstraZeneca UK Limited/MedImmune, LLC's tremelimumab anti-CTLA4 antibody.

If FPA150 were approved for the treatment of various cancers, it could face competition from currently-approved and marketed products, including cisplatin, carboplatin, gemcitabine, doxorubicin, paclitaxel, topotecan, Genentech, Inc.'s, or Genentech's, *Avastin*® (bevacizumab), Celgene Corporation's *Abraxane*® (paclitaxel protein-bound), Genentech's *Xeloda*® (capecitabine), Sagent Pharmaceuticals, Inc.'s *Navelbine*® (vinorelbine), and Eisai Inc.'s *Halaven*® (eribulin mesylate); antibodies that bind to PD-1/PD-L1, including *Opdivo* monotherapy and *Opdivo* in combination with *Yervoy* (ipilimumab), *Keytruda* (pembrolizumab), *Bavencio* (avelumab), Genentech's *Tecentriq*® (atezolizumab), *Imfinzi* (durvalumab), and tremelimumab; Immunomedics, Inc.'s sacituzumab govitecan (IMMU-132) anti-Trop-2-SN-38 antibody drug conjugate, or ADC; small molecule poly ADP-ribose polymerase inhibitors, including AstraZeneca UK Limited's *Lynparza*® (olaparib), GlaxoSmithKline plc/Tesaro, Inc.'s *Zejula*® (niraparib), Clovis Oncology, Inc.'s *Rubraca*® (rucaparib), Pfizer's talazoparib and AbbVie Inc.'s veliparib; and other product candidates that are in or may enter clinical development, such as ImmunoGen, Inc.'s mirvetuximab soravtansine (IMGN853) ADC that targets folate receptor alpha.

We believe that our ability to successfully compete will depend on, among other things:

- the efficacy and safety profile of our product candidates, including relative to marketed products and product candidates undergoing development by third parties;
- the time it takes for our product candidates to complete clinical development and receive marketing approval;
- our and our partners' ability to commercialize any of our product candidates that receive regulatory approval;
- our and our partners' ability to manufacture commercial quantities of any of our product candidates that receive regulatory approval;
- the price of our products, including in comparison to branded or generic competitors;
- whether coverage and adequate levels of reimbursement are available under private and governmental health insurance plans, including Medicare;
- acceptance of any of our product candidates that receive regulatory approval by physicians and other healthcare providers; and
- our ability to establish, maintain and protect intellectual property rights related to our product candidates.

Our product candidates may not achieve the level of market acceptance among physicians, patients, healthcare payors and others in the medical community necessary for commercial success.

Even if our product candidates receive regulatory approval, they may not gain the level of market acceptance among physicians, patients, healthcare payors and others in the medical community necessary for commercial success. Whether and the extent to which our product candidates achieve commercial success will also depend on coverage of and adequate reimbursement for these product candidates by third-party payors, including government payors, which may be difficult or time-consuming to obtain, may be limited in scope and may not be available or otherwise obtained in all jurisdictions in which we may seek to market our approved product candidates. The degree of market acceptance of any of our approved product candidates will depend on numerous factors, including:

- the efficacy and safety profile of the product candidate, as demonstrated in clinical trials;
- the acceptance of the product candidate as a safe and effective treatment by physicians, clinics and patients;
- the timing of market introduction of both the product candidate and products competitive to such product candidate;
- the clinical indications for which the product candidate is approved;
- the potential and perceived advantages of the product candidate over alternative treatments, including any similar generic treatments;
- the cost of treatment with the product candidate in relation to alternative treatments;
- the pricing of our products and the availability of coverage and adequate reimbursement by third parties and government authorities;
- the relative convenience and ease of administration of the product candidate;
- the frequency and severity of adverse events caused by the product candidate;
- the effectiveness of sales and marketing efforts with respect to the product candidate; and
- any unfavorable publicity relating to the product candidate.

If any product candidate is approved but does not achieve an adequate level of acceptance by physicians, hospitals, healthcare payors and patients, we may not generate or derive sufficient revenue from that product candidate to enable us to achieve or sustain profitability.

Even if we commercialize one or more of our product candidates, these product candidates may become subject to unfavorable pricing regulations, third-party coverage and reimbursement practices or healthcare reform initiatives, which could harm our business.

The regulations that govern marketing approvals, pricing, coverage and reimbursement for new drug products vary widely from country to country. Current and future legislation may significantly change the approval requirements in ways that could involve additional costs and cause delays in obtaining approvals. Some countries require approval of the sale price of a drug before it can be marketed. In many countries, the pricing review period begins after marketing or product licensing approval is granted. In some foreign markets, prescription pharmaceutical pricing remains subject to continuing governmental control even after initial approval is granted. As a result, even if we obtain marketing approval for a product in a particular country, we may be subject to price regulations that delay the commercial launch of such product, possibly for lengthy time periods, which could negatively impact the revenues we generate from the sale of such product in that particular country. Adverse pricing limitations may hinder our ability to recoup our investment in one or more product candidates, even if such product candidates obtain marketing approval.

Our ability to successfully commercialize any products will also depend in part on the extent to which coverage and adequate reimbursement for these products and related treatments will be available from government health administration authorities, private health insurers and other organizations. Government authorities and other third-party payors, such as private health insurers and health maintenance organizations, determine which medications they will cover, establish reimbursement levels for medications and attempt to control costs by limiting such coverage and reimbursement levels. Increasingly, third-party payors are requiring that pharmaceutical companies provide such third-party payors with predetermined discounts from list prices and are challenging the prices charged for medications. We cannot be sure that coverage and reimbursement will be available for any product that we commercialize and, if reimbursement is available, what the level of reimbursement will be. Coverage and reimbursement may impact the demand for, or the price of, any product candidate for which we obtain marketing approval. If coverage and reimbursement for any product candidate for which we obtain marketing approval are not available or reimbursement is available only at limited levels, we may be unable to successfully commercialize any such product candidate.

There may be significant delays in obtaining coverage and reimbursement for newly approved drugs, and coverage may be more limited than the purposes for which the drug is approved by the FDA or any comparable foreign regulatory authority. Moreover, eligibility for coverage and reimbursement does not guarantee that a drug will be paid for in all cases or at a rate that covers our costs, including with respect to research, development, manufacture, sale and distribution. Interim reimbursement levels for new drugs, if applicable, may also not be sufficient to cover our costs and may only be provided on a temporary basis. Reimbursement rates may vary depending on the approved uses for the drug and the clinical setting in which it is used, may be based on reimbursement levels already set for lower cost drugs and may be incorporated into existing payments for other services. Net prices for drugs may be reduced by mandatory discounts or rebates required by government healthcare programs or private payors and by any future relaxation of laws that presently restrict imports of drugs from countries where they may be sold at lower prices than in the United States. Additionally, companion diagnostic tests that we or our collaborators may develop require coverage and reimbursement separate and apart from the coverage and reimbursement for their companion pharmaceutical or biologics products. Similar challenges to obtaining coverage and reimbursement, applicable to pharmaceutical or biologics products, will apply to companion diagnostic tests. Our inability to promptly obtain coverage and profitable reimbursement rates from both government-funded and private payors for any of our approved products or companion diagnostic tests that we or our collaborators may develop could have a material adverse effect on our operating results, our ability to raise capital needed to commercialize products and our overall financial condition.

Enacted and future legislation may increase the difficulty and cost of commercialization of our product candidates and affect the prices we may charge for such product candidates.

The United States and many foreign jurisdictions have enacted or proposed legislative and regulatory changes affecting the healthcare system that could prevent or delay marketing approval of our product candidates, restrict or regulate post-approval activities and affect our ability to profitably sell any product candidate for which we obtain marketing approval.

In March 2010, Congress enacted the Patient Protection and Affordable Care Act, as amended by the Health Care and Education Reconciliation Act of 2010, or collectively, the Affordable Care Act, which includes measures that have changed the way healthcare is financed by both governmental and private insurers. There remain judicial and congressional challenges to certain aspects of the Affordable Care Act. Since January 2017, President Trump has signed two Executive Orders and other directives designed to delay the implementation of certain provisions of the Affordable Care Act or otherwise circumvent some of the requirements for health insurance mandated by the Affordable Care Act. Concurrently, Congress has considered legislation that would repeal or repeal and replace all or part of the Affordable Care Act. While Congress has not passed comprehensive repeal legislation, several bills affecting the implementation of certain taxes under the Affordable Care Act have been signed into law. The federal Tax Cuts and Jobs Act of 2017, or the Tax Act, includes a provision that became effective on January 1, 2019 and repealed the tax-based shared responsibility payment imposed by the Affordable Care Act on certain individuals who fail to maintain qualifying health coverage for all or part of a year, which payment is commonly referred to as the “individual mandate.” In addition, the 2020 federal spending package permanently eliminated, effective January 1, 2020, the Affordable Care Act-mandated “Cadillac” tax on high-cost employer-sponsored health coverage and medical device tax and, effective January 1, 2021, also eliminates the health insurer tax. The Bipartisan Budget Act

of 2018, or the BBA, among other things, amended the Affordable Care Act, effective January 1, 2019, to close the coverage gap in most Medicare drug plans, commonly referred to as the “donut hole.” In December 2018, the Centers for Medicare & Medicaid Services, or CMS, published a new final rule permitting further collections and payments to and from certain Affordable Care Act-qualified health plans and health insurance issuers under the Affordable Care Act risk adjustment program in response to the outcome of federal district court litigation regarding the method CMS uses to determine this risk adjustment. On December 14, 2018, a Texas U.S. District Court judge ruled that the Affordable Care Act is unconstitutional in its entirety because the individual mandate was repealed by Congress as part of the Tax Act. Additionally, on December 18, 2019, the U.S. Court of Appeals for the 5th Circuit upheld the District Court ruling that the individual mandate was unconstitutional and remanded the case back to the District Court to determine whether the remaining provisions of the Affordable Care Act are invalid as well. It is unclear how this decision, future decisions, subsequent appeals and other efforts to repeal and replace the Affordable Care Act will impact our business.

Other legislative changes have been proposed and adopted since the Affordable Care Act was enacted. For example, in August 2011, then-President Obama signed into law the Budget Control Act of 2011, which, among other things, created the Joint Select Committee on Deficit Reduction to recommend to Congress proposals in spending reductions. The Joint Select Committee on Deficit Reduction did not achieve a targeted deficit reduction, which triggered the legislation’s automatic reduction to several government programs. This includes aggregate reductions in Medicare payments to providers of, on average, 2% per fiscal year through 2029 unless Congress takes additional action. The American Taxpayer Relief Act of 2012, among other things, further reduced Medicare payments to several providers, including hospitals and cancer treatment centers, and increased the statute of limitations period for the government to recover overpayments to providers from three to five years.

Further, there has been increasing legislative and enforcement interest in the United States with respect to drug pricing practices. Specifically, there have been several recent U.S. congressional inquiries and proposed and enacted federal legislation designed to, among other things, increase transparency in drug pricing, reduce the cost of prescription drugs under Medicare, review the relationship between pricing and manufacturer patient programs and reform government program reimbursement methodologies for drugs. At the federal level, the Trump administration’s budget proposal for fiscal year 2021 includes a \$135 billion allowance to support legislative proposals seeking to reduce drug prices, increase competition, lower out-of-pocket drug costs for patients and increase patient access to lower-cost generic and biosimilar drugs. The Trump administration also released a “Blueprint” to lower drug prices and reduce out-of-pocket costs of drugs that contains additional proposals to increase manufacturer competition, increase the negotiating power of certain federal healthcare programs, incentivize manufacturers to lower the list price of their products and reduce the out-of-pocket costs of drug products paid by consumers. The Department of Health and Human Services, or HHS, has solicited feedback on some of these measures and has implemented others under its existing authority. Although a number of these and other proposals may require additional authorization to become effective, both Congress and the Trump administration have indicated that they will continue to seek new legislative, administrative and executive measures, including the President’s issuance of future executive orders, as applicable, to control drug costs. At the state level, state governments are increasingly passing legislation and implementing regulations designed to control pharmaceutical and biologics 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 product importation from other countries and bulk purchasing.

We cannot predict the likelihood, nature or extent of government regulation that may arise from future legislative, administrative or executive action. We expect that the healthcare reform measures that have been adopted and may be adopted in the future may result in more rigorous coverage criteria and additional downward pressure on the price that we receive for any approved product, which could materially harm our future revenues. Any reduction in reimbursement from Medicare or other government programs may result in a similar reduction in payments from private payors. The implementation of cost containment measures or other healthcare reforms may prevent us from being able to generate revenue, attain or maintain profitability or successfully commercialize our products.

We may become subject to product liability lawsuits, which could cause us to incur substantial liabilities and limit commercialization of any products we may develop.

We face an inherent risk of product liability exposure related to the testing of our product candidates in human clinical trials and will face an even greater risk if we commercially sell any products that receive marketing approval. Product liability claims may be brought against us by patients, including those enrolled in our clinical trials, healthcare providers or others that use, administer or sell our products. If we cannot successfully defend ourselves against claims that our product candidates or products that we may develop caused injuries, we could incur substantial liabilities. Regardless of merit or eventual outcome, product liability claims may result in:

- decreased demand for our product candidates or any products that receive marketing approval;
- termination of clinical trials at particular sites or entire clinical trial programs;
- injury to our reputation and significant negative media attention;
- withdrawal of patients from participation in our clinical trials;
- significant costs to defend the related litigation;
- substantial monetary awards payable to claimants, including patients enrolled in our clinical trials;
- loss of revenue;
- diversion of management and scientific resources from our business operations; and
- inability to commercialize any products that have received marketing approval.

We currently hold \$10.0 million in clinical trial liability insurance coverage, which may not adequately cover all liabilities that we may incur. We may not be able to maintain insurance coverage at a reasonable cost or in an amount adequate to satisfy any liability that may arise. We intend to expand our product liability insurance coverage to include the sale of commercial products if we obtain marketing approval for one or more of our product candidates, but we may be unable to obtain such product liability insurance on commercially reasonable terms. Large judgments have been awarded in class action lawsuits based on drugs that had unanticipated side effects. A successful product liability claim or series of claims brought against us, particularly if judgments exceed our insurance coverage, could decrease our cash and adversely affect our business.

Our relationships with healthcare providers, third-party payors and customers will be subject to applicable anti-kickback, fraud and abuse, transparency, privacy and other healthcare laws and regulations, violation of which could expose us to criminal sanctions, civil penalties, contractual damages, reputational harm, administrative burdens and diminished profits and future earnings.

Healthcare providers, physicians and third-party payors will play a primary role in the recommendation and prescription of any product candidates for which we obtain marketing approval. Our current and future arrangements with healthcare providers, third-party payors and customers may expose us to broadly applicable fraud and abuse and other healthcare laws and regulations that may constrain the business or financial arrangements and relationships through which we market, sell and distribute any of our products that have received marketing approval. Restrictions under applicable federal and state healthcare laws and regulations include the following:

- The federal Anti-Kickback Statute prohibits any person or entity from, among other things, knowingly and willfully soliciting, offering, receiving or providing remuneration, directly or indirectly, in cash or in kind, to induce or reward, or in return for, the referral of an individual for the furnishing or arranging for the furnishing, or the purchase, lease or order, or arranging for or recommending purchase, lease or order, of any good or service for which payment may be made under a federal healthcare program, such as Medicare or Medicaid;
- The federal false claims laws, including the civil federal False Claims Act (which can be enforced by private citizens through whistleblower or *qui tam* actions), impose civil and criminal penalties against individuals or entities for knowingly presenting, or causing to be presented, to the federal government claims for payment that are false or fraudulent or making a false statement to avoid, decrease or conceal an obligation to pay money to the federal government;

- The federal Health Insurance Portability and Accountability Act of 1996, or HIPAA, imposes criminal liability for knowingly and willfully executing a scheme to defraud any healthcare benefit program, knowingly and willfully embezzling or stealing any money or other assets of a healthcare benefit program, willfully obstructing a criminal investigation of a healthcare fraud offense or knowingly and willfully making false statements relating to healthcare matters;
- HIPAA, as amended by the Health Information Technology for Economic and Clinical Health Act of 2009, and their implementing regulations, also impose obligations on certain healthcare providers, health plans and healthcare clearinghouses, known as covered entities, as well as their business associates that perform certain services involving the use or disclosure of individually identifiable health information, including mandatory contractual terms, with respect to safeguarding the privacy, security and transmission of individually identifiable health information;
- The federal Open Payments program requires manufacturers of drugs, devices, biologics or medical supplies for which payment is available under Medicare, Medicaid or the Children’s Health Insurance Program (with certain exceptions) to report annually to CMS information related to “payments or other transfers of value” made to physicians (defined to include doctors, dentists, optometrists, podiatrists and chiropractors) and teaching hospitals, as well as ownership and investment interests held by such physicians and their immediate family members; and
- Analogous state and foreign laws and regulations impose similar restrictions to those described above, such as state anti-kickback and false claims laws, which may apply to sales or marketing arrangements and claims involving healthcare items or services reimbursed by non-governmental third-party payors, including private insurers; state and foreign 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 and foreign laws that require drug manufacturers to report information related to payments and other transfers of value to physicians and other healthcare providers or marketing expenditures; state laws that require pharmaceutical companies to report information on the pricing of certain drugs, state and local laws that require the registration of pharmaceutical sales representatives, and state and foreign laws that govern 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 or are in conflict with HIPAA, including the European Union, or EU, General Data Protection Regulation, or GDPR, which imposes privacy and security obligations on any entity that collects or processes health data from individuals located in the EU and became enforceable on May 25, 2018. As well as complicating our compliance efforts, these laws could subject us to penalties or significant legal liability in the event that we fail or are unable to comply. For example, significant non-compliance with the GDPR may result in the imposition of fines of up to 20 million euros or up to four percent of the annual global turnover of the responsible entity, whichever is greater.

Efforts to ensure that our business arrangements with third parties will comply with applicable healthcare laws and regulations will involve substantial costs. It is possible that governmental authorities will conclude that our business practices do not comply with current or future statutes, regulations or case law interpreting applicable fraud and abuse or other healthcare laws and regulations. If our operations are found to be in violation of any of these laws or any other governmental regulations that may apply to us, we may be subject to significant civil, criminal and administrative penalties, damages, fines, imprisonment, exclusion from government-funded healthcare programs, such as Medicare and Medicaid, additional reporting requirements and oversight if we become subject to a corporate integrity agreement or similar agreement to resolve allegations of non-compliance with these laws, reputational harm and the curtailment or restructuring of our operations. If any physician or other healthcare provider or entity with whom we expect to do business is found to have violated applicable laws, that person or entity may be subject to significant criminal, civil or administrative sanctions, including exclusions from government-funded healthcare programs.

We must attract and retain highly skilled employees to succeed.

To succeed, we must recruit, develop, retain, manage and motivate qualified clinical, scientific, technical, general and administrative and management personnel while facing significant competition for experienced personnel. In January 2019, we announced our implementation of a corporate restructuring, or the January restructuring, to focus our resources on our clinical development and late-stage research programs. In connection with the January restructuring, we eliminated 41 positions, representing approximately 20% of our then-current headcount. In October 2019, we implemented another corporate restructuring, or the October restructuring, to extend our cash runway and ensure our long-term sustainability. In connection with the October restructuring, we will eliminate approximately 70 positions across all functions through the second quarter of 2020. Seventy percent of these eliminations occurred by December 31, 2019, and the remainder will occur in 2020. We believe the restructurings have harmed our ability to attract and retain qualified personnel and resulted in reduced morale among our remaining personnel. Our inability or failure to successfully attract and retain qualified personnel, particularly at the management level, could adversely affect our ability to execute our business plan and harm our operating results. In particular, the loss of one or more of our executive officers could be detrimental if we cannot recruit suitable replacements in a timely manner. The competition for qualified personnel in the pharmaceutical field is intense and we may be unable to continue to attract and retain qualified personnel necessary for the development of our business or to recruit suitable replacement personnel.

Many of the other pharmaceutical companies with which we compete for qualified personnel have greater financial and other resources, different risk profiles and a longer history in the industry than we have. These companies may also provide more diverse opportunities and better or more chances for development or career advancement. Some of these characteristics may appeal more to high-quality candidates than what we offer. If we are unable to continue to attract and retain personnel, the rate at which we can develop and advance current and future product candidates, and our success in doing so, will be limited and our business may be harmed.

Our operations are vulnerable to interruption by natural disasters, including fire and earthquake, telecommunications failure, geo-political actions, including war and terrorism, political and economic instability and other events beyond our control, which could harm our business.

Our computer and other systems, or those of our partners, CROs or other service providers, may fail or be interrupted, including due to geo-political actions, including war and terrorism, natural disasters, including earthquakes, typhoons, floods, and fires, public health epidemics, such as the coronavirus currently impacting China and elsewhere, hardware, software, telecommunication or electrical failures or political and economic instability, which could significantly disrupt or harm our business or operations. For example, a computing system failure could result in the loss of research or preclinical or clinical data important to our research or development programs, interrupt the conduct of ongoing research or otherwise impair our ability to operate, which could result in delays in the advancement of our programs or cause us to incur costs to recover or reproduce lost data. Our facility is in a seismically-active region. We have not undertaken a systematic analysis of the potential consequences to our business and financial results from a major earthquake, fire, power loss, terrorist activity or other disaster and do not have a recovery plan for such disasters. In addition, we do not carry sufficient insurance to compensate us for actual losses that may occur from interruption of our business and any losses or damages incurred by us could harm our business.

Our business operations depend significantly on information technology systems, and a cyber-attack or other significant disruption or breach of our information technology systems, or those of third parties on whom we may rely or with whom we share confidential information, could cause us significant financial, legal, regulatory, business and reputational harm.

We are increasingly dependent on information technology systems and infrastructure, including mobile technologies, to operate our business. In the ordinary course of our business, we collect, store, process and transmit sensitive information, including intellectual property, proprietary business information, personal information and other confidential information belonging to us and to third parties. It is critical that we do so in a secure manner to maintain the confidentiality, integrity and availability of such sensitive information. We also outsource elements of our operations, including elements of our information technology infrastructure, to third-party vendors, and as a result, these vendors may have access to our computer networks or our confidential information. In addition, many of those vendors subcontract or outsource to other third parties some of their responsibilities under our agreements

with such vendors. While all information technology operations are inherently vulnerable to inadvertent or intentional security breaches, incidents, attacks and exposures, the accessibility and distributed nature of our information technology systems, and the nature of the sensitive information stored on these systems, make such systems particularly vulnerable to internal and external attacks, both unintentional and malicious. Potential vulnerabilities can be exploited through inadvertent or intentional actions of our employees, third-party vendors, and business partners, or by malicious third parties. Attacks of this nature are increasing in their frequency, levels of persistence, sophistication and intensity and are being conducted by sophisticated and organized groups and individuals, including organized criminal groups, “hacktivists,” nation-states and others, with a wide range of motives, including industrial espionage, and expertise. In addition to the extraction of sensitive information, such attacks could involve the deployment of harmful malware, ransomware, denial-of-service attacks, social engineering and other means to affect service reliability and threaten the confidentiality, integrity and availability of such information. In addition, the prevalent use of mobile devices increases the risk of the occurrence of data security incidents.

Data security incidents or other significant disruptions affecting our, our vendors’ or our business partners’ information technology systems could adversely affect our business operations and result in loss or misappropriation of, or unauthorized access to, use or disclosure of, or the prevention of access to, sensitive information, which could cause us financial, legal, regulatory, business and reputational harm. In addition, disruptions to our information technology systems could result in a material disruption of our development programs and our business operations. For example, the loss of clinical trial data from completed, current or future clinical trials could result in delays in our regulatory approval efforts and significantly increase our costs to recover or reproduce such data.

There is no way to know with certainty whether we have experienced any data security incidents that we have not yet discovered. While we have no reason to believe this to be the case, attackers have become sophisticated with respect to concealing their access to systems, and many companies whose information security systems have been attacked are not aware that they have been attacked. Any event that leads to unauthorized access, use or disclosure of personal information, including personal information of our employees or patients or investigators in our clinical trials, could disrupt our business, harm our reputation, compel us to comply with applicable federal, state or foreign breach notification laws, subject us to time-consuming, distracting and expensive litigation, regulatory investigations and oversight or mandatory corrective action, require us to verify the correctness of certain stored information, or otherwise subject us to liability under applicable laws, regulations and our contracts with third parties, including those that require us to protect the privacy and security of personal information. This could cause us to incur significant costs and expose us to significant legal and financial liability and reputational harm. In addition, if there is any failure or perceived failure by us or our vendors or business partners to comply with our or their privacy, confidentiality or data security-related legal or other obligations to third parties, or if there are any security incidents or other inappropriate access events that result in the unauthorized access, release or transfer of sensitive information, including personally identifiable information, we may be the subject of governmental investigations, enforcement actions, regulatory fines, litigation, or public statements against us by advocacy groups or others, third parties, including clinical trial sites, regulators or current and potential business partners, may lose trust in us, and we could be subject to claims by third parties that we have breached our privacy- or confidentiality-related obligations, which could materially and adversely affect our business and prospects. Moreover, data security incidents and other unauthorized access can be difficult to detect, and any delay in identifying such incidents or unauthorized access may lead to increased harm of the types described above. While we have implemented technical and organizational measures designed to ensure a level of security appropriate to the risks involved, there can be no assurance that such measures have prevented or will prevent service interruptions or security incidents.

Our employees, consultants, collaborators and other third parties may engage in misconduct or other improper activities, including insider trading and activities that violate regulatory standards and requirements.

Our employees, consultants, collaborators and other third parties with whom we interact may engage in fraudulent or illegal activity. Misconduct by these parties could include intentional, reckless or negligent conduct that violates United States and international laws and regulations, including laws requiring the true, complete and accurate reporting of financial and other information or data, drug manufacturing standards and healthcare fraud and abuse laws and regulations. In particular, sales, marketing and business arrangements in the healthcare industry, including the sale of pharmaceutical products, are subject to extensive laws and regulations intended to prevent fraud, misconduct, kickbacks, self-dealing and other abusive practices. Such 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. It is not always possible to detect, identify and deter misconduct by our employees or third parties, and the precautions we take to detect and prevent this activity may not be effective to control risks or losses or protect us from governmental investigations or other actions or lawsuits stemming from an actual or perceived failure to comply with such laws or regulations. If any such actions are instituted against us and we are not successful in defending ourselves or asserting our rights, such actions could result in the imposition of significant monetary fines or other sanctions, including the imposition of civil, criminal and administrative penalties, damages, imprisonment, possible exclusion from participation in Medicare, Medicaid and other federal healthcare programs, additional reporting obligations and oversight if we become subject to a corporate integrity agreement or other agreement to resolve allegations of non-compliance with these laws, contractual damages, reputational harm, diminished profits and future earnings and curtailment of operations, any of which could adversely affect our ability to operate our business and our results of operations. Whether or not we are successful in defending against such actions or investigations, this could cause us to incur substantial costs, including legal fees, and divert the attention of management in our defending against any such actions or responding to related investigations.

Risks Related to Our Dependence on Third Parties

Zai Lab has exclusive rights to develop and commercialize bemarituzumab in Greater China. Zai Lab's failure to timely develop or commercialize bemarituzumab would have a material adverse effect on our business and operating results.

We granted Zai Lab an exclusive license to develop and commercialize bemarituzumab in Greater China, subject to certain rights that we retained in that territory. Our bemarituzumab collaboration with Zai Lab may not be successful for various reasons, including the following:

- bemarituzumab may fail to demonstrate in clinical trials sufficient efficacy and an acceptable safety profile to support regulatory approval;
- Zai Lab may not be able to obtain from us or manufacture, as applicable, bemarituzumab in a sufficiently timely or cost-effective manner to support clinical development and potential commercialization;
- Zai Lab may be unable to obtain regulatory approval to commercialize bemarituzumab, even if preclinical and clinical testing is successful;
- Zai Lab may not succeed in obtaining sufficient reimbursement for bemarituzumab if approved;
- existing or future products or technologies developed by competitors may be safer, more effective, more conveniently delivered to patients or otherwise better accepted than bemarituzumab; and
- public health epidemics, such as the coronavirus currently impacting China and elsewhere, may impact the development and commercialization of bemarituzumab.

In addition, we could be adversely affected by:

- Zai Lab's failure to timely perform its obligations under our collaboration agreements;
- Zai Lab's failure to timely or fully develop or effectively commercialize bemarituzumab; or
- a material contractual dispute with Zai Lab.

The occurrence of any of the foregoing could adversely impact the likelihood and timing of any milestone payments we are eligible to receive under our collaboration agreement with Zai Lab, could have a material adverse effect on our business, results of operations and prospects and would likely cause our stock price to decline. In addition, reimbursement for our research and development expenses and other payments we may receive from Zai Lab may fluctuate from period to period, which may adversely affect our stock price.

Zai Lab has the right to terminate its collaboration agreement with us without cause as well as upon the existence of certain conditions and, in some cases, Zai Lab may terminate on short notice. Zai Lab could also pursue alternative potentially competitive products, therapeutic approaches or technologies as a means of developing treatments for the diseases targeted by bemarituzumab during the course of our collaboration.

We may not succeed in establishing and maintaining additional collaborations with strategic partners, which could adversely affect our ability to develop and commercialize product candidates.

A part of our strategy is to establish collaborations with strategic partners, including major biotechnology or pharmaceutical companies. These collaborations allow us to supplement our development, manufacturing, regulatory and commercialization capabilities to broaden and accelerate clinical development and commercialization of our product candidates, provide us with significant funding to advance our pipeline and validate our technology. We face significant competition in seeking appropriate partners for additional collaborations and the negotiation process is time-consuming and complex. Moreover, we may not succeed in our efforts to establish a collaboration or other alternative arrangement for any of our other existing or future product candidates and programs because development of our product candidates and programs may be deemed to be too early in development for collaborative efforts or third parties may not view our product candidates as having the requisite potential to demonstrate safety and efficacy or otherwise become marketable products if approved. Even if we are successful in our efforts to establish new development collaborations, the terms that we agree upon may not be favorable to us and we may not be able to maintain such development collaborations if, for example, development or approval of the applicable product candidate is delayed or sales of such product candidate, once approved, are disappointing. Any delay in entering into new development collaboration agreements related to our product candidates could delay the development and commercialization of such product candidates and reduce their competitiveness if they reach the market.

Moreover, if we fail to establish and maintain additional collaborations related to our product candidates:

- our cash expenditures related to development of certain of our current or future product candidates would increase significantly and we may need to seek additional financing;
- if we are unable to secure additional financing, the development of certain of our current or future product candidates may be delayed or terminated;
- we may be required to hire additional employees for which we have not budgeted, or otherwise develop expertise in areas in which we may have limited experience, such as sales and marketing; and
- we will bear all the risk related to the development of any such product candidates.

We may not succeed in executing strategic transactions to acquire or in-license rights to additional product candidates.

As part our October 2019 corporate restructuring, we shifted our focus from in-house discovery and research to supplementing our development pipeline by looking to selectively acquire or in-license, on an exclusive basis, rights to develop product candidates from biotechnology and pharmaceutical companies. We plan to evaluate for potential acquisition or licensing assets that are IND-ready or in early clinical development and that we can leverage our in-house development capabilities to develop to data read-outs in the near- to medium-term. Our primary focus remains on oncology therapeutics. If we are unable to identify product candidates or otherwise successfully execute transactions granting us rights to such product candidates within our desired timeframes or at all, we will not be able to grow our development pipeline, which could adversely effect on our business and financial condition. We may fail to successfully execute strategic acquisitions of or in-licenses for rights to develop product candidates for numerous reasons. Suitable acquisition or in-licensing opportunities may not exist, which could impair our ability to grow or obtain access to products or technologies that may be important to the development of our business. Other pharmaceutical companies, many of which may have substantially greater financial and other resources, compete with us for these opportunities and may succeed in acquiring or licensing third-party product candidates before we do. Even if appropriate opportunities are available, we may not be able to successfully identify such opportunities or they may not be available to us on terms that are commercially reasonable or otherwise acceptable to us.

We rely on CROs to conduct our clinical trials, and the unsatisfactory performance by such CROs may harm our business.

We rely on CROs to perform most of the activities related to the conduct of our clinical trials, including site identification, screening, preparation, training, initiation and monitoring, document preparation and coordination, program management and data management. However, we do not directly control the conduct, timing, expense or quality of the performance of these activities. The performance of our CROs will impact the quality and validity of

our clinical trial results, which we rely on for business planning purposes and include in submissions to regulatory authorities. Although we contract with CROs to conduct most clinical trial-related activities, we remain responsible for ensuring that each of our clinical trials is conducted in accordance with the applicable clinical protocol and legal and regulatory requirements. Our reliance on CROs does not relieve us of our legal and regulatory responsibilities with respect to our clinical trials.

We and our CROs are required to comply with GCP, which are regulations, standards and guidelines enforced by the FDA, the Competent Authorities of the Member States of the European Economic Area and comparable foreign regulatory authorities, for all of our product candidates in clinical development. Regulatory authorities enforce GCP requirements through periodic inspections of clinical trial sponsors, principal investigators and clinical trial sites. If we or any of our CROs fail to comply with applicable GCP, the clinical data generated in our clinical trials may be deemed unreliable and the FDA or comparable foreign regulatory authorities may require us to perform additional clinical trials before approving our marketing applications. We cannot ensure that upon inspection by a given regulatory authority, such regulatory authority will determine that any of our clinical trials are being conducted in accordance with GCP requirements. In addition, we must conduct our clinical trials using drug product produced and developed in accordance with GMP and GLP requirements. Our failure, or the failure of our clinical trial sites or CROs or CMOs, to comply with applicable GCP, GMP and GLP may require us to repeat preclinical studies and clinical trials, which would delay the regulatory approval process.

Our CROs and their representatives that perform services for us are not our employees. Except for remedies available to us in connection with our agreements with such CROs, we cannot control whether they devote sufficient time and resources to our ongoing clinical, nonclinical and preclinical programs. If our CROs do not successfully carry out their contractual duties or obligations or meet expected deadlines or if the quality or accuracy of the clinical data they obtain is compromised due to their failure to adhere to our clinical protocols or regulatory requirements, or for other reasons, our clinical trials may be extended, delayed or terminated and we may not be able to obtain regulatory approval for or successfully commercialize our product candidates. In such a case, our results of operations and the commercial prospects for our product candidates would be harmed, our costs could increase and our ability to generate revenues could be delayed or significantly limited.

Risks Related to Intellectual Property

If we are unable to obtain, maintain or protect intellectual property rights, we may not be able to compete effectively in our market.

Our success depends in significant part on our ability and the ability of our licensors and collaborators to obtain, maintain and defend patents and other intellectual property rights and to operate without infringing the intellectual property rights of others. We have filed numerous patent applications both in the United States and in foreign jurisdictions to obtain patent rights to inventions we have discovered. We have also licensed patent and other intellectual property rights to and from our partners and other third parties. Pursuant to some of these licenses, we have the right to prepare, file and prosecute patent applications and maintain and enforce the patents that are the subject of these licenses, whereas our partners or other third parties have such rights under other licenses.

In some circumstances, we may not have the right to control the preparation, filing and prosecution of patent applications or to maintain the patents covering technology that we license to or from third parties, including our collaborators, and we may have to rely on such third parties to fulfill these responsibilities. Consequently, these patents and applications may not be prosecuted and enforced in a manner consistent with the best interests of our business. If our current or future licensors, licensees or collaborators fail to establish, maintain or protect such patents and other intellectual property rights, such rights may be reduced or eliminated. If our licensors, licensees or collaborators are not fully cooperative or disagree with us as to the strategy for prosecution, maintenance or enforcement of any patent rights, such patent rights could be compromised.

The patent prosecution process is expensive and time-consuming. We and our current or future licensors, licensees or collaborators may not be able to prepare, file and prosecute all necessary or desirable patent applications at a reasonable cost or in a timely manner. It is also possible that we or our licensors, licensees or collaborators will fail to file patent applications covering inventions made in the course of development and commercialization activities before a competitor or other third party files a patent application covering or publishes information disclosing a similar, independently-developed invention. Such competitor's or third party's patent application or other publication may hinder our or our licensors', licensees' or collaborators' ability to obtain patent protection for these inventions or may limit the scope of patent protection we or our licensors, licensees or collaborators may obtain.

The patent position of biotechnology and pharmaceutical companies generally is uncertain, involves complex legal and factual questions and is the subject of much litigation. As a result, the scope, validity, enforceability and commercial value of our and our current or future licensors', licensees' or collaborators' patent rights, as well as whether any patents will ever be issued based on applications claiming such patent rights, are uncertain. Our and our current or future licensors', licensees' or collaborators' pending and future patent applications may not result in issued patents that protect our technology or products, in whole or in part, or that effectively exclude others from commercializing similar or otherwise competitive technologies and products. During the patent prosecution process, we or our licensors, licensees or collaborators may be required to narrow the scope of the claims of pending and future patent applications, which may limit the scope of protection if patents issue from such applications. Our and our licensors', licensees' or collaborators' rights in the technology claimed in patent applications cannot be enforced against third parties using such technology unless and until a patent issues from such applications, and then only to the extent the issued claims effectively cover such technology.

Furthermore, because the amount of time required for the development, testing and regulatory review of new product candidates is lengthy, patents protecting such candidates might expire before or shortly after such candidates are approved for commercialization. As a result, our owned and licensed patent portfolios may not provide us with adequate protection against third parties seeking to commercialize products similar or identical to ours. We expect to request extensions of patent terms to the extent available in countries where we obtain issued patents. In the United States, the Drug Price Competition and Patent Term Restoration Act of 1984 permits, in certain cases, a patent term extension of up to five years beyond the expiration of the patent. However, there are no assurances that the FDA or any comparable foreign regulatory authority will grant such extensions, in whole or in part. If we fail to obtain patent term extensions for any reason, our competitors may launch their products earlier than might otherwise be anticipated.

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

Filing, prosecuting, enforcing and defending patents covering our product candidates in all countries throughout the world would be prohibitively expensive, and our or our licensors' or collaborators' intellectual property rights in some countries outside the United States may be less extensive than those in the United States. Moreover, the requirements for patentability in certain foreign countries, particularly developing countries, differ materially from those of the United States and such requirements also vary among foreign countries. For example, compared to the United States, China's patentability requirements are more stringent and may limit the scope of a patent's claims solely to the specific examples described in the patent. Therefore, it may be more difficult to obtain patent protection in certain countries relative to others.

The laws of some foreign countries do not protect intellectual property rights to the same extent as federal and state laws in the United States. Consequently, we and our licensors or collaborators may not be able to prevent third parties from using our and our licensors' or collaborators' inventions in certain countries outside the United States. In jurisdictions where we have not obtained patent protection, competitors may use our and our licensors' or collaborators' technologies to develop their own products. Competitors may also export infringing products to territories where we and our licensors or collaborators have patent protection but enforcement is not as strong or effective as in the United States. These products may compete with our product candidates and our and our licensors' or collaborators' patents or other intellectual property rights may not be sufficient to prevent them from competing.

Many companies have encountered significant problems in protecting and defending intellectual property rights in foreign jurisdictions. The legal systems in certain countries, particularly certain developing countries, do not favor the enforcement of patents and other intellectual property rights, particularly those relating to biopharmaceuticals, which could make it difficult for us and our licensors or collaborators to stop the infringement of our and our licensors' or collaborators' patents or marketing of competing products in violation of our and our licensors' or collaborators' proprietary rights generally. Proceedings to enforce our and our licensors' or collaborators' patent rights in foreign jurisdictions could result in substantial costs and divert our and our licensors' or collaborators' efforts and attention from other aspects of our business and could provoke third parties to assert counterclaims against us or our licensors or collaborators, which could put our and our licensors' or collaborators' patents at risk of being invalidated or interpreted narrowly. We or our licensors or collaborators may not prevail in any lawsuits that we or our licensors or collaborators initiate and, even if we or our licensors or collaborators prevail, the damages or other remedies awarded, if any, may not be commercially meaningful, particularly in light of any expenses incurred in connection with the initiation and conduct of such lawsuits.

Biosimilar drug manufacturers or other competitors may challenge the scope, validity or enforceability of our or our licensors’ or collaborators’ foreign patents, requiring us or our licensors or collaborators to engage in complex, lengthy and costly litigation or other proceedings outside of the United States. Biosimilar drug manufacturers may develop, seek approval for and launch biosimilar versions of our products. India, certain countries in Europe and certain developing countries, including China, have compulsory licensing laws under which a patent owner may be compelled to grant licenses to third parties. In those countries, we and our licensors or collaborators may have limited remedies if compelled to grant a license to a third party, which could materially diminish the value of the applicable patents and limit our potential revenue opportunities. Accordingly, we may be unable to derive a significant commercial advantage from our and our licensors’ or collaborators’ intellectual property rights or our enforcement of those rights.

Changes to patent laws could diminish the value of patents in general, thereby impairing our ability to protect our rights in our product candidates.

The ability of a party to obtain and enforce patents in the biopharmaceutical industry is inherently uncertain, due in part to ongoing changes to applicable patent laws. Depending on decisions by Congress, the federal courts, and the U.S. Patent and Trademark Office, or USPTO, the laws and regulations governing patents could change in unpredictable ways and could weaken our and our licensors’ or collaborators’ ability to obtain new patents or to enforce existing or future patents.

For example, several of the Supreme Court’s rulings in patent cases in recent years have either narrowed the scope of patent protection available under certain circumstances or weakened the rights of patent owners in certain situations. Therefore, there is increased uncertainty with regard to our and our licensors’ or collaborators’ ability to obtain patents in the future, as well as uncertainty with respect to the value that any of our patents may have once they have issued. Additionally, significant changes to the patent laws under the Leahy-Smith America Invents Act of 2011, or the Leahy-Smith Act, have affected how patent applications are prosecuted and challenged in the U.S. Those changes include implementation of a “first-to-file” system, effective in 2013, for determining entitlement to inventions claimed by more than one party, as well as creation of new administrative proceedings for challenging issued patents. As such, there is increased uncertainty with respect to both outcome and costs associated with the prosecution of patent applications and the enforcement or defense of issued patents controlled by us or our licensors or collaborators, which could have a material adverse effect on our business and financial condition.

Obtaining and maintaining patent protection requires 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 if we fail to comply with these requirements.

Patent holders are required to pay periodic maintenance and annuity fees to the USPTO and foreign patent agencies over the lifetime of any issued patent. The USPTO and various foreign patent agencies also require compliance with various procedural, documentary, fee payment and other similar requirements during the patent application and prosecution process. Non-compliance events that could result in abandonment or lapse of a patent or patent application include failure to respond to official communications within prescribed time limits, non-payment of fees and failure to properly legalize and submit formal documents. In many cases, an inadvertent lapse can be cured by payment of a late fee or by other means in accordance with the applicable rules. However, there are situations in which non-compliance can result in irrevocable abandonment or lapse of the patent or patent application, resulting in partial or complete loss of patent rights in the relevant jurisdiction. If we or our licensors or collaborators fail to maintain the patents and patent applications covering our product candidates, our competitors might be able to enter the market and compete with such product candidates, which would have a material adverse effect on our business.

We may need to protect or enforce our intellectual property through litigation or other proceedings, which could be expensive, time-consuming and unsuccessful and have a material adverse effect on the success of our business.

Third parties may infringe our or our licensors’ or collaborators’ patents or misappropriate or otherwise violate our or our licensors’ or collaborators’ intellectual property rights. In the future, we or our licensors or collaborators may initiate legal proceedings to enforce or defend our or our licensors’ or collaborators’ intellectual property rights or to protect our or our licensors’ or collaborators’ trade secrets. The outcome of such proceedings may determine or alter the validity or scope of intellectual property rights we own or control. Also, third parties may initiate legal

proceedings, including litigation or administrative proceedings, against us or our licensors or collaborators to challenge the validity or scope of intellectual property rights we own or control. These proceedings can be expensive and time-consuming and many of our or our licensors' or collaborators' adversaries in these proceedings may have the ability to dedicate substantially greater resources to prosecuting these legal actions than we or our licensors or collaborators can. Accordingly, despite our or our licensors' or collaborators' efforts and the legitimacy of our or our licensors' or collaborators' arguments and positions in these proceedings, we or our licensors or collaborators may not be able to prevent third parties from infringing or misappropriating intellectual property rights we or our licensors or collaborators own or control, particularly in countries where the laws may not protect those rights as fully as in the United States. Litigation or administrative proceedings could result in substantial costs and diversion of management resources, which could harm our business and financial results. In addition, in a patent infringement proceeding, a court may decide that a patent owned by or licensed to us is invalid or unenforceable, or may refuse to impose monetary damages or enjoin the infringing party from using the technology at issue on the grounds that our or our licensors' or collaborators' patents do not cover the technology in question. Any legal proceeding involving one or more of our or our licensors' or collaborators' patents could put such patents at risk of being invalidated, held unenforceable or interpreted narrowly.

Derivation or interference proceedings in the United States or similar proceedings in other jurisdictions may be necessary to determine the priority of inventions with respect to our or our licensors' or collaborators' patents or patent applications. An unfavorable outcome in these proceedings could require us or our licensors or collaborators to cease using the technology covered by the applicable patents or patent applications and commercializing our product candidates or to attempt to license rights to such technology from the prevailing party. Our business could be harmed if the prevailing party does not offer us or our licensors or collaborators a license or offers a license on terms that are not commercially reasonable or are otherwise unfavorable to us. Even if we or our licensors or collaborators obtain a license, it may be non-exclusive, allowing our competitors to gain access to the same technologies licensed to us or our licensors or collaborators. In addition, if the breadth or strength of protection provided by our or our licensors' or collaborators' patents and patent applications is threatened, potential collaborators may be dissuaded from partnering with us with respect to the development or commercialization of our affected current or future product candidates. Even if we prevail in such a proceeding, such a proceeding may cause us to incur substantial costs and distract our management and other employees from our business and operations.

Furthermore, because intellectual property litigation and certain other legal proceedings require discovery, which may in some cases be substantial, there is a risk that our confidential information could be compromised by disclosure during the course of such proceedings. There could also be public announcements of the results of hearings, motions or other interim rulings or developments in the proceedings, and if securities analysts or investors perceive these results to be negative, the price of shares of our common stock may be materially adversely affected.

If we breach the agreements under which third parties have licensed intellectual property rights to us, we could lose the ability to use certain of our technologies or continue the development and commercialization of our product candidates.

Our commercial success depends upon our ability, and the ability of our licensors and collaborators, to develop, manufacture, market and sell product candidates without infringing the proprietary rights of third parties. Third parties currently, and may in the future, hold intellectual property rights, including patent rights, that are important or necessary for the development or commercialization of our product candidates. As a result, we are a party to a number of licenses that are important to our business and expect to enter into additional licenses in the future. For example, we have entered into non-exclusive licenses with third parties, including BioWa, Inc. and Lonza Sales AG, to use their proprietary protein expression and cell line technologies, which are necessary to produce our product candidates. If we fail to comply with the obligations under these license agreements, including payment and diligence terms, our licensors may have the right to terminate these agreements, in which event we may not be able to develop, manufacture, market or sell any product candidate that, or the development or manufacturing of which, is covered by the rights licensed under these agreements and may face other contractual penalties. Such an occurrence could materially adversely affect the value of any product candidate being developed using technology licensed under any such agreement. Termination of, or reduction or elimination of our rights under, these agreements may require us to negotiate new or reinstated agreements, which may not be available to us on equally favorable or otherwise commercially reasonable terms, or at all, or cause us to lose our rights we had under the original agreements, including our rights to intellectual property or technology important to or necessary for our development programs.

Third parties may initiate legal proceedings against us alleging that we infringe their intellectual property rights or we may initiate legal proceedings against third parties to challenge the validity or scope of intellectual property rights controlled by such third parties. The outcome of any of these proceedings would be uncertain and could have a material adverse effect on the success of our business.

Third parties may initiate legal proceedings against us or our licensors or collaborators alleging that we or our licensors or collaborators infringe the intellectual property rights controlled by these third parties, or we or our licensors or collaborators may initiate legal proceedings against third parties to challenge the validity or scope of intellectual property rights controlled by these third parties, including in oppositions, interferences, reexaminations, *inter partes* reviews, post-grant reviews or derivation proceedings in the United States or comparable proceedings in other jurisdictions. These proceedings can be expensive and time-consuming and many of our or our licensors' or collaborators' adversaries in these proceedings may have the ability to dedicate substantially greater resources to prosecuting these legal actions than we or our licensors or collaborators can.

An unfavorable outcome in any of these proceedings could require us or our licensors or collaborators to cease using the relevant technology or developing or commercializing our product candidates, or to attempt to license any necessary rights to such technology from the prevailing party. Our business could be harmed if the prevailing party does not offer us or our licensors or collaborators a license, or otherwise offers a license on terms that are not commercially reasonable or are otherwise unfavorable to us. Even if we or our licensors or collaborators obtain a license, it may be non-exclusive, thereby giving our competitors access to the same technologies licensed to us or our licensors or collaborators. In addition, we could be found liable for monetary damages if we are found to have infringed a patent, including treble damages and attorneys' fees if such infringement was willful. A finding of infringement could prevent us from commercializing our product candidates or force us to cease some of our business operations, which could materially harm our business.

Furthermore, because of intellectual property litigation and certain other legal proceedings require discovery, which may in some cases be substantial, there is a risk that our confidential information could be compromised by disclosure during the course of such proceedings involving third party intellectual property rights. There could also be public announcements of the results of hearings, motions or other interim rulings or developments in the proceedings, and if securities analysts or investors perceive these results to be negative, the price of shares of our common stock may be materially adversely affected.

We may be subject to claims by third parties asserting that we or our employees have misappropriated their intellectual property or claiming ownership of what we regard as our own intellectual property.

Many of our employees, including members of our senior management, were previously employed at universities or at other biotechnology or pharmaceutical companies, including our competitors or potential competitors, and executed proprietary rights, non-disclosure and non-competition agreements in connection with such previous employment. Although we work to ensure that our employees do not use the proprietary information or know-how of others in their work for us, including through written contractual obligations, we may be subject to claims that we or our employees have used or disclosed confidential information or intellectual property, including trade secrets or other proprietary information, of a former employer of any such employee. Litigation may be necessary to defend against these claims.

If we are unable to successfully defend against any such claims, in addition to paying monetary damages, we may lose valuable intellectual property rights or personnel. Such intellectual property rights could be determined to be owned by a third party, and we could be required to obtain a license from such third party to commercialize our technology or products. Such a license may not be available to us at all, may not be available to us on commercially reasonable terms or may include obligations that are otherwise unfavorable to us. Even if we successfully defend against such claims, litigation could result in substantial costs and distract management from our day-to-day operations.

Our inability to protect our confidential information and trade secrets would harm our business and competitive position.

In addition to seeking patents covering our technology and products, 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 confidentiality agreements with parties who have access to them, including our employees, corporate collaborators, scientific collaborators, contract manufacturers, advisors and other third parties. We also enter into confidentiality and intellectual property, including patent, assignment agreements with our employees and consultants. Despite these efforts, any of these parties, including our current or former employees or consultants and those of our service providers or collaborators, may breach the applicable agreements and disclose our confidential information, including our trade secrets, and we may not be able to obtain adequate remedies for any such breach. Bringing a claim against a party for illegally disclosing or misappropriating a trade secret is difficult, expensive and time-consuming and the outcome of any resulting litigation or other proceeding is unpredictable. Additionally, litigation involving our trade secrets puts us at significant risk that such trade secrets will be publicly disclosed, thereby significantly reducing or eliminating their value and potentially increasing competition and otherwise harming our business. Further, some courts both within and outside the United States may be less willing or unwilling to protect trade secrets. If a competitor lawfully obtained or independently developed any of our trade secrets, we would have no right to prevent such competitor from using any such trade secret to compete with us, which could harm our competitive position.

Risks Related to Our Financial Position and Capital Needs

We expect to incur net losses for the foreseeable future.

We are a clinical-stage biotechnology company with a limited operating history. Investment in biopharmaceutical product development is highly speculative because it entails substantial upfront capital expenditures and significant risk that any potential product candidate will fail to demonstrate adequate efficacy with an acceptable safety profile, gain regulatory approval and become commercially viable. We have no products approved for commercial sale, have not generated any revenue from product sales to date and continue to incur significant research and development and other expenses related to our ongoing operations. As a result, we are not profitable and have incurred losses in each period since our inception in 2001, with the exception of the fiscal year ended December 31, 2015, due primarily to the \$350.0 million up-front payment we received from BMS under our cabiralizumab collaboration agreement, and the fiscal year ended December 31, 2011, due primarily to an upfront payment we received from a collaboration partner. For the year ended December 31, 2019, we reported a net loss of \$137.2 million.

Although we may from time to time report profitable results, we expect to continue to incur significant expenses and increasing operating losses for the foreseeable future. The net losses we incur may fluctuate significantly from quarter to quarter. We expect our operating expenses to increase as we advance our research and development of, and seek regulatory approvals for, our product candidates. We may encounter unforeseen expenses, difficulties, complications, delays and other unknown circumstances that may adversely affect our business. The size of our future net losses will depend, in part, on the rate of future growth of our expenses and our ability to generate revenues. Our prior losses and expected future losses have had and will continue to have an adverse effect on our stockholders' equity and working capital.

We currently have no source of product revenue and may never become consistently profitable.

To date, we have not generated any revenue from commercialization of our product candidates. Our ability to generate product revenue and ultimately become profitable depends upon our ability, alone or with our partners, to successfully commercialize products, including our current product candidates and other product candidates that we may develop, in-license or acquire in the future. We do not anticipate that we will generate revenue from the sale of products for the foreseeable future. Our ability to generate future product revenue from our current or future product candidates also depends on additional factors, including our or our partners' ability to:

- successfully complete research and clinical development of current and future product candidates;
- establish and maintain supply and manufacturing relationships with third parties to ensure adequate, timely and compliant manufacturing of bulk drug substances and drug products to maintain our or our partners' supply of such bulk drug substances and drug products;
- launch and commercialize any product candidates for which we obtain marketing approval, and if we launch independently or with certain partners, successfully establish a sales force and marketing and distribution infrastructure;
- obtain coverage and adequate product reimbursement from third-party payors, including government payors;
- successfully and timely develop, validate and obtain any necessary regulatory approvals for companion diagnostics to any of our approved product candidates;
- achieve market acceptance for any of our or our partners' approved products;
- acquire rights to and otherwise establish, maintain and protect intellectual property rights necessary to develop and commercialize our product candidates; and
- attract, hire and retain qualified personnel.

In addition, because of the numerous risks and uncertainties generally associated with development of pharmaceutical products, including that they may not advance through clinical development or achieve the endpoints of applicable clinical trials, we are unable to predict the timing or amount of expenses associated with development of our product candidates, or if or when we will achieve or maintain profitability. In addition, our expenses could increase beyond our current expectations if we decide to or are required by the FDA or any comparable foreign regulatory authority to perform studies or trials in addition to those that we currently anticipate. Even if we successfully complete the development and regulatory processes described above, we expect that we will incur significant costs in connection with launching and commercializing our products.

Even if we generate revenue from the sale of any of our products that may be approved, we may not become profitable and may need to obtain additional funding to continue operations. If we fail to become profitable or do not sustain profitability on a continuing basis, then we may be unable to continue our operations at planned levels and be forced to reduce our operations.

We will require additional capital to finance our operations, which may not be available to us on acceptable terms or at all. As a result, we may not complete the development and commercialization of our current or future product candidates.

As a research and development company, our operations have consumed substantial amounts of cash since inception. We have sufficient cash and cash equivalents to fund our projected operating expenses and capital expenditure requirements for at least the next 12 months and, as a result of the restructurings and other cost control measures, including our efforts to sublease all or a portion of our current corporate facilities, we expect our expenses to decrease in the short term. However, we expect our research and development expenses will increase substantially in connection with our ongoing activities, particularly as we advance our product candidates further into clinical development, advance additional product candidates into clinical trials and increase the number and size of our clinical trials. In addition, circumstances may cause us to consume capital more rapidly than we currently anticipate. For example, as we move our product candidates through preclinical studies and into clinical development, we may observe adverse results that require us or one of our collaboration partners to terminate the program for a product

candidate. Alternatively, we may be required to conduct additional research or development activities or studies for a product candidate or substantially redesign a product candidate, each of which could lengthen the development process and increase our development costs for such product candidate. If we initiate additional clinical trials for certain product candidates, we may need to raise additional funds or otherwise obtain funding through product collaborations beyond the collaborations we currently have in place. In any event, we will require additional capital to develop, obtain regulatory approval for and to commercialize our current and future product candidates.

If we need to secure additional financing, fundraising efforts may divert our management from our day-to-day activities, which may adversely affect our ability to develop and commercialize current and future product candidates. In addition, we cannot guarantee that future financing will be available in sufficient amounts or on terms acceptable to us, if at all. If we are unable to or otherwise do not raise additional capital when required or on acceptable terms, we may need to:

- significantly delay, scale back or discontinue the development or commercialization of one or more of our product candidates or cease all or a portion of our operations;
- seek collaborations for research and development programs at an earlier stage than we would otherwise desire or on terms less favorable than might otherwise be available; or
- relinquish or license to third parties on unfavorable terms our rights to technologies or product candidates that we otherwise would seek to develop or commercialize ourselves.

If we need to conduct additional fundraising activities and we do not raise additional capital in sufficient amounts or on terms acceptable to us, we may be required to halt or delay our ongoing development efforts and may be prevented from pursuing further development and commercialization efforts, and we may be required to halt or delay any acquisition or in-licensing of new product candidates or may be prevented from pursuing further acquisition or in-licensing efforts, each of which could have a material adverse effect on our business, operating results and prospects.

The time through which our financial resources will adequately support our operations could vary as a result of numerous factors, including factors discussed elsewhere in this “Risk Factors” section. Our future funding requirements, both short- and long-term, will depend on many factors, including:

- the initiation, progress, timing, costs and results of preclinical and clinical studies for our current product candidates and any future product candidates;
- the outcome, timing and cost of seeking and obtaining regulatory approvals from the FDA and comparable foreign regulatory authorities, including the potential that such authorities may require us to perform more studies than we expect;
- the cost to establish, maintain, expand and defend the scope of our intellectual property portfolio, including the amount and timing of any payments we may be required to make, or that we may receive, in connection with licensing, preparing, filing, prosecuting, maintaining, defending and enforcing any of our patents or other intellectual property rights;
- the effect of competing technological and market developments;
- market acceptance of any of our product candidates that may receive regulatory approval;
- the costs of acquiring, licensing or investing in additional businesses, products, product candidates and technologies;
- the cost and timing of selecting, auditing and validating a manufacturing site for commercial-scale manufacturing; and
- the cost of establishing sales, marketing and distribution capabilities for any product candidates for which we may receive regulatory approval and that we choose to commercialize ourselves or with our collaboration partners.

If a lack of available capital means that we cannot expand our operations or otherwise capitalize on our business opportunities, our business, financial condition and results of operations could be materially adversely affected.

Raising additional capital may dilute our existing stockholders, restrict our operations or require us to relinquish rights to our technologies.

Until we generate sufficient product revenue, if ever, we expect to finance our future cash needs through public or private equity or debt offerings, collaborations, strategic alliances and other similar licensing transactions. Additional capital may not be available on reasonable terms, if at all. Raising additional funds through the issuance of additional debt or equity securities could increase fixed payment obligations or dilute our existing stockholders. Furthermore, these securities may have rights senior to those of our common stock and could contain covenants that restrict our operations and potentially impair our competitiveness, including limitations on our ability to incur additional debt, limitations on our ability to acquire, sell or license intellectual property rights and other operating restrictions that could adversely impact our ability to conduct our business. Any of these events could significantly harm our business, financial condition and prospects.

Changes in tax laws or regulations that are applied adversely to us may have a material adverse effect on our business, financial condition or results of operations.

New tax laws, statutes, rules, regulations or ordinances could be enacted at any time, which could adversely affect our business operations and financial performance. Further, existing tax laws, statutes, rules, regulations or ordinances could be interpreted, changed, modified or applied adversely to us. For example, enactment of Tax Act resulted in many significant changes to the U.S. tax laws. Future guidance from the Internal Revenue Service and other tax authorities with respect to the Tax Act may affect us, and certain aspects of the Tax Act could be repealed or modified in future legislation. In addition, it is uncertain if and to what extent various states will conform to the Tax Act or any newly enacted federal tax legislation. Changes in corporate tax rates, the realization of net deferred tax assets relating to our operations, the taxation of foreign earnings, and the deductibility of expenses under the Tax Act or future reform legislation could have a material impact on the value of our deferred tax assets, could result in significant one-time charges and could increase our future U.S. tax expense.

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. We do not anticipate generating revenue from sales of products for the foreseeable future, if ever, and we may never achieve profitability. To the extent that we continue to generate tax losses, unused losses generated in tax years ending on or prior to December 31, 2017 will carry forward to offset future taxable income, if any, until such unused losses expire. Unused tax losses generated after December 31, 2017 under the Tax Act will not expire and may be carried forward indefinitely, but will be deductible only to the extent of 80% of current taxable income in any given year. It is uncertain if and to what extent various states will conform to the Tax Act. In addition, under Sections 382 and 383 of the Internal Revenue Code of 1986, as amended, or the Code, if a corporation undergoes an “ownership change,” which is generally defined as a greater than 50% change, by value, in its equity ownership over a 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 or taxes may be limited. We have not completed an analysis to determine whether we have experienced an ownership change. In addition, we may experience ownership changes in the future as a result of subsequent shifts in our stock ownership. Similar provisions of state tax law may also apply to limit our use of accumulated state tax attributes. In addition, at the state level, there may be periods during which the use of net operating losses is suspended or otherwise limited, which could accelerate or permanently increase state taxes owed. As a result, even if we attain profitability, we may be unable to use all or a material portion of our net operating losses and other tax attributes, which could adversely affect our future cash flows. As of December 31, 2019, we had federal and state net operating loss carryforwards of approximately \$375.5 million and \$161.9 million, respectively, that could be limited if we have experienced, or if in the future we experience, an ownership change.

Risks Related to the Ownership of Our Common Stock

The market price of our stock is volatile.

The trading price of our common stock has been and is likely to continue to be volatile. Since shares of our common stock were sold in our initial public offering in September 2013, our closing stock price as reported on The Nasdaq Global Market and The Nasdaq Global Select Market has ranged from \$3.20 to \$60.89 through February 26, 2020. The following factors, in addition to other risk factors described in this “Risk Factors” section and elsewhere in this Annual Report, may have a significant impact on the market price of our common stock:

- results or status of or plans for clinical trials of our product candidates or those of our competitors, as well as interpretation and perception of such results, status or plans by third parties;
- announcements by us, our partners or our competitors of significant acquisitions, strategic collaborations, joint ventures, collaborations or capital commitments;
- success or failure of products or technologies that compete or may compete with our product candidates and technologies;
- regulatory actions with respect to our product candidates or our competitors’ products;
- actual or anticipated changes in our or our partners’ growth rates relative to our competitors;
- failure of our partners to effectively execute or changes in our partners’ strategies with respect to our product candidates or collaborations;
- regulatory or legal developments in the United States and other countries;
- developments or disputes concerning our patent applications, issued patents or other proprietary rights;
- our dependence on third parties, including CMOs, CROs and collaboration partners, including those we may engage to develop and provide us with companion diagnostic products;
- recruitment or departure of key personnel;
- level of expenses related to any of our product candidates or clinical development programs;
- results of our efforts to in-license or acquire additional product candidates or products;
- actual or anticipated changes in estimates as to our financial results, development timelines or recommendations by securities analysts;
- variations in our financial results or those of companies that are perceived to be comparable to us;
- fluctuations in the valuation of companies perceived by investors to be comparable to us;
- share price and volume fluctuations attributable to inconsistent trading volume levels of our shares;
- announcements or expectations of additional financing efforts;
- sales of our common stock by us, our insiders or our other stockholders;
- changes in the structure of healthcare payment systems;
- market conditions in the pharmaceutical and biotechnology sectors; and
- general economic, industry, political and market conditions.

In addition, the stock market in general, and The Nasdaq Global Select Market and biotechnology companies, in particular, have experienced extreme price and volume fluctuations that have often been unrelated or disproportionate to the operating performance of the relevant companies. Broad market and industry factors may negatively affect the market price of our common stock, regardless of our actual operating performance. The realization of any of the above risks or any of a broad range of other risks, including those described in this “Risk Factors” section, could have a dramatic and material adverse impact on the market price of our common stock.

If equity research analysts do not publish research or reports, or publish unfavorable research or reports, about us, our business or our market, our stock price and trading volume could decline.

The trading market for our common stock is influenced by the research and reports that equity research analysts publish about us and our business. We have only limited research coverage by equity research analysts. Equity research analysts may elect not to initiate research coverage of our common stock or may discontinue research coverage, and a lack of research coverage may adversely affect the market price of our common stock. We do not have any control over the analysts or the content and opinions included in their reports. The price of our shares could decline if one or more equity research analysts downgrade our shares or issue other unfavorable commentary or research about us. If one or more equity research analysts ceases coverage of us or fails to publish reports on us regularly, demand for our shares could decrease, which in turn could cause the trading price or trading volume of our common stock to decline.

We may be subject to securities litigation, which is expensive and could divert management attention.

The market price of our common stock has declined over the last few years and may continue to be volatile. In the past, companies that have experienced volatility in the market price of their stock have been subject to securities class action litigation and we may become a target of this type of litigation in the future. Securities litigation against us could result in substantial costs and divert our management's attention from other business concerns, which could seriously harm our business.

Our principal stockholders and management own a significant percentage of our stock and may be able to exert significant control over matters subject to stockholder approval.

As of December 31, 2019, our executive officers, directors, holders of 5% or more of our capital stock and their respective affiliates beneficially owned approximately 35% of our common stock. This concentration of share ownership may adversely affect the trading price of our common stock because investors often perceive disadvantages in owning stock in companies with controlling stockholders. As a result, these stockholders, acting together, could significantly influence all matters requiring approval by our stockholders, including the election of directors and the approval of mergers or other business combination transactions. The interests of these stockholders may not always coincide with our interests or the interests of other stockholders.

Sales of a substantial number of shares of our common stock in the public market by our existing stockholders could cause our stock price to fall.

Sales of a substantial number of shares of our common stock in the public market or the perception that these sales might occur could depress the market price of our common stock and could impair our ability to raise capital through the sale of additional equity securities. We are unable to predict the effect that sales may have on the prevailing market price of our common stock.

Our disclosure controls and procedures may not prevent or detect all errors or acts of fraud.

We are subject to the periodic reporting requirements of the Securities and Exchange Act of 1934, as amended, or the Exchange Act. We designed our disclosure controls and procedures to reasonably assure that information we must disclose in reports we file or submit under the Exchange Act is accumulated and communicated to management, and recorded, processed, summarized and reported within the time periods specified in the rules and forms of the SEC. We believe that any disclosure controls and procedures or internal controls and procedures, no matter how well-conceived and operated, can provide only reasonable, not absolute, assurance that the objectives of the control system are met.

These inherent limitations include the realities that judgments in decision-making can be faulty, and that breakdowns can occur because of simple error or mistake. Additionally, controls can be circumvented by the individual acts of some persons, by collusion of two or more people or by an unauthorized override of the controls. Accordingly, because of the inherent limitations in our control system, misstatements due to error or fraud may occur and not be detected.

Some provisions of our charter documents and Delaware law may have anti-takeover effects that could discourage an acquisition of us by others, even if an acquisition would benefit our stockholders, and may prevent attempts by our stockholders to replace or remove our current management.

Provisions in our amended and restated certificate of incorporation and amended and restated bylaws, as well as provisions of Delaware law, could make it more difficult or costly for a third party to acquire us, even if doing so would benefit our stockholders, and could make it more difficult to remove our current management. These provisions include:

- authorizing the issuance of “blank check” preferred stock, the terms of which we may establish and shares of which we may issue without stockholder approval;
- prohibiting cumulative voting in the election of directors, which would otherwise allow for less than a majority of stockholders to elect director candidates;
- prohibiting stockholder action by written consent, thereby requiring all stockholder actions to be taken at a meeting of our stockholders;
- eliminating the ability of stockholders to call a special meeting of stockholders; and
- establishing advance notice requirements for nominations for election to the board of directors or for proposing matters that can be acted upon at stockholder meetings.

These provisions may frustrate or prevent any attempts by our stockholders to replace or remove our current management by making it more difficult for stockholders to replace members of our board of directors, who are responsible for appointing the members of our management. Because we are incorporated in Delaware, we are governed by the provisions of Section 203 of the General Corporation Law of the State of Delaware, or the DGCL, which may discourage, delay or prevent someone from acquiring us or merging with us whether or not it is desired by or beneficial to our stockholders. Under the DGCL, a corporation may not, in general, engage in a business combination with any holder of 15% or more of its capital stock unless the holder has held the stock for three years or, among other things, the board of directors has approved the transaction. Any provision of our amended and restated certificate of incorporation or amended and restated bylaws or Delaware law that has the effect of delaying or deterring a change of control could limit the opportunity for our stockholders to receive a premium for their shares of our common stock and could also affect the price that some investors are willing to pay for our common stock.

Item 1B. Unresolved Staff Comments.

None.

Item 2. Properties.

Our principal executive office is currently located in South San Francisco, California, and consists of 115,466 square feet of office and laboratory space, all of which is located in a single building, under a lease that expires on December 31, 2027.

In October 2019, we implemented a corporate restructuring, pursuant to which we have initiated activities to reduce our corporate facilities footprint by either subletting a significant portion of our current leased space or subletting our current building and relocating to smaller facilities.

Item 3. Legal Proceedings.

We are not currently subject to any material legal proceedings.

Item 4. Mine Safety Disclosures.

None.

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

Market Information

Our common stock is traded on The Nasdaq Global Select Market under the symbol “FPRX.”

Holders of Record

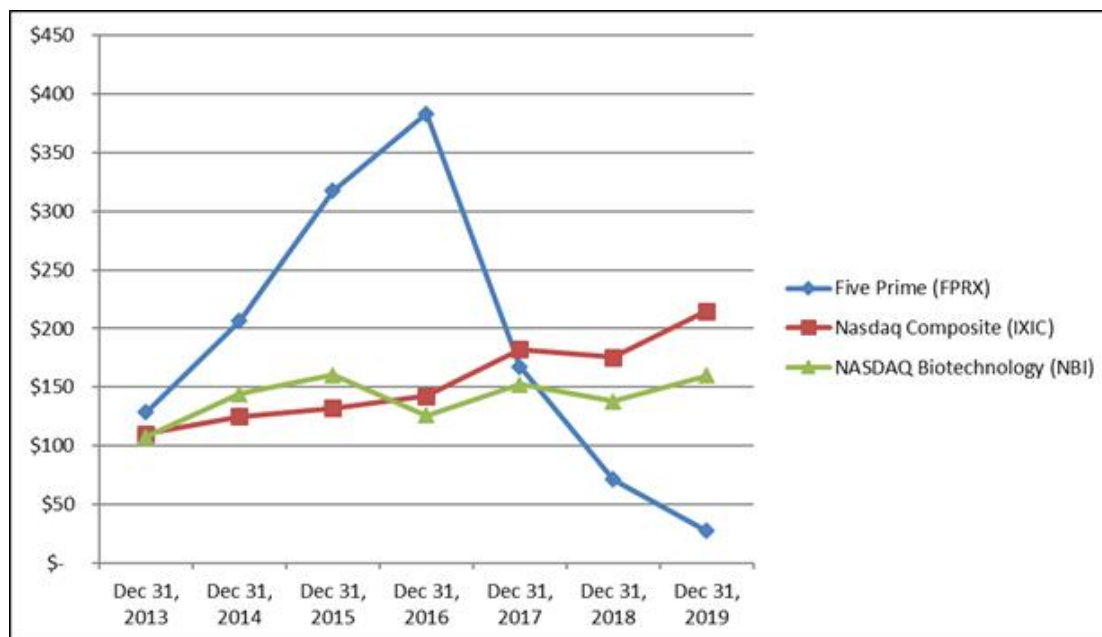
As of February 26, 2020, we had 36,391,980 shares of common stock outstanding held by approximately 27 stockholders of record. The actual number of stockholders is greater than this number of record holders, and includes stockholders who are beneficial owners, but whose shares are held in street name by brokers and other nominees. This number of holders of record also does not include stockholders whose shares may be held in trust by other entities.

Dividend Policy

We have never declared or paid any cash dividends on our capital stock and do not anticipate paying any cash dividends in the foreseeable future. Payment of cash dividends, if any, in the future will be at the discretion of our board of directors and will depend on then-existing conditions, including our financial condition, operating results, contractual restrictions, capital requirements, business prospects and other factors our board of directors may deem relevant.

Stock Performance Graph

The following graph illustrates a comparison of the total cumulative stockholder return on our common stock since our initial public offering on September 18, 2013 with the Nasdaq Composite Index and the Nasdaq Biotechnology Index. The stockholder return shown in the graph below is not necessarily indicative of future performance, and we do not make or endorse any predictions as to future stockholder returns. This graph shall not be deemed “soliciting material” or be deemed “filed” for purposes of Section 18 of the Exchange Act, or otherwise subject to the liabilities under that Section, and shall not be deemed to be incorporated by reference into any of our filings under the Securities Act, whether made before or after the date hereof and irrespective of any general incorporation language in any such filing.



\$100 investment in stock or index	Dec 31, 2013	Dec 31, 2014	Dec 31, 2015	Dec 31, 2016	Dec 31, 2017	Dec 31, 2018	Dec 31, 2019
Five Prime (FPRX)	\$ 128.36	\$ 206.42	\$ 317.28	\$ 383.10	\$ 167.58	\$ 71.10	\$ 27.34
Nasdaq Composite Index (IXIC)	\$ 110.39	\$ 125.17	\$ 132.34	\$ 142.27	\$ 182.45	\$ 175.37	\$ 214.83
Nasdaq Biotechnology (NBI)	\$ 107.41	\$ 144.04	\$ 160.49	\$ 125.69	\$ 152.16	\$ 137.97	\$ 159.80

Recent Sales of Unregistered Equity Securities

None.

Purchases of Equity Securities by the Issuer and Affiliated Purchasers

None.

Item 6. Selected Financial Data.

You should read the following selected financial data together with the “Management’s Discussion and Analysis of Financial Condition and Results of Operations” section of this Annual Report and our financial statements and the accompanying notes included elsewhere in this Annual Report. We have derived the statements of operations data for the years ended December 31, 2019, 2018 and 2017 and the balance sheet data as of December 31, 2019 and 2018 from our audited financial statements appearing in this Annual Report. We have derived the statements of operations data for the years ended December 31, 2016 and 2015 and the balance sheet data as of December 31, 2017, 2016, and 2015 from our audited financial statements not included in this Annual Report. Our historical results for any prior period are not necessarily indicative of results to be expected in any future period.

(in thousands, except per share amounts)	Year Ended December 31,				
	2019	2018	2017	2016	2015
Statement of Operations Data:					
Collaboration and license revenue ⁽¹⁾	\$ 14,874	\$ 49,868	\$ 39,508	\$ 30,691	\$ 379,801
Operating expenses:					
Research and development	114,063	156,352	150,908	94,072	70,197
General and administrative	42,749	39,671	40,002	35,831	22,631
Total operating expenses	156,812	196,023	190,910	129,903	92,828
(Loss) income from operations	(141,938)	(146,155)	(151,402)	(99,212)	286,973
Interest income	4,740	5,792	2,978	2,467	487
Other loss, net	(4)	(84)	(94)	—	(3)
(Loss) income before income tax	(137,202)	(140,447)	(148,518)	(96,745)	287,457
Income tax (provision) benefit	—	—	(1,704)	31,048	(37,810)
Net (loss) income	\$ (137,202)	\$ (140,447)	\$ (150,222)	\$ (65,697)	\$ 249,647
Basic net (loss) income per share attributable to common stockholders ⁽²⁾	\$ (3.92)	\$ (4.13)	\$ (5.38)	\$ (2.44)	\$ 9.73
Diluted net (loss) income per share attributable to common stockholders ⁽²⁾	\$ (3.92)	\$ (4.13)	\$ (5.38)	\$ (2.44)	\$ 9.23
Weighted average shares of common stock outstanding used in computing basic net (loss) income per share ⁽²⁾	34,970	33,976	27,945	26,955	25,661
Weighted average shares of common stock outstanding used in computing diluted net (loss) income per share ⁽²⁾	34,970	33,976	27,945	26,955	27,035

(1) Effective January 1, 2018, we adopted Financial Accounting Standards Board, or FASB, Accounting Standard Update, or ASU, 2014-09, *Revenue from Contracts with Customers (Topic 606)*, or Topic 606, using the modified retrospective transition method. We applied the standard to contracts that were not completed at the date of initial application. See Note 2 to our financial statements for a discussion of the impact of our adoption of Topic 606 on the financial statement line items.

(2) See Note 7 to our financial statements for an explanation of the method used to calculate basic and diluted net income (loss) per share of common stock and the weighted average number of shares used in computation of the per share amounts.

(in thousands)	As of December 31,				
	2019	2018	2017	2016	2015
Balance Sheet Data:					
Cash, cash equivalents and marketable securities	\$ 156,380	\$ 270,138	\$ 292,690	\$ 421,748	\$ 517,466
Working capital ⁽³⁾	143,696	261,081	260,209	401,384	448,913
Total assets ⁽³⁾	224,142	321,534	344,047	448,281	548,285
Total stockholders’ equity	150,473	265,139	265,202	391,575	433,206

(3) Effective January 1, 2019, we adopted FASB ASU 2016-02, *Leases (Topic 842)*, or Topic 842, using the updated modified retrospective transition method. We reviewed all existing contracts and elected to not record short-term leases on the balance sheet. See Note 2 to our financial statements for a discussion of the impact of our adoption of Topic 842 on the financial statement line items.

Item 7. Management’s Discussion and Analysis of Financial Condition and Results of Operations.

You should read the following discussion of our financial condition and results of operations in conjunction with the financial statements and the related notes included elsewhere in this Annual Report. The following discussion contains forward-looking statements that reflect our plans, estimates and beliefs. Our actual results could differ materially from those discussed in the forward-looking statements. Factors that could cause or contribute to these differences include those discussed below and elsewhere in this Annual Report, particularly in “Special Note Regarding Forward-Looking Statements and Industry Data” and “Risk Factors.”

Overview

We are a clinical-stage biotechnology company focused on developing immune modulators and precision therapies to improve the lives of patients with solid tumor cancers. Our primary focus is on developing immuno-oncology and targeted cancer therapies. Each of our product candidates has an innovative mechanism of action and addresses patient populations for which better therapies are needed. In addition, we use companion diagnostics where appropriate to allow us to select patients most likely to benefit from treatment with our product candidates. The most advanced product candidates that we or our partners are developing are identified below.

- **Bemarituzumab (FPA144)** is an antibody that inhibits fibroblast growth factor receptor 2b, or FGFR2b, and that induces antibody-dependent cellular cytotoxicity that we are studying in a clinical trial in combination with 5-fluorouracil (5-FU), leucovorin and oxaliplatin, a standard-of-care chemotherapy regimen known as mFOLFOX6, as front-line treatment of patients with gastric (stomach) or gastroesophageal junction, or GEJ, cancer that overexpresses FGFR2b. In December 2017, we granted Zai Lab (Shanghai) Co., Ltd., or Zai Lab, an exclusive license to develop and commercialize bemarituzumab in China, Hong Kong, Macau and Taiwan.
- **FPA150** is an antibody that targets B7-H4 that we are studying in a clinical trial to treat patients with cancers that overexpress B7-H4.
- **FPT155** is a soluble CD80 fusion protein that enhances co-stimulation of T cells through CD28 that we are studying in a clinical trial in multiple cancers.
- **BMS-986258** is an anti-T cell immunoglobulin and mucin domain-3, or TIM-3, antibody that our partner, BMS, is studying in a clinical trial in combination with *Opdivo* in patients with advanced malignant tumors.

Our product candidates are typically only-in-class, first-in-class or meaningfully differentiated from other in-class therapeutics. We generally look for single-agent activity or clear activity in, for example, tumor types that are rarely sensitive to checkpoint inhibitors.

Historically, we leveraged our differentiated discovery capabilities and protein therapeutic generation and engineering capabilities to identify and validate targets that we believed could be useful in oncology, and we generated and preclinically tested therapeutic proteins, including antibodies and fusion proteins, directed to or containing the targets we identified and validated. In October 2019, we began a corporate restructuring, pursuant to which we are eliminating most of our in-house target discovery and validation and protein therapeutic generation and engineering capabilities by the first quarter of 2020. We currently have three late-stage research programs that arose from our work with our discovery capabilities. We plan to advance lead therapeutic antibodies for one of these programs into IND-enabling studies in the second quarter of 2020. Due to our significantly reduced scope of in-house research and preclinical capabilities following our October 2019 restructuring, we expect to advance each of our late-stage research programs through preclinical development relying mostly on out-sourced and contracted capabilities. In addition, as part of our corporate restructuring, we shifted our focus from in-house discovery and research to supplementing our development pipeline by looking to selectively acquire or license, on an exclusive basis, rights to product candidates from biotechnology and pharmaceutical companies.

We have no products approved for commercial sale and have not generated any revenue from product sales to date. We continue to incur significant research and development and other expenses related to our ongoing operations and we expect that our expenses will increase as we advance our product candidates into later stages of clinical development and increase the number of product candidates in clinical development. We have incurred losses in each period since our inception in 2002, with the exception of the fiscal year ended December 31, 2015, due primarily to the \$350.0 million upfront payment we received from BMS from our license and collaboration agreement for cabiralizumab, and the fiscal year ended December 31, 2011, due primarily to the \$50.0 million upfront payment we received from GSK from our license and collaboration agreement for FP-1039. For the years ending December 31, 2019 and 2018, we reported net loss of \$137.2 million and net loss of \$140.4 million, respectively.

Critical Accounting Policies and Estimates

We based our management's discussion and analysis of financial condition and results of operations upon our condensed financial statements, which we prepared in accordance with U.S. generally accepted accounting principles, or GAAP. The preparation of these financial statements requires us to make estimates and judgments that affect the reported amounts of assets, liabilities, revenues and expenses. We evaluate our critical accounting policies and estimates on an ongoing basis. We base our estimates on historical experience and on various other assumptions that we believe to be reasonable under the circumstances, and these estimates form the basis for making judgments about the carrying values of assets and liabilities that are not readily apparent from other sources. Actual results under different assumptions and conditions may differ from these estimates. Our significant accounting policies are more fully described in Note 2 to our financial statements.

We define our critical accounting policies as those accounting principles generally accepted in the United States that require us to make subjective estimates and judgments about matters that are uncertain and are likely to have a material impact on our financial condition and results of operations as well as the specific manner in which we apply those principles. We believe the critical accounting policies used in the preparation of our financial statements that require significant estimates and judgments are as follows:

Revenue Recognition

The terms of our collaborative research and development agreements include upfront and license fees, research, development and other funding or reimbursements, milestone and other contingent payments for the achievement of defined collaboration objectives and certain preclinical, clinical, regulatory and sales-based events, as well as royalties on sales of commercialized products. Arrangements that include upfront payments may require deferral of revenue recognition to a future period until we perform obligations under these arrangements. We record research and development funding payable to us as accounts receivable when our right to consideration is unconditional. The event-based milestone and other contingent payments represent variable consideration, and we use the most likely amount method to estimate this variable consideration. Given the high degree of uncertainty around the occurrence of these events, we determine the milestone and other contingent amounts to be fully constrained until the uncertainty associated with these payments is resolved. We will recognize revenue from sales-based royalty payments when or as the sales occur. We will re-evaluate the transaction price in each reporting period as uncertain events are resolved and other changes in circumstances occur.

A performance obligation is a promise in a contract to transfer a distinct good or service and is the unit of accounting in Topic 606. A contract's transaction price is allocated as revenue among each distinct performance obligation based on relative standalone selling price and recognized when, or as, the applicable performance obligation is satisfied. Under Topic 606, we elected to use the practical expedient permitted related to adoption, which does not require us to disclose certain information regarding our remaining performance obligations as of the end of the reporting period prior to the initial date of adoption. Additionally, we elected the practical expedient for certain research and development funding which allows us to recognize revenue in the amount for which we have a right to invoice if our right to consideration is an amount that corresponds directly to the value of our performance completed to date. As a result, we effectively bypass the steps of determining the transaction price and allocating that transaction price to the performance obligation.

See Note 2 to our financial statements for information regarding our adoption of Topic 606.

Research and Development Expenses

Research and development expenses consist of costs we incur for our own and for sponsored and collaborative research and development activities. Research and development costs are expensed as incurred. Research and development costs consist of salaries and benefits, including associated stock-based compensation, laboratory supplies and facility costs, as well as fees paid to other entities that conduct certain research and development activities on our behalf. We estimate preclinical study and clinical trial expenses based on the services performed pursuant to contracts with research institutions and contract research organizations, or CROs, and clinical manufacturing organizations, or CMOs, that conduct and manage preclinical studies and clinical trials on our behalf based on actual time and expenses incurred by such entities. Further, we accrue expenses related to clinical trials based on the level of patient enrollment and activity according to the relevant agreement. We monitor patient enrollment levels and related activity to the extent reasonably possible and adjust estimates accordingly. If we do not identify costs that we have begun to incur or if we underestimate or overestimate the level of services performed or the costs of these services, our actual expenses could differ from our estimates.

We expense payments for the acquisition and development of technology as research and development costs if, at the time of payment, the technology is under development, is not approved by the U.S. Food and Drug Administration or other regulatory agencies for marketing, has not reached technical feasibility, or otherwise has no foreseeable alternative future use.

Stock-Based Compensation

We issue stock-based compensation awards in the form of restricted stock awards and stock options. We measure stock-based compensation expense related to these awards based on the fair value of the award on the date of grant and recognize stock-based compensation expense on a straight-line basis over the requisite service period of the awards, which generally equals the vesting period.

Restricted stock awards that we grant generally vest over three years, though we have from time to time granted restricted stock awards with shorter vesting periods. We base stock-based compensation expense related to restricted stock awards on the closing price of our common stock on the date of grant and recognize expense ratably over the requisite service period.

Stock options that we grant generally vest over four years. To determine the fair value of stock option awards, we have selected the Black-Scholes option pricing model, which requires the input of various assumptions that require management to apply judgment and make assumptions and estimates, including:

- The expected term of the stock option award, which we calculate using the simplified method, due to limited history, in accordance with the Securities and Exchange Commission, or SEC, Staff Accounting Bulletin Nos. 107 and 110, which permits entities to calculate the expected term as the midpoint of the contractual term of the options and the ordinary vesting period;
- The expected volatility of the underlying common stock, which we estimate for options based on the historical volatility of the price of our common stock since we became publicly traded;
- The assumed dividend yield, which is based on our expectation of not paying dividends for the foreseeable future; and
- The fair value of our common stock, which is determined on the date of grant, as described below.

We estimated the fair value of each stock option using the Black-Scholes option-pricing model based on the date of grant of such stock option with the following assumptions:

	Year Ended December 31,		
	2019	2018	2017
Expected term (years)	5.0-6.3	5.5-6.3	5.5-6.3
Expected volatility	67%-68%	68-70%	66-70%
Risk-free interest rate	1.6%-2.5%	2.6-2.9%	1.9-2.2%
Expected dividend yield	0.0%	0.0%	0.0%

Income Taxes

We account 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. On December 22, 2017, the Tax Cuts and Jobs Act of 2017, or the Tax Act, was signed into law. The Tax Act reduces the corporate tax rate from a top marginal rate of 35% to a flat rate of 21%. Although the Tax Act generally became effective on January 1, 2018, GAAP requires recognition of the tax effects of new legislation during the reporting period that includes the enactment date of December 22, 2017. Because of the impacts of the Tax Act, the SEC issued Staff Accounting Bulletin No. 118, Income Tax Accounting Implications of the Tax Cuts and Jobs Act, which allows us to record provisional amounts for those impacts, provided that the accounting is completed in a period not to exceed one year from the date of enactment. As a result, as of December 31, 2017, we performed a provisional estimate of the effect of the Tax Act on the financial statements. In the fourth quarter of 2018, we completed our analysis to determine the effect of the Tax Act. No material adjustments were noted from the completion of the analysis as of December 31, 2018. The primary impact of the Tax Act resulted from the re-measurement of deferred tax assets and liabilities due to the change in the corporate tax rate, reducing our deferred tax assets by \$27.1 million with a corresponding reduction in our valuation allowance, which had no effect on our effective tax rate.

As of December 31, 2019, our total net deferred tax assets, net of gross deferred tax liabilities, were \$168.7 million. Due to our lack of earnings history, the net deferred tax assets have been fully offset by a valuation allowance. In assessing the realizability of deferred tax assets, we considered whether it is more-likely-than-not that some portion or all of the deferred tax assets will not be realized. The ultimate realization of deferred tax assets is dependent upon the generation of future taxable income during the periods in which the temporary differences representing net future deductible amounts become deductible. Due to our history of losses and lack of other positive evidence, we determined that it is more likely than not that its net deferred tax assets will not be realized, and therefore, the net deferred tax assets are fully offset by a valuation allowance.

New Accounting Standards

For a discussion of new accounting standards, please see Note 2 to our financial statements.

Financial Overview

Collaboration and License Revenue

We have not generated any revenue from product sales. We have derived our revenue to date from upfront payments, research and development funding and milestone payments under collaboration and license agreements with our collaboration partners and licensees. We currently have an active collaboration and license agreement with Zai Lab for bemarituzumab, or the China collaboration agreement. For additional information on this collaboration, please see the section titled “Business – Collaborations and License Agreements – Collaborations” elsewhere in this report and the description of this agreement set forth in this section below.

In addition, we have a license and collaboration agreement with BMS for cabiralizumab, or the cabiralizumab collaboration agreement, pursuant to which BMS conducted sponsored development of cabiralizumab, including in combination with *Opdivo*, prior to February 2020. We completed the research terms of our immuno-oncology research collaboration with BMS in March 2019, our research collaboration in respiratory diseases with GSK in July 2016, and our fibrosis and CNS research collaboration with UCB Pharma S.A., or UCB, in March 2016. For additional information on these collaborations, please see the descriptions of these agreements set forth in this section below.

Summary Revenue by Collaboration and License Agreements

The following is a comparison of collaboration and license revenue for the years ended December 31, 2019, 2018 and 2017:

(in millions)	Year Ended December 31,		
	2019	2018	2017
Milestone Payments			
Cabiralizumab Collaboration - BMS	—	25.0	—
Immuno-oncology Research Collaboration - BMS	—	—	5.0
Fibrosis and CNS Collaboration - UCB	—	0.3	0.3
Respiratory Diseases Collaboration - GSK	—	—	0.5
Other Payments			
China Collaboration - Zai Lab	4.4	5.1	—
Cabiralizumab Collaboration - BMS	9.0	13.4	23.7
Immuno-oncology Research Collaboration - BMS	1.5	6.1	7.0
Fibrosis and CNS Collaboration - UCB	—	—	3.0
Total	\$ 14.9	\$ 49.9	\$ 39.5

We expect that the level of revenue we generate will fluctuate from period to period as a result of the timing and amount of milestone, reimbursable expense and other payments we receive during the course of our existing collaborations and licenses and as a result of the deferred revenue that we recognize, including due to revisions to estimates related to reimbursable activities or to estimates of actual or estimated costs as a percentage of total budgeted costs, or as a result of entry into any new collaborations and license agreements.

BMS Immuno-Oncology Research Collaboration

In March 2014, we entered into the immuno-oncology research collaboration with BMS, pursuant to which BMS is carrying out a research program to (i) discover novel interacting proteins in two undisclosed immune checkpoint pathways, which we refer to as the checkpoint pathways, using our target discovery platform; (ii) further the understanding of target biology with respect to targets in these checkpoint pathways; and (iii) discover and pre-clinically develop compounds suitable for development for human therapeutic uses against targets in these checkpoint pathways. Under the immuno-oncology research collaboration, we granted BMS an exclusive, worldwide license to research, develop and commercialize products directed towards certain targets in the checkpoint pathways. BMS has an option to take exclusive licenses to additional targets we may identify in these checkpoint pathways pursuant to the research plan under the immuno-oncology research collaboration. Based on data arising from our activities under the research plan, in January 2016, we amended the immuno-oncology research collaboration to add an additional checkpoint pathway to the research program, for a total of three immune checkpoint pathways.

We received an upfront payment of \$20.0 million from BMS in April 2014 in connection with our entry into the immuno-oncology research collaboration. BMS was obligated to pay us \$9.5 million in research funding over the course of the three-year research term based on the research activities planned under the research plan. BMS had the option to extend the research term for two additional one-year periods on a year-by-year basis for an additional \$2.1 million for each extension, during which extensions we would be obligated to perform additional services as agreed to with BMS, and BMS would be obligated to pay us research funding with respect to such services. The initial research term under the immuno-oncology research collaboration expired in March 2017. In each of December 2016 and December 2017, BMS exercised its option to extend the research term for an additional year to March 2018 and March 2019, respectively. In connection with the immuno-oncology research collaboration, BMS purchased 994,352 shares of our common stock at a price per share of \$21.16, for an aggregate purchase price of \$21.0 million. We determined that the purchase price of \$21.16 per share exceeded the fair value of our common stock by \$2.4 million and, therefore, recorded the \$2.4 million as deferred revenue that we are recognizing in the same manner as the \$20.0 million upfront payment and research funding. We are eligible to receive certain contingent payments with respect to each target subject to the immuno-oncology research collaboration and royalties on sales of products related to such targets, if any. In December 2017, we recognized \$5.0 million related to a developmental contingent payment.

The immuno-oncology research collaboration will terminate upon the expiration of all payment obligations under the collaboration. In addition, BMS may terminate the immuno-oncology research collaboration in its entirety or on a collaboration target-by-collaboration target basis at any time with advance written notice, and either party may terminate the collaboration in its entirety or on a collaboration target-by-collaboration target basis with written notice for the other party's material breach if such other party fails to timely cure the breach or immediately upon certain insolvency events.

We identified one performance obligation under the immuno-oncology research collaboration for the research license to access our technology, the exclusive commercial license and research activities. BMS's options to select additional collaboration targets are not priced at a discount and therefore do not represent performance obligations for which the transaction price would be allocated. The transaction price of \$36.1 million includes the \$20.0 million non-refundable upfront fee, \$13.7 million of research funding and \$2.4 million of equity premium. We concluded that the transaction price should not include the variable consideration related to maintenance fees and unachieved clinical and regulatory development milestones because this consideration was considered to be constrained as it is probable that the inclusion of such variable consideration could result in a significant reversal in revenue in the future. We will recognize any consideration related to sales-based payments (including milestones and royalties) when the related sales occur, as we have determined that these amounts relate predominantly to the license granted and therefore will be recognized on the later to occur of satisfaction of the performance obligation or the occurrence of the related sales. We will re-evaluate the transaction price at each reporting period. For the year ended December 31, 2019, no adjustments were made to the transaction price.

Upon adoption of Topic 606, we recognized an additional \$0.7 million of revenue through a decrease to deferred revenue and an increase to beginning retained earnings, based on the difference between the input method currently used under Topic 606 and the ratable recognition method previously used under Topic 605. Under the input method, we recognize revenue on the basis of our efforts or inputs applicable to the satisfaction of a performance obligation (e.g., resources consumed, labor hours expended, costs incurred or time elapsed) relative to the total expected inputs applicable to the satisfaction of that performance obligation. We concluded that we will recognize revenue based on actual costs incurred as a percentage of total budgeted costs as we complete our performance obligation. As of March 31, 2019, the performance obligation was fully satisfied and the transaction price of \$36.1 million was fully recognized as collaboration revenue. Revenue recognized from the performance obligation was \$1.5 million for the year ended December 31, 2019.

For the years ended December 31, 2019, 2018, and 2017, we recognized \$1.5 million, \$6.1 million, and \$12.0 million, respectively, of revenue under the immuno-oncology research collaboration. As of December 31, 2019 and 2018, we had deferred revenue relating to the immuno-oncology research collaboration of \$0 and \$1.5 million, respectively.

BMS License and Collaboration Agreement

On October 14, 2015, we entered into a license and collaboration agreement, or the cabiralizumab collaboration agreement, pursuant to which we granted BMS exclusive global rights to develop and commercialize certain colony stimulating factor-1 receptor, or CSF1R, antibodies, including our monoclonal CSF1R inhibiting antibody that we refer to as cabiralizumab, and all modifications, derivatives, fragments, or variants of such antibodies, each of which we refer to as a licensed antibody. Under the terms of the cabiralizumab collaboration agreement, BMS is responsible, at its expense, for developing products containing licensed antibodies, each of which we refer to as a licensed product, under a development plan, subject to our option, at our own expense, to conduct certain studies, including registration-enabling studies to support approval of cabiralizumab. BMS is responsible for manufacturing and commercializing each licensed product and we retain rights to a United States co-promotion option. The cabiralizumab collaboration agreement superseded the clinical trial collaboration agreement we entered into with BMS in November 2014, or the original collaboration agreement. We assessed the two agreements separately as standalone agreements under Topic 606.

In February 2020, BMS informed us that the trial did not meet its primary endpoint. BMS informed us that while it has no near-term plans for additional sponsored development of cabiralizumab, it will continue to support the evaluation of cabiralizumab in select, ongoing investigator-sponsored trials and may continue to assess future development opportunities for cabiralizumab.

We received an upfront payment of \$30.0 million from BMS in December 2014 in connection with our entry into the original collaboration agreement. We completed enrollment and treatment of patients in our Phase 1a/1b clinical trial to evaluate the safety, tolerability and preliminary efficacy of combining *Opdivo*, BMS's programmed-death 1 (PD-1) immune checkpoint inhibitor, with cabiralizumab in multiple tumor types, which we commenced under the original collaboration agreement. BMS was responsible for all costs and expenses relating to this trial, including manufacturing costs for the supply of cabiralizumab, except that we were responsible for our own internal costs, including internal personnel costs.

Under the original collaboration agreement, we identified one performance obligation for the execution of a Phase 1a/1b clinical trial of cabiralizumab in combination with *Opdivo*. The transaction price consists of the \$30.0 million non-refundable upfront fee under the original collaboration agreement.

We used the input method to measure progress toward completion of the performance obligation and concluded that we will recognize revenue based on actual costs incurred by our CRO as a percentage of total budgeted costs as we complete our performance obligation. We will recognize revenue from reimbursements when we have the right to invoice BMS. No adjustment was necessary upon adoption of Topic 606. We recognized \$4.4 million of the transaction price as revenue for the year ended December 31, 2019. Total revenue recognized for reimbursements for the year ended December 31, 2019 was \$4.6 million. Through December 31, 2019, we recognized \$29.2 million of the transaction price as collaboration revenue under the original collaboration agreement. The remaining transaction price of \$0.8 million is recorded in deferred revenue as of December 31, 2019 and will be recognized as revenue under the input method over the estimated performance period.

Under the cabiralizumab collaboration agreement, we identified the following performance obligations: (1) license grant to BMS and (2) transfer of licensed know-how to BMS. The transaction price consists of the \$350.0 million non-refundable up-front fee. We concluded that the transaction price should not yet include milestone payments that may become due as they are fully constrained. We will recognize any consideration related to royalties when the related sales occur, as we have determined that these amounts relate predominantly to the license granted and therefore will be recognized upon the occurrence of the related sales. We will re-evaluate the transaction price in each reporting period as uncertain events are resolved and other changes in circumstances occur. For the year ended December 31, 2019, no adjustments were made to the transaction price.

The \$350.0 million non-refundable upfront fee was fully recognized concurrent with the transfer of the license and know-how in 2015. As such, no adjustment to revenue was necessary under Topic 606. In January 2018, we recognized \$25.0 million related to a milestone achieved for the dosing of the first patient in BMS's randomized Phase 2 clinical trial of cabiralizumab in combination with *Opdivo*, with and without chemotherapy, as a treatment for patients with second-line pancreatic cancer. For the year ended December 31, 2019, no milestones were achieved.

For the years ended December 31, 2019, 2018, and 2017, we recognized \$9.0 million, \$38.4 million and \$ 23.7 million, respectively, of revenue under the license and collaboration agreements. As of December 31, 2019 and 2018, we had deferred revenue relating to the license and collaboration agreements of \$0.8 million and \$5.2 million, respectively.

Zai Lab China License and Collaboration Agreement

In December 2017, we entered into the China collaboration agreement with Zai Lab, pursuant to which we granted Zai Lab an exclusive license to develop and commercialize bemarituzumab, and all fragments, conjugates, derivatives and modifications thereof, or the licensed antibody, in China, Hong Kong, Macau and Taiwan, each a region and collectively, the territory.

Under the terms of the China collaboration agreement, Zai Lab will be responsible, at its expense, for (i) developing and commercializing products containing the licensed antibody, each a licensed product, under a territory development plan and (ii) performing certain development activities to support our global development and registration of licensed products, including our FIGHT trial, in the territory under a global development plan. Under the terms of the China collaboration agreement, Zai Lab paid us a \$5.0 million non-refundable and non-creditable upfront fee (\$4.2 million after netting of value-added tax withholdings of \$0.8 million) in January 2018. Pursuant to the China collaboration agreement, with respect to each licensed product, we are eligible to receive up to \$39.0 million of specified developmental and regulatory milestone payments. Zai Lab will also be obligated to pay us a royalty, on a licensed product-by-licensed product and region-by-region basis. In addition, Zai Lab agreed to reimburse us for certain global development activities, which is limited to a maximum of \$10.0 million, and certain costs for the development of companion diagnostics.

We identified the following performance obligations: (1) license grant to Zai Lab together with the transfer of licensed know-how, development drug supply and global development activities, or the license grant, and (2) development of companion diagnostics. Zai Lab will have the option to purchase commercial drug supply from us pursuant to a separate commercial supply agreement to be negotiated in the future. The commercial drug supply will be accounted for as a separate contract when Zai Lab exercises this option. In our evaluation of the transaction price upon the adoption of Topic 606, the \$4.2 million non-refundable upfront fee and \$8.3 million of expected reimbursement from Zai Lab for global development activities were included as part of the transaction price of \$12.5 million. We estimated the \$8.3 million of expected reimbursements from Zai Lab based on the probability-weighted amounts of a range of possible consideration amounts. In September 2018, we recorded a \$1.7 million receivable related to Zai Lab's \$2.0 million clinical development milestone payment, net of value-added tax and other withholdings of \$0.3 million, which became due upon dosing of the first patient in the Phase 3 FIGHT trial. As a result, at such time we re-evaluated the transaction price and increased the transaction price by \$2.2 million to \$14.7 million, which includes the \$4.2 million non-refundable upfront fee, \$8.8 million of expected reimbursement from Zai Lab for global development activities and the \$1.7 million clinical development milestone payment. We have not included the remaining regulatory milestone payments in the transaction price as all such milestone amounts are fully constrained. We will recognize any consideration related to royalties when the related sales occur, as we determined that these amounts relate predominantly to the license granted and therefore will be recognized upon the occurrence of the related sales. We concluded that the reimbursement of costs incurred for the development of companion diagnostics qualifies for the practical expedient under Topic 606, which allows us to recognize revenue in the amount for which we have a right to invoice if our right to consideration is an amount that corresponds directly to the value to Zai Lab of our performance completed to date. We therefore effectively bypass the steps of determining the transaction price and allocating that transaction price to the performance obligation. We will re-evaluate the transaction price in each reporting period as uncertain events are resolved and other changes in circumstances occur.

We use the input method to measure progress toward completion of the performance obligation for the license grant. We concluded that revenue will be recognized based on actual costs incurred by our CRO as a percentage of total budgeted costs as we complete our performance obligation. We will recognize revenue from reimbursements for the development of companion diagnostics when we have the right to invoice Zai Lab.

No adjustment was necessary upon adoption of Topic 606. Total revenue recognized for the companion diagnostics development performance obligation was \$3.0 million. No revenue was recognized for the license grant for year ended December 31, 2019. Of the remaining transaction price of \$11.5 million, we recorded \$5.1 million in deferred revenue, which we will recognize over the estimated performance period for satisfaction of the performance obligations.

GSK Respiratory Diseases and Muscle Diseases Collaborations

In April 2012, we entered into a research collaboration and license agreement, or the respiratory diseases collaboration, with Glaxo Group Limited, or GSK, to identify new therapeutic approaches to treat refractory asthma and chronic obstructive pulmonary disease, or COPD, with a particular focus on identifying novel protein therapeutics and antibody targets. In January 2016, we amended our respiratory diseases collaboration to extend the research term by three months to July 2016 to allow additional validation of the protein targets we discovered and to increase the research funding. In July 2010, we entered into a research collaboration and license agreement, or the muscle diseases collaboration, with GlaxoSmithKline LLC, to identify potential drug targets and drug candidates to treat skeletal muscle diseases. We conducted three customized cell-based screens and one *in vivo* screen of our protein libraries under the muscle diseases collaboration. The research term under the muscle diseases collaboration ended in May 2014 and the agreement terminated in April 2018.

Based on our assessment of the respiratory diseases collaboration and the muscle diseases collaboration under Topic 606, we identified one performance obligation under each collaboration for the research license and research activities. The non-refundable upfront fees, the equity premiums and the variable consideration for research activities are included as part of the transaction prices for each collaboration. The clinical and regulatory development milestone payments have not been included in the transaction prices, as all such milestone amounts are fully constrained. We will recognize any consideration related to sales-based payments (including milestones and royalties) when the related sales occur, as we have determined that these amounts relate predominantly to the license

granted and therefore will be recognized on the later to occur of satisfaction of the performance obligation or the occurrence of the related sales. Under the respiratory diseases collaboration, additional research funding that GSK had the option to add was also not included in the transaction price. As the muscle diseases collaboration with GlaxoSmithKline LLC terminated in April 2018, we are no longer eligible to receive milestone payments or royalties under that collaboration. We will re-evaluate the transaction price for the respiratory diseases collaboration in each reporting period as uncertain events are resolved and other changes in circumstances occur. For year ended December 31, 2019, no adjustments were made to the transaction prices of the collaborations with GSK or GlaxoSmithKline LLC.

Under the respiratory diseases collaboration and the muscle diseases collaboration, the non-refundable upfront fees, the equity premiums and the payment for research activities were fully recognized in 2016 and 2014, respectively. As the performance obligations were fully satisfied in prior years, no adjustment to revenue was necessary under Topic 606.

For the years ended December 31, 2019 and December 31, 2018, we recognized no milestone revenue, and we recognized \$0.5 million in milestone revenue for the year ended December 31, 2017. No revenue was recognized for progress made toward the performance obligation for years ended December 31, 2019, 2018, or 2017 under the respiratory diseases collaboration.

UCB Fibrosis and CNS Collaboration

In March 2013, we entered into a research collaboration and license agreement, or the fibrosis and CNS collaboration, with UCB Pharma, S.A., or UCB, to identify potential biologics targets and therapeutics in the areas of fibrosis-related immunologic diseases and central nervous system, or CNS, disorders.

Under the terms of the fibrosis and CNS collaboration, UCB paid us an upfront payment of \$6.0 million in March 2013. In addition, UCB agreed to pay us \$6.6 million for a technology fee and \$2.0 million for research funding. As of December 31, 2015, we fully collected the technology fees and research funding under the fibrosis and CNS collaboration. We are eligible to receive certain evaluation and selection fees and contingent payments for each protein target with respect to which UCB elects to obtain an exclusive license and royalties on the sales of products related to such targets, if any. Our initial research activities under this collaboration were completed in March 2016. Upon the completion of those research activities, UCB had up to a two-year evaluation period, which ended in March 2018, during which we were obligated to perform additional services at the request of UCB.

The fibrosis and CNS collaboration will terminate upon the expiration of the royalty terms of any products that incorporate or target a protein exclusively licensed under the collaboration. In addition, UCB may terminate the fibrosis and CNS collaboration at any time with advance written notice, and either party may terminate the fibrosis and CNS collaboration with written notice for the other party's material breach if such other party fails to timely cure the breach or upon certain insolvency events.

Based on our assessment of the fibrosis and CNS collaboration under Topic 606, we identified research activities as our only performance obligation. UCB's options to select additional collaboration targets and to license exclusive rights to selected targets are not priced at a discount and therefore do not represent performance obligations for which the transaction price would be allocated. The transaction price of \$15.6 million includes the \$6.0 million non-refundable upfront fee, the \$6.6 million technology access fee, the \$1.0 million reimbursement for reagent costs and the \$2.0 million of research funding. We have not included the clinical and regulatory development milestone payments in the transaction price as all such milestone amounts are fully constrained. We will recognize any consideration related to sales-based payments (including milestones and royalties) when the related sales occur, as we have determined that these amounts relate predominantly to the license granted and therefore will be recognized on the later to occur of satisfaction of the performance obligation or the occurrence of the related sales. We will re-evaluate the transaction price in each reporting period as uncertain events are resolved and other changes in circumstances occur. For the year ended December 31, 2019, there was no change in the transaction price.

Upon adoption of Topic 606, we recognized an additional \$0.6 million of revenue through a decrease to deferred revenue and an increase to beginning retained earnings, based on the difference between the input method currently used under Topic 606 and the ratable recognition method previously used under Topic 605. We use the input method to measure progress toward completion of the performance obligation and concluded that revenue will be recognized based on actual full-time equivalent labor hours expended as a percentage of total budgeted costs. The \$0.6 million adjustment recorded upon the adoption of Topic 606 recognized the remainder of the transaction price.

During 2019, 2018 and 2017, we recognized \$0, \$0.3 million and \$0.3 million, respectively, in target evaluation and selection fees. For the years ended December 31, 2019 and December 31, 2018, no revenue was recognized for the performance obligation, and \$3.0 million was recognized for the performance obligation for the year ended December 31, 2017. As of December 31, 2017, we had deferred revenue of \$0.6 million which was fully recognized upon adoption of Topic 606.

Research and Development

Research and development expenses consist of costs we incur in performing internal and collaborative research and development activities. Expenses incurred related to collaborative research and development agreements generally approximate the revenue recognized under these agreements. Research and development costs consist of salaries and benefits, including associated stock-based compensation, lab supplies and facility costs, as well as fees paid to other entities that conduct certain research and development activities, including manufacturing, on our behalf.

We are conducting research and development activities on several disease targets and product candidates.

We have a research and development team that designs, manages and evaluates the results of all our research and development activities. Historically, we conducted most of our core target discovery and early research and preclinical activities internally and relied more heavily on third parties, such as CROs and CMOs, for the execution of our IND-enabling and development activities, such as GLP toxicology studies, drug substance and drug product manufacturing, lab-developed test and companion diagnostic development, and the conduct of our clinical trials. In October 2019, we began a corporate restructuring, pursuant to which we are eliminating most of our in-house target discovery and validation and protein therapeutics generation and engineering capabilities by the end of the first quarter of 2020. Because we will have a significantly reduced scope of in-house and preclinical capabilities, we expect to advance our three late-stage research programs and any future programs through preclinical development relying mostly on out-sourced and contracted capabilities. In addition, we expect to increasingly rely on third-party service providers with respect to manufacturing, and we may in the foreseeable future outsource all or a portion of our cell line and process development activities that we currently conduct, as well as the manufacturing of quantities of our product candidates for use in preclinical studies.

We account for research and development costs on a program-by-program basis. In the early phases of research and discovery, historically, our costs have often been related to conducting target screening, evaluation and validation activities and conducting research activities with respect to selected targets and target pathways and have not necessarily been allocable to a specific program. We assign costs for such activities to a distinct non-program related project code. We allocate research and development management, overhead, common usage laboratory supplies and facility costs on a full-time equivalent basis.

The following is a comparison of research and development expenses for the years ending December 31, 2019, 2018 and 2017, respectively:

(in millions)	Year Ended December 31,		
	2019	2018	2017
Development programs:			
Cabiralizumab	\$ 9.1	\$ 15.8	\$ 29.5
Bemarituzumab	42.9	63.1	34.8
FPA150	24.3	18.8	19.0
FP-1039	—	0.1	1.6
FPT155	13.0	—	—
Subtotal development programs	89.3	97.8	84.9
Preclinical programs	—	19.1	32.5
Discovery collaborations	0.6	3.3	4.0
Early research and discovery	24.2	36.2	29.5
Total research and development expenses	<u>\$ 114.1</u>	<u>\$ 156.4</u>	<u>\$ 150.9</u>

We expect that most of the research and development expenses we incur will continue to relate to activities to support our clinical development programs and our three late-stage research programs. Our research and development expenses may increase as we advance our current product candidates through clinical development and our three late-stage research programs into preclinical and clinical development and if we add to our development pipeline through strategic or licensing of product candidates from other biotechnology or pharmaceutical companies. In particular, our research and development expenses may increase as we increase the number and size of our clinical trials, including by advancing into registrational trials.

In January 2019, we implemented a corporate restructuring, or the January restructuring, to focus our resources on our clinical development and late-stage research programs. Pursuant to the restructuring, we eliminated 41 employee positions, representing approximately 20% of our then-current headcount, primarily in areas relating to research, pathology and manufacturing.

Restructuring charges related to the January 2019 restructuring were incurred primarily during the first quarter of 2019 and amounted to approximately \$1.8 million for severance and other benefit costs related to the restructuring.

On October 10, 2019, we announced another corporate restructuring, or the October restructuring, to extend our cash runway and ensure long-term sustainability. As part of the October restructuring, we will reduce our workforce by approximately 70 positions across all functions through the second quarter of 2020. Seventy percent of these eliminations occurred by December 31, 2019, and the remainder will occur in 2020. In addition, we are initiating activities to reduce our corporate facilities footprint by either subletting a significant portion of our current leased space or subletting our current building and relocating to smaller facilities. Furthermore, we have been reducing our focus on research activities and, as such, have decided to sell the majority of the lab equipment we own through an auction that will be conducted by a third-party vendor during the second quarter of 2020. We expect the October restructuring to be completed by the end of 2020. During the year ended December 31, 2019, we incurred approximately \$2.3 million for severance, other termination costs and employee retention costs related to the research and development October restructuring.

The process to obtain marketing approval of a drug candidate, including preclinical and clinical development and the development of manufacturing processes, is costly and time-consuming. We or our partners may never succeed in achieving marketing approval for any of our drug candidates. Numerous factors may affect the probability of success for each drug candidate, including preclinical and clinical results, competition, manufacturing capability and commercial viability.

The successful development of our drug candidates is highly uncertain and may not result in products that are approved for marketing by the FDA or any comparable foreign regulatory authority. The costs and duration of the processes necessary to achieve marketing approval for each drug candidate can vary significantly and are difficult to predict. Given the uncertainty associated with clinical trial patient enrollment and the risks inherent in the development process, estimating the duration and completion costs of current or future clinical trials of our drug candidates or if, or to what extent, we will generate revenues from the commercialization and sale of any of our approved drug candidates is difficult and uncertain. We anticipate we will make determinations as to which programs to pursue and how much funding to direct to each program on an ongoing basis in response to the outcome of research, preclinical and clinical activities with respect to each drug candidate, as well as ongoing assessments as to each drug candidate's commercial potential. We will need to raise additional capital and may seek to enter into additional collaborations in the future to advance and complete the development and commercialization of our current and future drug candidates.

General and Administrative

General and administrative expenses consist primarily of salaries and related benefits, including associated stock-based compensation, related to our executive, finance, legal, business development, human resource and support functions. Other general and administrative expenses include allocated facility-related costs not otherwise included in research and development expenses, travel expenses and professional fees for auditing and tax and legal services, including intellectual property-related legal services.

Our general and administrative expenses may increase in the event that we need to expand operations to support future potential increases in research and development activities. Also, we expect our intellectual property-related legal expenses, including those related to preparing, filing and prosecuting patent applications and maintaining patents, to increase as our intellectual property portfolio expands.

During the year ended December 31, 2019, we incurred approximately \$0.4 million in restructuring charges related to our October restructuring.

Interest Income

Interest income consists of interest income earned on our cash and cash equivalents and marketable securities.

Other (Expense) Income, Net

Other (expense) income, net consists primarily of the gain or loss on the disposal of property and equipment, if any.

Results of Operations

Comparison for the Years Ended December 31, 2019 and 2018:

(in millions)	Year Ended December 31,	
	2019	2018
Collaboration and license revenue	\$ 14.9	\$ 49.9
Operating expenses:		
Research and development	114.1	156.3
General and administrative	42.7	39.7
Total operating expenses	156.8	196.0
Interest income	4.7	5.8
Other expense, net	—	(0.1)
Loss before income tax	(137.2)	(140.4)
Income tax benefit (provision)	—	—
Net loss	\$ (137.2)	\$ (140.4)

Collaboration and License Revenue

Collaboration and license revenue decreased by \$35 million, or 70%, to \$14.9 million for the year ended December 31, 2019, from \$49.9 million for the year ended December 31, 2018. This decrease was primarily due to a \$25.0 million decrease in revenue recognized as compared to the year ended December 31, 2018 related to our cabiralizumab collaboration agreement with BMS for the achievement of the developmental milestone for the dosing of the first patient in BMS's Phase 2 clinical trial of cabiralizumab in combination with *Opdivo*, with and without chemotherapy, as a treatment for patients with second-line pancreatic cancer, a \$2.1 million decrease from progress made towards our performance obligation under our original collaboration agreement with BMS, a \$4.7 million decrease as we completed the research term of our immuno-oncology research collaboration with BMS in March 2019, a \$2.2 million decrease in research and development funding from our original collaboration agreement with BMS as our Phase 1a/1b combination trial completed enrollment in 2018, a \$0.7 million decrease in collaboration and license revenue from our collaboration with Zai Lab and a \$0.3 million decrease in target evaluation and selection fees from our fibrosis and CNS collaboration with UCB.

Research and Development

Our research and development expenses decreased by \$42.3 million, or 27%, to \$114.1 million for the year ended December 31, 2019 from \$156.4 million for the year ended December 31, 2018. This decrease was due to a \$16.0 million decrease in compensation costs due to the January 2019 restructuring, a \$11.9 million decrease in milestone payments triggered by the dosing of the first patient in our Phase 3 FIGHT trial and the dosing of the first patient dosing in the Phase 1a portion of our Phase 1a/1b clinical trial of FPA150, a \$8.8 million decrease in companion diagnostic expenses related to our bemarituzumab development program, a \$6.9 million decrease in costs related to our preclinical programs, a \$2.6 million decrease related to reduction of the use of temporary resources, a \$2.1 million decrease in allocated overhead facility and information technology related expenses, and a \$1.4 million decrease in other clinical services expenses and other research and development expenses. The decreases were offset by a \$2.3 million increase in bioanalytics and specialty laboratories expenses primarily to advance our bemarituzumab program, a \$3.1 million increase in clinical trial expenses to advance our bemarituzumab and FPA150 programs, and a \$2.0 million charge for the impairment of lab equipment.

General and Administrative

Our general and administrative expenses increased by \$3.0 million, or 8%, to \$42.7 million for the year ended December 31, 2019 from \$39.7 million for the year ended December 31, 2018. This increase was primarily due to a \$2.1 million increase in allocated overhead facility and information technology related expenses, a \$2.1 million increase in compensation costs, and a \$1.2 million increase in professional services fees, insurance costs, and other general and administrative costs, offset by a \$2.4 million decrease in expenses related to reduction of the use of temporary resources.

Comparison of the Years Ended December 31, 2018 and 2017

(in millions)	Year Ended December 31,	
	2018	2017
Collaboration and license revenue	\$ 49.9	\$ 39.5
Operating expenses:		
Research and development	156.3	150.9
General and administrative	39.7	40.0
Total operating expenses	196.0	190.9
Interest income	5.8	3.0
Other expense, net	(0.1)	(0.1)
Loss before income tax	(140.4)	(148.5)
Income tax (provision) benefit	—	(1.7)
Net loss	<u>\$ (140.4)</u>	<u>\$ (150.2)</u>

Collaboration and License Revenue

Collaboration and license revenue increased by \$10.4 million, or 26%, to \$49.9 million for the year ended December 31, 2018 from \$39.5 million for the year ended December 31, 2017. This increase was primarily due to \$25.0 million of revenue recognized under our cabiralizumab collaboration agreement with BMS for the achievement of the developmental milestone for the dosing of the first patient in BMS's Phase 2 clinical trial of cabiralizumab in combination with *Opdivo*, with and without chemotherapy, as a treatment for patients with second-line pancreatic cancer, as well as an increase of \$5.1 million of collaboration and license revenue from our collaboration with Zai Lab. This increase was offset by a \$10.3 million decrease in research and development funding from our original collaboration agreement with BMS as our Phase 1a/1b combination trial completed enrollment, a \$5.0 million decrease related to a 2017 developmental contingent payment from our immuno-oncology research collaboration with BMS, a \$3.0 million decrease from the fibrosis and CNS collaboration with UCB due to the completion of the performance obligation under the fibrosis and CNS collaboration, a \$0.9 million decrease from our immuno-oncology research collaboration with BMS and a \$0.5 million decrease in revenue from the respiratory diseases collaboration with GSK.

Research and Development

Our research and development expenses increased by \$5.4 million, or 3.6%, to \$156.3 million for the year ended December 31, 2018 from \$150.9 million for the year ended December 31, 2017. This increase was due to \$10.4 million in milestone payments associated with the first patient dosed in our Phase 3 FIGHT trial, a \$4.4 million increase in the cost to develop companion diagnostics for use in our bemarituzumab development program, a \$3.0 million increase in facility and depreciation costs, a \$2.6 million increase in clinical trial expenses, a \$1.9 million increase in expenses related to temporary resources and a \$1.5 million increase in laboratory supplies and other laboratory costs. These increases were offset by a \$10.6 million decrease in manufacturing costs to advance our FPA150 and FPT155 programs and the FPA154 program, which we terminated in 2017, a \$7.4 million decrease in preclinical expense to advance FPA150 towards clinical development and for preclinical expense, including licensing fees associated with FPA154 and a \$0.3 million decrease in employee compensation.

General and Administrative

Our general and administrative expenses decreased by \$0.3 million, or 0.7%, to \$39.7 million in 2018 from \$40.0 million in 2017. This decrease was primarily due to a \$2.7 million decrease in compensation costs and a \$0.5 million decrease in facilities expense related to our corporate office and laboratory facility, which was offset by increases of \$2.4 million in expense related to temporary resources and \$0.6 million in other miscellaneous costs.

Income Tax Benefit (Provision)

We recognized a tax expense of \$1.7 million in 2017 related to deficiency interest based on the Internal Revenue Service reducing our tentative net operating loss carryback refund claim filed in March 2017.

Liquidity and Capital Resources

As of December 31, 2019, we had \$156.4 million in cash, cash equivalents and marketable securities invested in a money market fund, U.S. Treasury securities and commercial paper with maturities of 6 months or less.

In January 2018, we closed on a public offering of 5,897,435 shares of our common stock, which included 769,230 shares sold upon the underwriters' full exercise of their option to purchase additional shares, resulting in aggregate gross proceeds of \$115.0 million, before deducting underwriting discounts and commissions and estimated offering expenses payable by us, and net proceeds of approximately \$107.6 million after deducting these amounts.

On November 6, 2018, we filed a shelf registration on Form S-3 with the SEC for the issuance and sale of up to an aggregate of \$250.0 million in shares of our common stock.

In addition to our existing cash and cash equivalents, we are eligible to receive research and development funding and to earn milestone and other contingent payments for the achievement of defined collaboration objectives and certain nonclinical, clinical, regulatory and sales-based events and royalty payments under our collaboration agreements. Our ability to earn these milestone and contingent payments and the timing of these milestones is primarily dependent upon the outcome of our collaborators' and licensees' research and development activities and is uncertain at this time. Our rights to payment under our collaboration and license agreements are our only committed external sources of funds.

Funding Requirements

Our primary uses of capital are, and we expect will continue to be, compensation and related expenses, third-party clinical and preclinical research and development services, including clinical trial, manufacturing, laboratory and related supplies, legal, patent and other regulatory expenses and general overhead costs. We believe our use of CROs and CMOs provides us with flexibility in managing our spending and limits our cost commitments at any point in time.

Because our product candidates are in various stages of clinical and preclinical development and the outcome of these efforts is uncertain, we cannot estimate the actual amounts necessary to successfully complete the development and commercialization of our product candidates or whether, or when, we may achieve profitability. Until such time, if ever, that we can generate substantial product revenues, we expect to finance our cash needs primarily through equity financings and collaboration and licensing arrangements. Except for any obligations of our collaborators to reimburse us for research and development expenses or to make milestone or royalty payments under our agreements with them, we will not have any committed external sources of liquidity. To the extent that we raise additional capital through the future sale of equity or debt, the ownership interests of our stockholders will be diluted, and the terms of these securities may include liquidation or other preferences that adversely affect the rights of our existing stockholders. If we raise additional funds through collaboration or licensing arrangements in the future, we may have to relinquish valuable rights to our technologies, future revenue streams or product candidates or grant licenses on terms that may not be favorable to us. If we are unable to raise additional funds through equity or debt financings when needed, we may be required to delay, limit, reduce or terminate our product development or future commercialization efforts or grant rights to develop and market product candidates that we would otherwise prefer to develop and market ourselves.

Based on our research and development plans and our timing expectations related to the progress of our programs, we expect that our existing cash and cash equivalents and marketable securities as of December 31, 2019 will enable us to fund our operating expenses and capital expenditure requirements for at least the next twelve months.

Cash Flows

The following is a summary of cash flows for the years ended December 31, 2019, 2018 and 2017:

(in millions)	Year Ended December 31,		
	2019	2018	2017
Net cash used in operating activities	\$ (113.9)	\$ (122.5)	\$ (112.2)
Net cash provided by (used in) investing activities	126.2	(2.5)	174.2
Net cash (used in) provided by financing activities	(0.5)	109.2	(9.9)

Net Cash Used in Operating Activities

Net cash used in operating activities was \$113.9 million during the year ended December 31, 2019. The net loss of \$137.2 million was offset by non-cash charges of \$22.8 million for stock-based compensation expense, a \$2.3 million charge for operating leases, a \$2.0 million impairment charge for laboratory equipment and \$5.3 million for depreciation of property and equipment, partially offset by \$2.1 million of premium on marketable securities. Changes to working capital were \$6.9 million. Changes to working capital include a reduction of deferred revenue recognized of \$5.5 million. An additional \$5.7 million decrease in other accrued liabilities consisted of reductions in accrued clinical costs of \$2.3 million, accrued trade payables of \$1.5 million and other research accruals of \$1.3 million as well as a reduction in manufacturing of \$0.6 million..

Net cash used in operating activities was \$122.5 million during the year ended December 31, 2018 . The net loss of \$140.4 million was offset by non-cash charges of \$29.5 million for stock-based compensation expense and \$3.3 million for amortization of property and equipment and of premium on marketable securities. The net change in operating assets and liabilities was \$14.8 million.

Net cash used in operating activities was \$112.2 million during the year ended December 31, 2017. The net loss of \$150.2 million was offset by non-cash charges of \$34.2 million for stock-based compensation expense, \$1.6 million for amortization of premium on marketable securities and \$2.5 million for depreciation and amortization. The net change in operating assets and liabilities was \$0.4 million.

Net Cash Provided by (Used in) Investing Activities

Net cash provided by investing activities was \$126.2 million for the year ended December 31, 2019. Net cash provided by investing activities primarily relates to maturities of marketable securities of \$127.9 million, net of purchases, during the year ended December 31, 2019. The increase in maturities, net of purchases, was partially offset by the purchase of property and equipment for \$1.7 million.

Net cash used in investing activities was \$2.5 million for the year ended December 31, 2018. Net cash used in investing activities primarily relates to payments for the purchases of property and equipment of \$11.3 million during the year ended December 31, 2018. The property and equipment purchases consisted primarily of charges related to tenant improvement to our corporate office and laboratory facility and purchases of laboratory equipment to support our research and development activities. This was offset by the maturities of marketable securities exceeding the purchase of such marketable securities by \$8.8 million.

Net cash provided by investing activities was \$174.2 million for the year ended December 31, 2017. Net cash provided by investing activities for the period presented primarily relates to maturities of marketable securities exceeding purchase of such marketable securities by \$179.1 million. Payments for the purchases of property and equipment was \$4.9 million during the year ended December 31, 2017. The property and equipment purchases consisted primarily of purchases of laboratory equipment to support our research and development activities.

Net Cash (Used in) Provided by Financing Activities

Net cash used in financing activities was \$0.5 million during the year ended December 31, 2019, which consisted primarily of \$1.1 million received from employee stock option exercises, which was offset by \$1.6 million paid to satisfy tax withholding obligations from the net share issuance of restricted stock awards.

Net cash provided by financing activities was \$109.2 million during the year ended December 31, 2018, which consisted primarily of \$107.6 million in net proceeds from the public offering of our common stock in January 2018 and \$4.0 million received from employee stock option exercises. This was offset by \$2.4 million paid to satisfy tax withholding obligations from the net share issuance of restricted stock awards.

Net cash used in financing activities was \$9.9 million during the year ended December 31, 2017, primarily related to \$13.9 million paid to satisfy tax withholding obligations from the net share issuance of restricted stock awards offset by \$4.0 million received from employee stock option exercises and employee stock purchases in 2017.

Contractual Obligations and Contingent Liabilities

The following table summarizes our significant contractual obligations as of December 31, 2019:

(in millions) Contractual Obligations	Total	Less Than 1 Year	1 to 3 Years	3 to 5 Years	More Than 5 Years
Operating leases (1)	\$ 66,341	\$ 7,589	\$ 15,522	\$ 16,405	\$ 26,825
Total obligations	\$ 66,341	\$ 7,589	\$ 15,522	\$ 16,405	\$ 26,825

(1) Represents future minimum lease payments under non-cancelable operating leases in effect as of December 31, 2019 for our corporate office and laboratory facility in South San Francisco, California and sequencing instruments to support our bemarituzumab program. The minimum lease payments for our corporate office and laboratory facility above do not include common area maintenance charges or real estate taxes. The minimum lease payments for the sequencing instruments do not include installation and initiation.

The contractual obligations table above does not include any potential future milestone payments to third parties as part of certain collaboration and in-licensing agreements, which could total up to \$145.5 million, or any potential future royalty payments we may be required to make under our license agreements, including with:

- Galaxy, under which we were granted an exclusive worldwide license for the development, manufacturing and commercialization of anti-FGFR2b antibodies;
- BioWa-Lonza, under which we were granted a non-exclusive license to use their Potelligent® CHOK1SV technology, including the CHOK1SV cell line, and a non-exclusive license to related know-how and patents; and
- Adimab, LLC, or Adimab, under which Adimab conducted programs to discover and evaluate antibodies directed against targets of interest to us and under which we licensed certain of these antibodies.

Payments under these agreements are not included in the above contractual obligations table due to the uncertainty of the occurrence of the events requiring payment under these agreements, including our share of potential future milestone and royalty payments. These payments generally become due and payable only upon achievement of certain clinical development, regulatory or commercial milestones.

Off-Balance Sheet Arrangements

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

Item 7A. Quantitative and Qualitative Disclosures About Market Risk.

The market risk inherent in our financial instruments and in our financial position reflects the potential losses arising from adverse changes in interest rates and concentration of credit risk. As of December 31, 2019, we had cash and cash equivalents and marketable securities of \$156.4 million, consisting of bank deposits, interest-bearing money market accounts, a U.S. Treasury money market fund, U.S. Treasury securities, agency bonds, corporate bonds and commercial paper. Our primary exposure to market risk is interest rate sensitivity, which is affected by changes in the general level of U.S. interest rates. Our cash equivalents and marketable securities have an average maturity of approximately four months and the longest maturity is ten months. Due to the short-term maturities of our cash equivalents and marketable securities and the low risk profile of our marketable securities, an immediate 100 basis point change in interest rates would not have a material effect on the fair market value of our cash equivalents and marketable securities. We can hold our marketable securities until maturity, and we therefore do not expect a change in market interest rates to affect our operating results or cash flows to any significant degree.

Item 8. Financial Statements and Supplementary Data.

The financial statements required by this item are set forth beginning on page F-1 of this Annual Report.

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*

As of December 31, 2019, management, with the participation of our disclosure committee, performed an evaluation of the effectiveness of the design and operation of our disclosure controls and procedures as defined in Rules 13a-15(e) and 15d-15(e) of the Exchange Act. Our disclosure controls and procedures are designed to ensure that information required to be disclosed in the reports we file or submit under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms, and that such information is accumulated and communicated to our management, including the Chief Executive Officer and the Chief Financial Officer, to allow timely decisions regarding required disclosures.

Any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving the desired control objective. Based on this evaluation, our Chief Executive Officer and Chief Financial Officer concluded that, as of December 31, 2019, the design and operation of our disclosure controls and procedures were effective.

Management's Annual Report on Internal Control over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting, as such term is defined in Rules 13a-15(f) and 15d-15(f) of the Exchange Act. Our 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 U.S. generally accepted accounting principles, or GAAP. Our internal control over financial reporting includes those policies and procedures that: (i) pertain to the maintenance of records that in reasonable detail accurately and fairly reflect the transactions and dispositions of our assets, (ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with GAAP, and that our receipts and expenditures are being made only in accordance with authorizations of our management and directors, and (iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of our assets that could have a material effect on our 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.

Under the supervision and with the participation of our management, including our Chief Executive Officer and Chief Financial Officer, we conducted an evaluation of the effectiveness of our internal control over financial reporting as of December 31, 2019 based on the criteria established in Internal Control—Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 Framework), or COSO. Based on our evaluation under the criteria set forth in Internal Control—Integrated Framework issued by COSO, our management concluded our internal control over financial reporting was effective as of December 31, 2019.

Our independent registered public accounting firm, Ernst & Young LLP, audited the effectiveness of our internal control over financial reporting. Ernst & Young LLP has issued their attestation report which is included herein.

Changes in Internal Control over Financial Reporting.

There have been no changes in our internal control over financial reporting during our most recent fiscal quarter that materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

To the Stockholders and the Board of Directors of Five Prime Therapeutics, Inc.

Opinion on Internal Control over Financial Reporting

We have audited Five Prime Therapeutics, Inc.'s internal control over financial reporting as of December 31, 2019, 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, Five Prime Therapeutics, Inc. (the Company) maintained, in all material respects, effective internal control over financial reporting as of December 31, 2019, 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 the Company as of December 31, 2019 and 2018, and the related statements of operations, comprehensive loss, stockholders' equity and cash flows for each of the three years in the period ended December 31, 2019 and the related notes, and our report dated February 27, 2020 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
San Francisco, California
February 27, 2020

Item 9B. Other Information.

None.

Item 10. Directors, Executive Officers and Corporate Governance.

The information required by this item is incorporated by reference to the information set forth in the sections titled “Information About Our Board of Directors” and “Information About Our Executive Officers Who Are Not Directors,” “Corporate Governance,” “Corporate Governance – Code of Business Conduct and Ethics,” “Delinquent Section 16(a) Reports,” “Corporate Governance – Committees of the Board of Directors – Nominating and Corporate Governance Committee,” “Corporate Governance – Committees of the Board of Directors – Audit Committee” and “Corporate Governance – Committees of the Board of Directors – Compensation Committee” in our Proxy Statement.

Item 11. Executive Compensation.

The information required by this item is incorporated by reference to the information set forth in the sections titled “Executive Compensation” and “Director Compensation” in our Proxy Statement.

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

The information required by this item is incorporated by reference to the information set forth in the sections titled “Securities Authorized For Issuance Under Equity Compensation Plans” and “Security Ownership of Certain Beneficial Owners and Management” in our Proxy Statement.

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

The information required by this item is incorporated by reference to the information set forth in the sections titled “Corporate Governance – Board of Directors Independence” and “Transactions With Related Persons” in our Proxy Statement.

Item 14. Principal Accountant Fees and Services.

The information required by this item is incorporated by reference to the information set forth in the sections titled “Independent Registered Public Accounting Firm Fees and Services” and “Pre-Approval Policies and Procedures” in our Proxy Statement.

Item 15. Exhibits and Financial Statement Schedules.

The financial statements schedules and exhibits filed as part of this Annual Report on Form 10-K are as follows:

(a)(1) Financial Statements

Reference is made to the financial statements included in Item 8 of Part II hereof.

(a)(2) Financial Statement Schedules

All other schedules are omitted because they are not required or the required information is included in the financial statements or notes thereto.

(a)(3) Exhibits

The exhibits required to be filed as part of this report are listed in the Exhibit List attached hereto and are incorporated herein by reference.

Exhibit No.	Description
3.1	<u>Amended and Restated Certificate of Incorporation (incorporated herein by reference to Exhibit 3.1 to the company's Current Report on Form 8-K (File No. 001-36070), filed with the SEC on September 23, 2013).</u>
3.2	<u>Amended and Restated Bylaws (incorporated herein by reference to Exhibit 3.4 to the company's Registration Statement on Form S-1 (File No. 333-190194), filed with the SEC on July 26, 2013).</u>
4.1	<u>Specimen common stock certificate (incorporated herein by reference to Exhibit 4.1 to the company's Amendment No. 3 to the Registration Statement on Form S-1 (File No. 333-190194), filed with the SEC on September 4, 2013).</u>
4.2	<u>Description of the Registrant's Securities Registered Pursuant to Section 12 of the Securities Exchange Act of 1934.</u>
10.1+	<u>2002 Equity Incentive Plan (incorporated herein by reference to Exhibit 10.2 to the company's Registration Statement on Form S-1 (File No. 333-190194), filed with the SEC on July 26, 2013).</u>
10.2+	<u>Form of Option Agreement under 2002 Equity Incentive Plan (incorporated herein by reference to Exhibit 10.3 to the company's Registration Statement on Form S-1 (File No. 333-190194), filed with the SEC on July 26, 2013).</u>
10.3+	<u>2010 Equity Incentive Plan (incorporated herein by reference to Exhibit 10.4 to the company's Registration Statement on Form S-1 (File No. 333-190194), filed with the SEC on July 26, 2013).</u>
10.4+	<u>Form of Option Agreement under 2010 Equity Incentive Plan (incorporated herein by reference to Exhibit 10.5 to the company's Registration Statement on Form S-1 (File No. 333-190194), filed with the SEC on July 26, 2013).</u>
10.5+	<u>2013 Omnibus Incentive Plan (incorporated herein by reference to Exhibit 4.8 to the company's Registration Statement on Form S-8 (File No. 333-191700), filed with the SEC on October 11, 2013).</u>
10.6+	<u>Amendment No. 1 to Omnibus Incentive Plan (incorporated herein by reference to Exhibit 10.4 to the company's Quarterly Report on Form 10-Q (File No. 001-36070), filed with the SEC on November 6, 2017).</u>
10.7+	<u>Form of Incentive Stock Option Agreement under 2013 Omnibus Incentive Plan (incorporated herein by reference to Exhibit 10.7 to the company's Registration Statement on Form S-1 (File No. 333-190194), filed with the SEC on July 26, 2013).</u>

Exhibit No.	Description
10.8+	<u>Form of Non-Qualified Option Agreement under 2013 Omnibus Incentive Plan (incorporated herein by reference to Exhibit 10.8 to the company's Registration Statement on Form S-1 (File No. 333-190194), filed with the SEC on July 26, 2013).</u>
10.9+	<u>Form of Restricted Stock Agreement under 2013 Omnibus Incentive Plan (incorporated herein by reference to Exhibit 10.9 to the company's Registration Statement on Form S-1 (File No. 333-193491), filed with the SEC on January 22, 2014).</u>
10.10+	<u>2013 Employee Stock Purchase Plan (incorporated herein by reference to Exhibit 4.11 to the company's Registration Statement on Form S-8 (File No. 333-191700), filed with the SEC on October 11, 2013).</u>
10.11+	<u>Offer Letter Agreement by and between the company and Aron M. Knickerbocker, dated as of October 18, 2017 (incorporated herein by reference to Exhibit 10.2 to the company's Quarterly Report on Form 10-Q (File No. 001-36070), filed with the SEC on November 6, 2017).</u>
10.12+	<u>Offer Letter Agreement by and between the company and Francis Sarena, dated as of December 2, 2010 (incorporated herein by reference to Exhibit 10.10 to the company's Registration Statement on Form S-1 (File No. 333-190194), filed with the SEC on July 26, 2013).</u>
10.13+	<u>Offer Letter Agreement by and between the company and David V. Smith, dated as of October 24, 2018 (incorporated herein by reference to Exhibit 10.15 to the company's Annual Report on Form 10-K (File No. 001-36070), filed with the SEC on February 26, 2019).</u>
10.14+	<u>Offer Letter Agreement by and between the company and Helen Collins, dated as of May 12, 2016 (incorporated herein by reference to Exhibit 10.18 to the company's Annual Report on Form 10-K (File No. 001-36070), filed with the SEC on February 27, 2018).</u>
10.15+	<u>Offer Letter Agreement by and between the company and William R. Ringo, dated as of October 4, 2019 (incorporated herein by reference to Exhibit 10.4 to the company's Quarterly Report on Form 10-Q (File No. 001-36070), filed with the SEC on November 6, 2019).</u>
10.16+	<u>Amendment to Offer Letter Agreement by and between the company and William R. Ringo, dated as of October 8, 2019 (incorporated herein by reference to Exhibit 10.5 to the company's Quarterly Report on Form 10-Q (File No. 001-36070), filed with the SEC on November 6, 2019).</u>
10.17+	<u>Amendment to Offer Letter Agreement by and between the company and William R. Ringo, dated as of December 20, 2019.</u>
10.18+	<u>Separation Agreement by and between the company and Aron M. Knickerbocker, dated as of September 19, 2019 (incorporated herein by reference to Exhibit 10.3 to the company's Quarterly Report on Form 10-Q (File No. 001-36070), filed with the SEC on November 6, 2019).</u>
10.19+	<u>Executive Severance Benefits Agreement by and between the company and Francis Sarena, dated as of February 18, 2011 (incorporated herein by reference to Exhibit 10.14 to the company's Registration Statement on Form S-1 (File No. 333-190194), filed with the SEC on July 26, 2013).</u>
10.20+	<u>Amendment No. 1 to the Executive Severance Benefits Agreement by and between the company and Francis Sarena, effective May 8, 2013 (incorporated herein by reference to Exhibit 10.15 to the company's Registration Statement on Form S-1 (File No. 333-190194), filed with the SEC on July 26, 2013).</u>
10.21+	<u>Letter Agreement by and between the company and Francis Sarena, dated as of December 12, 2019.</u>
10.22+	<u>Executive Severance Benefits Agreement by and between the company and David V. Smith, dated as of November 26, 2018 (incorporated herein by reference to Exhibit 10.27 to the company's Annual Report on Form 10-K (File No. 001-36070), filed with the SEC on February 26, 2019).</u>
10.23+	<u>Letter Agreement by and between the company and David V. Smith, dated as of December 12, 2019.</u>

Exhibit No.	Description
10.24+ ††	<u>Retention Letter Agreement by and between the company and David V. Smith, dated as of January 15, 2020.</u>
10.25+ ††	<u>Retention Letter Agreement by and between the company and Helen Collins, dated as of January 15, 2020.</u>
10.26+ ††	<u>Retention Letter Agreement by and between the company and Francis Sarena, dated as of January 15, 2020.</u>
10.27+	<u>Executive Severance Benefits Agreement by and between the company and Helen Collins, dated as of March 20, 2017 (incorporated herein by reference to Exhibit 10.30 to the company's Annual Report on Form 10-K (File No. 001-36070), filed with the SEC on February 27, 2018).</u>
10.28+	<u>Letter Agreement by and between the company and Helen Collins, dated as of December 12, 2019.</u>
10.29	<u>Consulting Agreement by and between the company and Lewis T. Williams, effective as of April 1, 2019 (incorporated herein by reference to Exhibit 10.1 to the company's Quarterly Report on Form 10-Q (File No. 001-36070), filed with the SEC on May 9, 2019).</u>
10.30+	<u>Form of Retention Award Agreement (incorporated herein by reference to Exhibit 10.1 to the company's Current Report on Form 8-K (File No. 001-36070), filed with the SEC on May 4, 2015).</u>
10.31+	<u>Form of Restricted Stock Agreement (incorporated herein by reference to Exhibit 10.27 to the company's Annual Report on Form 10-K (File No. 001-36070), filed with the SEC on February 24, 2017).</u>
10.32+	<u>Annual Bonus Plan, effective January 1, 2018 (incorporated herein by reference to Exhibit 10.34 to the company's Annual Report on Form 10-K (File No. 001-36070), filed with the SEC on February 27, 2018).</u>
10.33+	<u>Executive Severance Benefit Plan and Summary Plan Description, effective November 20, 2019.</u>
10.34+	<u>Non-Employee Director Compensation Policy, effective November 21, 2019.</u>
10.35+	<u>Form of Indemnification Agreement by and between the company and each of its directors and officers (incorporated herein by reference to Exhibit 10.16 to the company's Amendment No. 1 to the Registration Statement on Form S-1 (File No. 333-190194), filed with the SEC on August 16, 2013).</u>
10.36	<u>Lease by and between the company and HCP Oyster Point III LLC, dated as of December 12, 2016 (incorporated herein by reference to Exhibit 10.34 to the company's Annual Report on Form 10-K (File No. 001-36070), filed with the SEC on February 24, 2017).</u>
10.37†	<u>Exclusive License Agreement by and between the company and Galaxy Biotech, LLC, dated as of December 22, 2011 (incorporated herein by reference to Exhibit 10.23 to the company's Amendment No. 1 to the Registration Statement on Form S-1 (File No. 333-190194), filed with the SEC on August 16, 2013).</u>
10.38†	<u>Amendment to the Exclusive License Agreement by and between the company and Galaxy Biotech, LLC, dated as of May 16, 2016 (incorporated herein by reference to Exhibit 10.1 to the company's quarterly report on Form 10-Q (File No. 001-36070), filed with the SEC on August 5, 2016).</u>
10.39†	<u>Amendment No. 2 to the Exclusive License Agreement by and between the company and Galaxy Biotech, LLC, dated as of May 30, 2017 (incorporated herein by reference to Exhibit 10.39 to the company's Annual Report on Form 10-K (File No. 001-36070), filed with the SEC on February 27, 2018).</u>
10.40†	<u>Non-Exclusive License Agreement by and among the company, BioWa, Inc. and Lonza Sales AG, dated as of February 6, 2012 (incorporated herein by reference to Exhibit 10.30 to the company's Amendment No. 1 to the Registration Statement on Form S-1 (File No. 333-190194), filed with the SEC on August 16, 2013).</u>

Exhibit No.	Description
10.41†	<u>Amendment No. 1 to the Non-Exclusive License Agreement by and among the company, BioWa, Inc. and Lonza Sales AG, dated as of June 6, 2013 (incorporated herein by reference to Exhibit 10.42 to the company's Annual Report on Form 10-K (File No. 001-36070), filed with the SEC on February 26, 2019).</u>
10.42†	<u>Amendment No. 2 to the Non-Exclusive License Agreement by and among the company, BioWa, Inc. and Lonza Sales AG, dated as of April 27, 2018 (incorporated herein by reference to Exhibit 10.43 to the company's Annual Report on Form 10-K (File No. 001-36070), filed with the SEC on February 26, 2019).</u>
10.43††	<u>Amendment No. 3 to the Non-Exclusive License Agreement by and among the company, BioWa, Inc. and Lonza Sales AG, dated as of July 17, 2019 (incorporated herein by reference to Exhibit 10.1 to the company's Quarterly Report on Form 10-Q (File No. 001-36070), filed with the SEC on November 6, 2019).</u>
10.44††	<u>Amendment No. 4 to the Non-Exclusive License Agreement by and among the company, BioWa, Inc. and Lonza Sales AG, dated as of August 22, 2019 (incorporated herein by reference to Exhibit 10.2 to the company's Quarterly Report on Form 10-Q (File No. 001-36070), filed with the SEC on November 6, 2019).</u>
10.45†	<u>Research Collaboration and License Agreement by and between the company and Bristol-Myers Squibb Company, dated as of March 14, 2014 (incorporated herein by reference to Exhibit 10.1 to Amendment No. 1 the company's Quarterly Report on Form 10-Q (File No. 001-36070), filed with the SEC on August 26, 2014).</u>
10.46†	<u>Amendment No. 1 to the Research Collaboration and License Agreement by and between the company and Bristol-Myers Squibb Company, dated as of January 21, 2016 (incorporated herein by reference to Exhibit 10.47 to the company's Annual Report on Form 10-K (File No. 001-36070), filed with the SEC on March 11, 2016).</u>
10.47†	<u>License and Collaboration Agreement by and between the company and Zai Lab (Shanghai) Co., Ltd., dated as of December 19, 2017 (incorporated herein by reference to Exhibit 10.44 to the company's Annual Report on Form 10-K (File No. 001-36070), filed with the SEC on February 27, 2018).</u>
10.48†	<u>Amendment No. 1 to the License and Collaboration Agreement by and between the company and Zai Lab (Shanghai) Co., Ltd., dated as of December 21, 2018 (incorporated herein by reference to Exhibit 10.48 to the company's Annual Report on Form 10-K (File No. 001-36070), filed with the SEC on February 26, 2019).</u>
21.1	<u>Subsidiaries of the company (incorporated herein by reference to Exhibit 21.1 to the company's Registration Statement on Form S-1 (File No. 333-190194), filed with the SEC on July 26, 2013).</u>
23.1*	<u>Consent of Independent Registered Public Accounting Firm.</u>
24.1	<u>Power of Attorney (included on the signature page to this Annual Report on Form 10-K).</u>
31.1*	<u>Certification of Principal Executive Officer pursuant to Rules 13a-14(a) and 15d-14(a).promulgated under the Securities Exchange Act of 1934, as amended.</u>
31.2*	<u>Certification of Principal Financial Officer pursuant to Rules 13a-14(a) and 15d-14(a).promulgated under the Securities Exchange Act of 1934, as amended.</u>
32.1*	<u>Certifications of Chief Executive Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.</u>
32.2*	<u>Certifications of Chief Financial Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.</u>
101.INS	Inline XBRL Instance Document.

Exhibit No.	Description
101.SCH	Inline XBRL Taxonomy Extension Schema Document.
101.CAL	Inline XBRL Taxonomy Extension Calculation Linkbase Document.
101.DEF	Inline XBRL Taxonomy Extension Definition Linkbase Document.
101.LAB	Inline XBRL Taxonomy Extension Labels Linkbase Document.
101.PRE	Inline XBRL Taxonomy Extension Presentation Linkbase Document.
104	Cover Page Interactive Data File (formatted as inline XBRL with applicable taxonomy extension information contained in Exhibit 101).
*	Furnished herewith and not deemed to be “filed” for purposes of Section 18 of the Securities Exchange Act of 1934, as amended, or the Exchange Act, and shall not be deemed to be incorporated by reference into any filing under the Securities Act of 1933, as amended, or the Exchange Act.
+	Indicates a management contract or compensatory plan.
†	Confidential treatment has been granted for certain portions of this exhibit. These portions have been omitted and filed separately with the SEC.
††	Portions of this exhibit (indicated by asterisks) have been omitted.

SIGNATURES

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

Five Prime Therapeutics, Inc.
(Registrant)

Date: February 27, 2020

/s/ William R. Ringo

William R. Ringo

Chief Executive Officer

(Principal Executive Officer)

Date: February 27, 2020

/s/ David V. Smith

David V. Smith

Executive Vice President and Chief Financial Officer

(Principal Financial Officer)

POWER OF ATTORNEY

Each person whose individual signature appears below hereby authorizes and appoints William R. Ringo and Francis W. Sarena, 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, as amended, this Annual Report on Form 10-K 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/ William R. Ringo William R. Ringo	Chief Executive Officer and Chairman of the Board (Principal Executive Officer)	February 27, 2020
/s/ David V. Smith David V. Smith	Executive Vice President and Chief Financial Officer (Principal Financial Officer)	February 27, 2020
/s/ Franklin M. Berger Franklin M. Berger	Director	February 27, 2020
/s/ Kapil Dhingra, M.B.B.S. Kapil Dhingra, M.B.B.S.	Director	February 27, 2020
/s/ Peder Jensen, M.D. Peder Jensen, M.D.	Director	February 27, 2020
/s/ Garry Nicholson Garry Nicholson	Director	February 27, 2020
/s/ Carol Schafer Carol Schafer	Director	February 27, 2020
/s/ Lori Lyons-Williams Lori Lyons-Williams	Director	February 27, 2020

FIVE PRIME THERAPEUTICS, INC.
FINANCIAL STATEMENTS
YEARS ENDED DECEMBER 31, 2019, 2018 AND 2017

Index

	PAGE
<u>Report of Independent Registered Public Accounting Firm</u>	F-2
Audited Financial Statements:	
<u>Balance Sheets</u>	F-3
<u>Statements of Operations</u>	F-4
<u>Statements of Comprehensive Loss</u>	F-5
<u>Statements of Stockholders' Equity</u>	F-6
<u>Statements of Cash Flows</u>	F-7
<u>Notes to Financial Statements</u>	F-8

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Stockholders and the Board of Directors of Five Prime Therapeutics, Inc.

Opinion on the Financial Statements

We have audited the accompanying balance sheets of Five Prime Therapeutics, Inc. (the “Company”) as of December 31, 2019 and 2018, the related statements of operations, comprehensive loss, stockholders’ equity and cash flows for each of the three years in the period ended December 31, 2019, 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, 2019 and 2018, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2019, 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, 2019, 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 February 27, 2020 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 of recognizing revenue as a result of the adoption of Accounting Standards Update (ASU) No. 2014-09, Revenue from Contracts with Customers (Topic 606), and the amendments in ASUs 2015-14, 2016-10 and 2016-12 effective January 1, 2018.

Adoption of ASU No. 2016-02

As discussed in Note 2 to the financial statements, the Company changed its method of accounting for leases in 2019 due to the adoption of Accounting Standards Update (ASU) No. 2016-02, Leases (Topic 842), and the related amendments effective January 1, 2019.

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 2003.
San Francisco, California
February 27, 2020

FIVE PRIME THERAPEUTICS, INC.

Balance Sheets

(In thousands, except share and per share amounts)

	December 31,	
	2019	2018
Assets		
Current assets:		
Cash and cash equivalents	\$ 55,800	\$ 43,953
Marketable securities	100,580	226,185
Receivables from collaborative partners	4,097	5,096
Prepaid and other current assets	6,243	13,334
Total current assets	166,720	288,568
Restricted cash	1,543	1,543
Property and equipment, net	22,534	28,718
Operating lease, right-of-use assets	30,934	—
Other long-term assets	2,411	2,705
Total assets	<u>\$ 224,142</u>	<u>\$ 321,534</u>
Liabilities and stockholders' equity		
Current liabilities:		
Accounts payable	\$ 1,184	\$ 1,972
Accrued personnel-related expenses	6,805	7,383
Other accrued liabilities	9,659	15,348
Operating lease obligations, current portion	4,080	—
Deferred revenue, current portion	1,296	1,428
Deferred rent, current portion	—	1,356
Total current liabilities	23,024	27,487
Deferred revenue, long-term portion	5,113	10,465
Operating lease obligations, long-term portion	45,532	—
Deferred rent, long-term portion	—	18,443
Commitments and contingencies (Note 11)		
Stockholders' equity:		
Common stock, \$0.001 par value; 100,000,000 shares authorized, 36,280,368 issued and 35,219,791 outstanding at December 31, 2019. 35,625,751 issued and 34,745,721 outstanding at December 31, 2018.	35	34
Preferred stock, \$0.001 par value, 10,000,000 shares authorized; no shares issued and outstanding	—	—
Additional paid-in capital	582,243	559,892
Accumulated other comprehensive gain (loss)	78	(106)
Accumulated deficit	(431,883)	(294,681)
Total stockholders' equity	150,473	265,139
Total liabilities and stockholders' equity	<u>\$ 224,142</u>	<u>\$ 321,534</u>

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

FIVE PRIME THERAPEUTICS, INC.

Statements of Operations

(In thousands, except per share amounts)

	Year Ended December 31,		
	2019	2018	2017
Collaboration and license revenue	\$ 14,874	\$ 49,868	\$ 39,508
Operating expenses:			
Research and development	114,063	156,352	150,908
General and administrative	42,749	39,671	40,002
Total operating expenses	156,812	196,023	190,910
Loss from operations	(141,938)	(146,155)	(151,402)
Interest income	4,740	5,792	2,978
Other loss, net	(4)	(84)	(94)
Loss before income tax	(137,202)	(140,447)	(148,518)
Income tax provision	—	—	(1,704)
Net loss	\$ (137,202)	\$ (140,447)	\$ (150,222)
Basic and diluted net loss per common share	\$ (3.92)	\$ (4.13)	\$ (5.38)
Weighted-average shares used to compute basic and diluted net loss per common share	34,970	33,976	27,945

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

FIVE PRIME THERAPEUTICS, INC.

Statements of Comprehensive Loss

(In thousands)

	Year Ended December 31,		
	2019	2018	2017
Net loss	\$ (137,202)	\$ (140,447)	\$ (150,222)
Other comprehensive gain (loss):			
Unrealized gain (loss) on marketable securities, net of tax	184	370	(437)
Comprehensive loss	<u>\$ (137,018)</u>	<u>\$ (140,077)</u>	<u>\$ (150,659)</u>

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

FIVE PRIME THERAPEUTICS, INC.

Statements of Stockholders' Equity
(In thousands, except share data)

	Common Stock		Additional Paid-In Capital	Accumulated Other Comprehensive Loss	Retained Earnings (Accumulated Deficit)	Total Stockholders' Equity
	Shares	Amount				
Balances at December 31, 2016	27,509,077	\$ 27	\$ 396,635	\$ (39)	\$ (5,048)	\$ 391,575
Issuance of common stock under equity incentive plans	992,556	1	4,021	—	—	4,022
Repurchase of shares to satisfy tax withholding obligations	(322,994)	—	(13,909)	—	—	(13,909)
Cumulative effect of adoption of ASU 2016-09	—	—	337	—	(337)	—
Stock-based compensation expense	—	—	34,173	—	—	34,173
Other comprehensive loss	—	—	—	(437)	—	(437)
Net loss	—	—	—	—	(150,222)	(150,222)
Balances at December 31, 2017	28,178,639	28	421,257	(476)	(155,607)	265,202
Issuance of common stock upon follow-on public offering	5,897,435	6	114,994	—	—	115,000
Issuance costs related to the follow-on public offering	—	—	(7,388)	—	—	(7,388)
Issuance of common stock under equity incentive plans	821,456	—	3,963	—	—	3,963
Repurchase of shares to satisfy tax withholding obligations	(151,809)	—	(2,402)	—	—	(2,402)
Effect of adoption of ASU 2014-09	—	—	—	—	1,373	1,373
Stock-based compensation expense	—	—	29,468	—	—	29,468
Other comprehensive gain	—	—	—	370	—	370
Net loss	—	—	—	—	(140,447)	(140,447)
Balances at December 31, 2018	34,745,721	34	559,892	(106)	(294,681)	265,139
Issuance of common stock under equity incentive plans	712,500	1	1,135	—	—	1,136
Repurchase of shares to satisfy tax withholding obligations	(238,430)	—	(1,599)	—	—	(1,599)
Stock-based compensation expense	—	—	22,815	—	—	22,815
Other comprehensive gain	—	—	—	184	—	184
Net loss	—	—	—	—	(137,202)	(137,202)
Balances at December 31, 2019	<u>35,219,791</u>	<u>\$ 35</u>	<u>\$ 582,243</u>	<u>\$ 78</u>	<u>\$ (431,883)</u>	<u>\$ 150,473</u>

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

FIVE PRIME THERAPEUTICS, INC.

Statements of Cash Flows
(In thousands)

	Year Ended December 31,		
	2019	2018	2017
Operating activities			
Net income loss	\$ (137,202)	\$ (140,447)	\$ (150,222)
Adjustments to reconcile net loss to net cash used in operating activities:			
Depreciation and amortization	5,313	5,020	2,513
Impairment of fixed assets	1,959	—	—
Loss on disposal of property and equipment	—	38	95
Stock-based compensation expense	22,815	29,468	34,173
Amortization of discounts and premiums on marketable securities	(2,163)	(1,750)	1,621
Non-cash operating lease expense	2,351	—	—
Changes in operating assets and liabilities:			
Receivables from collaborative partners	999	8,037	(9,174)
Income tax receivable	—	—	4,670
Prepaid, other current assets, and other long-term assets	6,800	(10,120)	4,235
Accounts payable	(72)	(265)	1,903
Accrued personnel-related expenses	(578)	227	(801)
Deferred revenue	(5,484)	(9,670)	(9,070)
Deferred rent	—	802	3,699
Other accrued liabilities, and other long-term liabilities	(5,699)	(3,854)	4,174
Operating lease liabilities	(2,905)	—	—
Net cash used in operating activities	(113,866)	(122,514)	(112,184)
Investing activities			
Purchases of marketable securities	(193,063)	(377,365)	(330,363)
Maturities of marketable securities	321,015	386,200	509,500
Proceeds from disposal of property and equipment	—	—	12
Purchases of property and equipment	(1,776)	(11,331)	(4,941)
Net cash provided by (used in) investing activities	126,176	(2,496)	174,208
Financing activities			
Proceeds from public offering of common stock, net of issuance costs	—	107,612	—
Proceeds from issuance of common stock under equity incentive plans	1,136	3,963	4,022
Repurchase of shares to satisfy tax withholding obligations	(1,599)	(2,402)	(13,909)
Net cash (used in) provided by financing activities	(463)	109,173	(9,887)
Net increase (decrease) in cash and cash equivalents and restricted cash	11,847	(15,837)	52,137
Cash, cash equivalents and restricted cash at beginning of period	45,496	61,333	9,196
Cash, cash equivalents and restricted cash at end of period	\$ 57,343	\$ 45,496	\$ 61,333
Supplemental disclosure			
Income taxes paid	\$ —	\$ —	\$ 1,704
Property and equipment purchases included in accrued liabilities	\$ 29	\$ 716	\$ 9,033
Tenant improvement by the landlord	\$ —	\$ —	\$ 14,324
Supplemental cash flow information			
Cash and cash equivalents at beginning of period	\$ 43,953	\$ 59,790	\$ 7,653
Restricted cash at beginning of period	1,543	1,543	1,543
Cash, cash equivalents and restricted cash at beginning of period	45,496	61,333	9,196
Cash and cash equivalents at end of period	\$ 55,800	\$ 43,953	\$ 59,790
Restricted cash at end of period	1,543	1,543	1,543
Cash, cash equivalents and restricted cash at end of period	57,343	45,496	61,333

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

FIVE PRIME THERAPEUTICS, INC.

Notes to Financial Statements

December 31, 2019

1. Business

Five Prime Therapeutics, Inc. (we, us, our, or the Company) is a clinical-stage biotechnology company focused on discovering and developing innovative protein therapeutics. We were incorporated in December 2001 in Delaware. Our operations are based in South San Francisco, California and we operate in one segment.

We have reclassified certain prior period amounts within our footnotes to conform to our current period presentation.

2. Summary of Significant Accounting Policies

Use of Estimates

The preparation of financial statements in conformity with GAAP requires management to make estimates and assumptions that affect the amounts reported in the financial statements and accompanying notes as of the date of the financial statements. The most significant estimates in the Company's financial statements include the recognition of revenue, stock-based compensation, completeness of clinical trial accruals 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. Actual results could differ materially from those estimates.

Cash and Cash Equivalents

We consider all highly liquid investments purchased with original maturities of three months or less at the date of purchase to be cash equivalents. Cash equivalents are recorded at face value, or cost, which approximates fair value.

Restricted Cash

Restricted cash consists of a certificate of deposit held by our bank as collateral for a standby letter of credit in the same notional amount by our landlord to secure our obligations under our corporate office and laboratory facility lease entered into in December 2016. The certificate of deposit earns interest at a rate of 1.37% per annum and its term is one month. We are required to maintain this restricted cash balance, the amount of which is subject to reduction starting on January 1, 2023, if certain conditions are met, for the duration of this lease. See Note 11 for further discussion on our lease.

Marketable Securities

All marketable securities have been classified as "available-for-sale" and are carried at fair value, based upon quoted market prices. We consider our available-for-sale portfolio as available for use in current operations. Accordingly, we classify certain investments as short-term marketable securities, even though the stated maturity date may be one year or more beyond the current balance sheet date. Unrealized gains and losses, net of any related tax effects, are excluded from earnings and are included in other comprehensive income or loss and reported as a separate component of stockholders' equity or deficit until realized. Realized gains and losses and declines in value judged to be other than temporary, if any, on available-for-sale securities are included in other income (expense), net. The cost of securities sold is based on the specific identification method. We adjust the amortized cost of securities for amortization of premiums and accretion of discounts to maturity. We include interest on short-term investments in interest income. In accordance with our investment policy, management invests to diversify credit risk and only invests in debt securities with high credit quality, including U.S. government securities.

We periodically evaluate whether declines in the fair value of our investments below their cost are other than temporary. The evaluation includes consideration of the cause of the impairment, including the creditworthiness of the security issuers, the number of securities in an unrealized loss position, the severity and duration of the unrealized losses, whether we have the intent to sell the securities, and whether it is more likely than not that we will be required to sell the securities before the recovery of their amortized cost basis. If we determine that the decline in fair value of an investment is below its accounting basis and this decline is other than temporary, we would reduce the carrying value of the security we hold and record a loss for the amount of such decline. We have not recorded any realized losses or declines in value judged to be other than temporary on our investments in debt securities.

Concentrations of Credit Risk

Financial instruments that potentially subject us to significant concentrations of credit risk consist primarily of cash and cash equivalents and marketable securities. Cash and cash equivalents and marketable securities are invested through banks and other financial institutions in the United States. Such deposits in the United States may be in excess of insured limits.

Fair Value of Financial Instruments

We determine the fair value of financial and nonfinancial assets and liabilities using the fair value hierarchy, which describes three levels of inputs that may be used to measure fair value, as follows:

Level 1—Quoted prices in active markets for identical assets or liabilities;

Level 2—Observable inputs other than Level 1 prices such as quoted prices for similar assets or liabilities, quoted prices for identical or similar assets or liabilities 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. For our marketable securities, we review trading activity and pricing as of the measurement date. When sufficient quoted pricing for identical securities is not available, we use market pricing and other observable market inputs for similar securities obtained from various third-party data providers. These inputs either represent quoted prices for similar assets in active markets or have been derived from observable market data; and

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.

We determine the fair value of Level 1 assets using quoted prices in active markets for identical assets. We review trading activity and pricing for Level 2 investments as of each measurement date. Level 2 inputs, obtained from various third-party data providers, represent quoted prices for similar assets in active markets and were derived from observable market data, or, if not directly observable, were derived from or corroborated by other observable market data. There were no transfers between Level 1 and Level 2 securities in the periods presented.

In certain cases where there is limited activity or less transparency around inputs to valuation, securities are classified as Level 3 within the valuation hierarchy. We do not have any assets or liabilities measured using Level 3 inputs as of December 31, 2019.

The following table summarizes our financial instruments that were measured at fair value on a recurring basis by level of input within the fair value hierarchy defined above (in thousands):

	December 31, 2019			
	Total	Basis of Fair Value Measurements		
		Level 1	Level 2	Level 3
Assets				
Money market funds	\$ 21,706	\$ 21,706		\$ —
U.S. Treasury securities	35,498	35,498		—
Agency bonds	48,834	48,834		—
Corporate bonds	1,800		1,800	—
Commercial paper	19,195		19,195	—
Certificate of deposit	1,543		1,543	—
Total	<u>\$ 128,576</u>	<u>\$ 106,038</u>	<u>\$ 22,538</u>	<u>\$ —</u>

	December 31, 2018			
	Total	Basis of Fair Value Measurements		
		Level 1	Level 2	Level 3
Assets				
Money market funds	\$ 40,849	\$ 40,849	\$ —	\$ —
U.S. Treasury securities	104,140	104,140	—	—
Agency bonds	53,999	53,999	—	—
Corporate bonds	11,893	—	11,893	—
Commercial paper	56,152	—	56,152	—
Certificate of deposit	1,543	—	1,543	—
Total	<u>\$ 268,576</u>	<u>\$ 198,988</u>	<u>\$ 69,588</u>	<u>\$ -</u>

Property and Equipment

Property and equipment are stated at cost and depreciated using the straight-line method over the estimated useful lives of the assets, ranging from three to five years. Leasehold improvements are amortized over the shorter of their estimated useful lives or the related lease term.

Impairment of Long-Lived Assets

Long-lived assets, including property and equipment, are reviewed for impairment whenever events or changes in circumstances indicate that the assets may not be recoverable. Recoverability of these assets is measured by comparing their carrying amounts to the future undiscounted cash flows the assets are expected to generate. If an asset is impaired, the impairment to be recognized equals the amount by which the carrying value exceeds the asset's fair value. The primary measure of fair value is discounted cash flow.

In conjunction with the corporate restructurings we undertook in 2019, we are extending our cash runway and ensuring long-term sustainability by our focusing on our current clinical programs and advancement of our three late-stage research programs. Accordingly, we evaluated our laboratory equipment and determined that the carrying value of \$5.9 million is no longer recoverable and its estimated fair value is \$3.9 million. Thus, we recorded an impairment loss of \$2.0 million in our research and development costs within operating expenses in our statements of operations. In addition the remaining useful life has been reduced to 0.25 years.

Restructuring and Other Charges

We account for costs related to our restructuring activities in accordance with ASC 420, *Exit or Disposal Cost Obligations*. Under ASC 420, one-time termination costs communicated to employees are accrued on the communication date, whereas termination costs that require employees to render future service beyond a minimum retention period are recognized ratably over the future service period.

We will recognize other restructuring costs, including lease or other contract termination costs incurred in connection with terminating a contract before the end of its term, when we terminate the contract in accordance with its terms. See Note 12 for additional information regarding charges related to our corporate restructurings.

Revenue Recognition

Effective January 1, 2018, we adopted Financial Accounting Standards Board, or FASB, Accounting Standard Update, or ASU 2014-09, *Revenue from Contracts with Customers (Topic 606)*, or Topic 606, using the modified retrospective transition method. We applied the standard to contracts that were not completed at the date of initial application. Topic 606 provides a unified model to determine how revenue is recognized. We determine revenue recognition for arrangements within the scope of Topic 606 by performing the following five steps: (i) identify the contract; (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 company satisfies a performance obligation.

The terms of our collaborative research and development agreements include upfront and license fees, research, development and other funding or reimbursements, milestone and other contingent payments for the achievement of defined collaboration objectives and certain preclinical, clinical, regulatory and sales-based events, as well as royalties on sales of commercialized products. Arrangements that include upfront payments may require deferral of revenue recognition to a future period until we perform obligations under these arrangements. We record research and development funding payable to us as accounts receivable when our right to consideration is unconditional. The event-based milestone and other contingent payments represent variable consideration, and we use the most likely amount method to estimate this variable consideration. Given the high degree of uncertainty around the occurrence of these events, we determine the milestone and other contingent amounts to be fully constrained until the uncertainty associated with these payments is resolved. We will recognize revenue from sales-based royalty payments when or as the sales occur. We will re-evaluate the transaction price in each reporting period as uncertain events are resolved and other changes in circumstances occur.

A performance obligation is a promise in a contract to transfer a distinct good or service and is the unit of accounting in Topic 606. A contract's transaction price is allocated among each distinct performance obligation based on relative standalone selling price and recognized as revenue when, or as, the applicable performance obligation is satisfied. Under Topic 606, we elected to use the practical expedient permitted related to adoption, which does not require us to disclose certain information regarding our remaining performance obligations as of the end of the reporting period prior to the initial date of adoption. Additionally, we elected the practical expedient for certain research and development funding which allows us to recognize revenue in the amount for which we have a right to invoice if our right to consideration is an amount that corresponds directly to the value of our performance completed to date. As a result, we effectively bypass the steps of determining the transaction price and allocating that transaction price to the performance obligation.

Research and Development Expenses

Research and development expenses consist of costs we incur for our own and for sponsored and collaborative research and development activities. Research and development costs are expensed as incurred. Research and development costs consist of salaries and benefits, including associated stock-based compensation, laboratory supplies and facility costs, as well as fees paid to other entities that conduct certain research and development activities on our behalf. We estimate preclinical study and clinical trial expenses based on the services performed pursuant to contracts with research institutions and contract research organizations, or CROs, and clinical manufacturing organizations, or CMOs, that conduct and manage preclinical studies and clinical trials on our behalf based on actual time and expenses incurred by such entities. Further, we accrue expenses related to clinical trials based on the level of patient activity according to the relevant agreement. We monitor patient enrollment levels and related activity to the extent reasonably possible and adjust estimates accordingly. If we do not identify costs that we have begun to incur or if we underestimate or overestimate the level of services performed or the costs of these services, our actual expenses could differ from our estimates.

We expense payments for the acquisition and development of technology as research and development costs if, at the time of payment, the technology: is under development; is not approved by the U.S. Food and Drug Administration or other regulatory agencies for marketing; has not reached technical feasibility; or otherwise has no foreseeable alternative future use.

Stock-Based Compensation

We recognize compensation expense using a fair value-based method for costs related to all share-based payments, including restricted stock awards, or RSAs, and stock option awards. For RSAs, stock-based compensation cost is based on the closing market value of our common stock at the date of grant and is recognized as expense ratably over the requisite service period. For stock option awards, stock-based compensation cost is measured at the grant date, based on the fair value of the award estimated using the Black-Scholes option pricing model, and is recognized as expense over the requisite service period on a straight-line basis. We account for forfeitures as they occur by reversing any expense recognized for unvested awards.

Income Taxes

We account 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 provided when the expected realization of the deferred tax assets does not meet the more-likely-than-not criteria. As a result, deferred tax assets at the end of 2019 and 2018 are subject to a full valuation allowance. We are required to determine whether it is more likely than not that a tax position will be sustained upon examination by the appropriate taxing authorities before any part of the benefit can be recorded in the financial statements. It is our practice to recognize interest and penalties related to unrecognized tax benefits, if any, as a component of income tax expense.

Recently Adopted Accounting Pronouncements

In June 2018, FASB issued *ASU 2018-07, Compensation—Stock Compensation (Topic 718) – Improvements to Nonemployee Share-Based Payment Accounting*, or ASU 2018-07. ASU 2018-07 expanded the scope of Topic 718, which previously included only share-based payments to employees, to include share-based payments issued to nonemployees for goods or services. Consequently, the accounting for share-based payments to nonemployees and employees will be substantially aligned. ASU 2018-07 supersedes *Subtopic 505-50, Equity—Equity-Based Payments to Non-Employees*. ASU 2018-07 is effective for public companies for fiscal years, and interim fiscal periods within fiscal years, beginning after December 15, 2018. Early adoption is permitted, but no earlier than a company's adoption date of Topic 606. We adopted ASU 2018-07 early in the second quarter of 2018. No adjustment was required as a result of this adoption.

In February 2016, FASB issued *ASU 2016-02, Leases (Topic 842)*, or ASU 2016-02, which amended existing guidance to require substantially all leases to be recognized by lessees on their balance sheet as a right-of-use asset and corresponding lease liability, including leases currently accounted for as operating leases.

We adopted the standard, effective January 1, 2019, using the updated modified retrospective transition method, under which the new standard is applied as of the date of initial adoption. We recognized and measured agreements executed prior to the date of initial adoption that were considered leases on January 1, 2019. No cumulative effect adjustment of initially applying the standard to the opening balance of retained earnings was made upon adoption. We elected the package of practical expedients permitted under the transition guidance that will retain the lease classification and initial direct costs for any leases that existed prior to adoption of the standard. We have not reassessed whether any contracts entered into prior to adoption are leases. In addition, we elected the accounting policy to not record short-term leases with a lease term at the commencement date of twelve months or less on the balance sheet as permitted by the new standard.

Upon adoption, we derecognized \$19.8 million in deferred rent and recognized \$52.5 million in lease liabilities and \$33.3 million in right-of-use assets on our balance sheet. The financial statements for the year ending December 31, 2019 are presented under the new standard, while comparative years presented are not adjusted and continue to be reported in accordance with our historical accounting policy.

In May 2014, FASB issued Topic 606, which superseded nearly all existing revenue recognition guidance under U.S. generally accepted accounting principles, or GAAP. FASB subsequently issued amendments to Topic 606 that have the same effective date and transition date. The core principle of Topic 606 is to recognize revenues when promised goods or services are transferred to customers in an amount that reflects the consideration that is expected to be received for those goods or services. Topic 606 defines a five-step process to achieve this core principle and, as a result, more judgment and estimates may be required in the course of the revenue recognition process, including with respect to identifying performance obligations in a contract, estimating the amount of variable consideration to include in the transaction price and allocating the transaction price to each separate performance obligation.

We adopted Topic 606, effective January 1, 2018, using the modified retrospective transition method, in which the new standard is applied as of the date of initial adoption. We applied the standard to contracts that were not completed at the date of initial application. We recorded the cumulative effect of initially applying the standard as an adjustment to the opening balance of retained earnings. The adoption of the new revenue recognition guidance resulted in a decrease of \$1.4 million to deferred revenue and an increase of \$1.4 million to retained earnings as of January 1, 2018. Additionally, we determined that the classification between deferred revenue, current portion, and deferred revenue, long-term portion changed as a result of adoption of Topic 606. We concluded that we will classify deferred revenue for all licensing and collaboration arrangements as deferred revenue, long-term portion and will reclassify to deferred revenue, current portion when the remaining term of the estimated performance period is one year or less.

Our adoption of Topic 606 effective January 1, 2018 affected the following financial statement line items:

Condensed Statements of Operations

(in thousands, except per share data)	Year Ended December 31, 2018		
	Under Topic 606	Under Topic 605	Effect of change
Collaboration and license revenue	\$ 49,868	\$ 52,329	\$ (2,461)
Operating expenses	196,023	196,023	—
Operating loss	\$ (146,155)	\$ (143,694)	\$ (2,461)
Net loss	\$ (140,447)	\$ (137,986)	\$ (2,461)
Net loss per share applicable to common stockholders - basic and diluted	\$ (4.13)	\$ (4.06)	\$ (0.07)

Condensed Balance Sheets

(in thousands)	December 31, 2018		
	Under Topic 606	Under Topic 605	Effect of change
Receivables from collaborative partner	\$ 5,096	\$ 5,096	\$ —
Deferred revenue, current portion	1,428	8,187	(6,759)
Deferred revenue, long-term portion	10,465	2,618	7,847
Accumulated deficit	(294,681)	(293,593)	(1,088)

Condensed Statement of Cash Flows

(in thousands)	Year Ended December 31, 2018		
	Under Topic 606	Under Topic 605	Effect of change
Net loss	\$ (140,447)	\$ (137,986)	\$ (2,461)
Decrease in deferred revenue in connection with Topic 606 adoption	1,373	—	1,373
Changes in operating assets and liabilities			
Receivables from collaborative partner	8,037	8,037	—
Deferred revenue	(11,043)	(12,131)	1,088
Cash, cash equivalents and restricted cash at beginning of period	61,333	61,333	—
Cash, cash equivalents and restricted cash at end of period	45,496	45,496	—

Accounting Pronouncements Not Yet Adopted

In November 2018, FASB issued *ASU No. 2018-18, Collaborative Arrangements (Topic 808)*, or ASU 2018-18, which clarifies when certain transactions between collaborative arrangement participants should be accounted for under Topic 606 and incorporates unit-of-account guidance consistent with Topic 606 to aid in this determination. ASU 2018-18 became effective January 1, 2020 and applies to all annual and interim reporting periods thereafter. Early adoption is permitted. ASU 2018-18 should generally be applied retrospectively to the date of initial application of Topic 606. We do not anticipate that the adoption of this standard will have a material effect on our financial statements.

In August 2018, FASB issued *ASU 2018-13, Fair Value Measurement (Topic 820): Disclosure Framework*, or ASU 2018-13. The updated guidance improves the disclosure requirements on fair value measurements. The update will become effective for us beginning in the first quarter of 2020. Early adoption is permitted for any removed or modified disclosures. We are currently assessing the timing and impact of adopting the updated provisions.

In June 2016, FASB issued *ASU 2016-13, Financial Instruments—Credit Losses (Topic 326)*, or ASU 2016-13. ASU 2016-13 requires measurement and recognition of expected credit losses for financial assets. This guidance will become effective for us beginning in the first quarter of 2020 and must be adopted using a modified retrospective approach, with certain exceptions. We do not anticipate that the adoption of this standard will have a material effect on our financial statements.

In April 2015, FASB issued *ASU 2018-15, Intangibles—Goodwill and Other—Internal-Use Software (Topic 350)*, or ASU 2018-15. ASU 2018-15 requires a customer in a cloud computing arrangement that is a service contract to follow the internal use software guidance to determine which implementation costs to defer and recognize as an asset. This guidance will become effective for us beginning in the first quarter of 2020 and can be adopted prospectively to all implementation costs incurred after the date of adoption or retrospectively. We are currently assessing the timing and impact of adopting the updated provisions.

3. Cash Equivalents and Marketable Securities

The following is a summary of our cash equivalents and marketable securities at December 31, 2019 and 2018 (in thousands):

	December 31, 2019			
	Amortized Cost Basis	Unrealized Gains	Unrealized Losses	Estimated Fair Value
Money market funds	\$ 21,706	\$ —	\$ —	\$ 21,706
U.S. Treasury securities	35,471	27	—	35,498
Agency bonds	48,790	44	—	48,834
Corporate bonds	1,800	—	—	1,800
Commercial paper	19,188	7	—	19,195
Total cash equivalents and marketable securities	126,955	78	—	127,033
Less: cash equivalents	(26,453)	—	—	(26,453)
Total marketable securities	<u>\$ 100,502</u>	<u>\$ 78</u>	<u>\$ —</u>	<u>\$ 100,580</u>

	December 31, 2018			
	Amortized Cost Basis	Unrealized Gains	Unrealized Losses	Estimated Fair Value
Money market funds	\$ 40,849	\$ —	\$ —	\$ 40,849
U.S. Treasury securities	104,218	—	(77)	104,141
Agency bonds	54,005	9	(15)	53,999
Corporate bonds	11,897	—	(4)	11,893
Commercial paper	56,171	—	(19)	56,152
Total cash equivalents and marketable securities	267,140	9	(115)	267,034
Less: cash equivalents	(40,849)	—	—	(40,849)
Total marketable securities	<u>\$ 226,291</u>	<u>\$ 9</u>	<u>\$ (115)</u>	<u>\$ 226,185</u>

As of December 31, 2019, the amortized cost and estimated fair value of our available-for-sale securities by contractual maturity are shown below (in thousands):

	Amortized Cost	Estimated Fair Value
Debt securities maturing:		
In one year or less	\$ 100,502	\$ 100,580
Total marketable securities	<u>\$ 100,502</u>	<u>\$ 100,580</u>

Our cash equivalents and marketable securities have an average maturity of approximately three months and the longest maturity is six months. There have been no significant realized gains or losses on our available-for-sale securities for the periods presented. We determined that the gross unrealized gains of \$0.2 million on our marketable securities as of December 31, 2019 were temporary in nature and related primarily to interest rate shifts rather than significant changes in the underlying credit quality of the securities that we hold. We currently do not intend to sell these securities prior to maturity and do not consider these investments to be other-than-temporarily impaired at December 31, 2019. There were no sales of available-for-sale securities in any of the periods presented.

4. Property and Equipment

Property and equipment consist of the following (in thousands):

	December 31,	
	2019	2018
Computer equipment and software	\$ 2,281	\$ 2,403
Furniture and fixtures	968	968
Laboratory equipment	4,219	19,579
Leasehold improvements	22,175	22,175
	<u>\$ 29,643</u>	<u>\$ 45,125</u>
Less: accumulated depreciation and amortization	(7,109)	(16,407)
Property and equipment, net	<u>\$ 22,534</u>	<u>\$ 28,718</u>

We entered into a lease agreement with respect to our corporate office and laboratory facility in December 2016. During the fiscal year ended December 31, 2017, we acquired \$22.2 million of leasehold improvements in connection with our move to this facility. We received lease incentives totaling \$14.4 million from our landlord for a portion of the costs of these leasehold improvements. Depreciation and amortization expense was \$5.3 million, \$5.0 million and \$2.5 million for the years ended December 31, 2019, 2018 and 2017, respectively.

We recognized an asset impairment loss of \$2 million in relation to our laboratory equipment as a result of the restructuring activities undertaken during the year ended December 31, 2019. See Note 12 for additional information on charges related to our corporate restructurings.

5. Other Accrued Liabilities

Other accrued liabilities consist of the following (in thousands):

	December 31,	
	2019	2018
Clinical development	\$ 7,787	\$ 10,513
Manufacturing	540	1,104
Trade payable	1,087	3,381
Other	245	350
Total accrued liabilities	<u>\$ 9,659</u>	<u>\$ 15,348</u>

6. Stockholders' Equity

We have 110,000,000 shares of authorized capital stock issuable in series, all with a par value of \$0.001 per share, of which 100,000,000 shares are designated as common stock and 10,000,000 shares are designated as preferred stock. Our Board of Directors, or our Board, is authorized to determine the designation, powers, preferences and rights of any such series. As of December 31, 2019 and 2018, we had 35,219,791 and 34,745,721 shares of common stock outstanding, respectively. There were no shares of preferred stock outstanding as of December 31, 2019 and 2018.

In January 2018, we closed on a public offering of 5,897,435 shares of our common stock, which included 769,230 shares sold upon the underwriters' full exercise of their option to purchase additional shares, resulting in aggregate gross proceeds of \$115.0 million, before deducting underwriting discounts and commissions and estimated offering expenses payable by us, and net proceeds of approximately \$107.6 million after deducting these amounts.

Equity Incentive Plans

In September 2013, our stockholders approved the 2013 Omnibus Incentive Plan, or the 2013 Plan. Any shares of common stock covered by awards granted under our 2002 Equity Incentive Plan or our 2010 Equity Incentive Plan, collectively, the Prior Plans, that terminate after September 23, 2013 by expiration, forfeiture, cancellation or other means without the issuance of such shares were added to the 2013 Plan reserve.

The initial number of shares of common stock available for issuance under the 2013 Plan was 3,500,000, which includes the 1,069,985 shares of common stock that were available for issuance under the Prior Plans as of the effective date of the 2013 Plan. Unless our Board provides otherwise, beginning on January 1, 2014 and continuing until the expiration of the 2013 Plan, the total number of shares of common stock available for issuance under the 2013 Plan will automatically increase annually on January 1 by 4% of the total number of outstanding shares of common stock as of December 31 of the immediately preceding year. Under the 2013 Plan, any shares that are forfeited or expired are added back to the shares available for issuance. As of December 31, 2019, 2,942,984 shares of common stock were available for future issuance of options, restricted stock and other stock-based awards under the 2013 Plan.

Incentive stock options may be granted with an exercise price of not less than estimated fair value. Stock options granted to a stockholder owning more than 10% of our voting stock must have an exercise price of not less than 110% of the estimated fair value of the common stock on the date of grant. For all stock options granted prior to our initial public offering, our Board determined the estimated fair value of our common stock. For all stock options granted after the completion of our initial public offering in September 2013, the fair value for our underlying common stock is determined using the closing market price on the date of grant. Stock options are granted with terms of up to ten years and generally vest over a period of four years.

The following table summarizes option activity under our stock plans and related information:

	Options Outstanding			
	Number of Shares	Weighted- Average Exercise Price Per Share	Weighted- Average Remaining Contractual Terms (in years)	Aggregate Intrinsic Value (in thousands)
Balance at January 1, 2019	3,710,181	\$ 28.37		
Options granted	1,356,778	8.67		
Options exercised	(41,892)	8.09		
Options forfeited	(826,948)	25.26		
Options expired	(883,397)	31.51		
Balance at December 31, 2019	3,314,722	20.50	5.99	\$ 176,110
Options exercisable at December 31, 2019	2,272,751	23.40	4.88	\$ 125,043

The weighted-average grant-date fair value per share of stock options granted during the years ended December 31, 2019, 2018 and 2017 was \$4.96, \$10.85 and \$25.78 per share, respectively. The total intrinsic value of options exercised during the years ended December 31, 2019, 2018 and 2017 was \$0.1 million, \$2.4 million and \$5.4 million, respectively.

We recorded stock-based compensation expense related to options of approximately \$14.3 million, \$17.3 million and \$19.7 million for the years ended December 31, 2019, 2018 and 2017, respectively. As of December 31, 2019, there was \$9.6 million of total unrecognized compensation expense that we expect to recognize over a weighted-average period of 2.2 years.

We have granted restricted stock awards, or RSAs, some of which are subject to performance conditions or market conditions. RSAs are share awards that entitle the holder to receive freely tradable shares of our common stock upon vesting and are not forfeitable once fully vested. We base the fair value of RSAs on the closing market price of our common stock on the grant date. For RSAs subject to market conditions, we based the fair value of the awards on a Monte Carlo simulation model. For RSAs subject to performance conditions, we recognize stock-based compensation expense using the accelerated attribution recognition method when it is probable that the performance condition will be achieved and, for RSAs subject to market conditions, we recognize stock-based compensation expense commencing at the grant date over the derived service period.

The following table summarizes RSA activity under the 2013 Plan and related information:

	RSAs Outstanding	
	Number of Shares	Weighted- Average Grant-Date Fair Value
Unvested balance at January 1, 2019	880,030	\$ 26.36
RSAs granted	1,501,750	8.04
RSAs vested	(539,453)	19.45
RSAs forfeited	(781,750)	16.46
Unvested balance at December 31, 2019	1,060,577	11.24

The total fair value on the date of vesting of RSAs that vested in 2019, 2018 and 2017 was \$3.7 million, \$6.2 million, and \$30.8 million, respectively.

We recorded stock-based compensation expense related to RSAs of approximately \$8.2 million, \$11.6 million and \$14.0 million for the years ended December 31, 2019, 2018 and 2017, respectively. As of December 31, 2019, there was \$4.8 million of unrecognized compensation cost related to unvested employee and director RSAs that we expect to recognize over a weighted-average period of 1.8 years.

Employee Stock Purchase Plan

In September 2013, our stockholders approved the 2013 Employee Stock Purchase Plan, or the ESPP, which became effective as of September 23, 2013. We initially reserved a total of 250,000 shares of common stock for issuance under the ESPP. Unless our Board provides otherwise, continuing until the expiration of the ESPP, the total number of shares of common stock available for issuance under the ESPP will automatically increase annually on January 1 by the lesser of (i) 1% of the total number of outstanding shares of common stock as of December 31 of the immediately preceding year, or (ii) 300,000 shares of common stock. As of December 31, 2019, 1,307,722 shares of common stock were available for issuance under the ESPP. In November 2019, the compensation and management development committee of our Board provided that the number of shares of common stock available for issuance under the ESPP would not automatically increase on January 1, 2020 and as such, no new shares of common stock became available for issuance under the ESPP on January 1, 2020.

Under our ESPP, employees can purchase shares of our common stock based on a percentage of their compensation subject to certain limits. The purchase price per share is equal to the lower of 85% of the fair market value of our common stock on the offering date or the purchase date with a six-month look-back feature. ESPP purchases are settled with common stock from the ESPP's previously authorized and available pool of shares. We issued a total of 131,155 shares under the ESPP in 2019.

The compensation expense related to the ESPP was \$0.3 million, \$0.5 million and \$0.5 million for the years ended December 31, 2019, 2018 and 2017, respectively. As of December 31, 2019, there was \$0.1 million of unrecognized compensation cost related to the ESPP, which we expect to recognize over 4.4 months.

Stock-Based Compensation

Total stock-based compensation expense recognized was as follows:

(in thousands)	Year Ended December 31,		
	2019	2018	2017
Research and development	\$ 8,041	\$ 15,426	\$ 18,285
General and administrative	14,774	14,042	15,888
Total	\$ 22,815	\$ 29,468	\$ 34,173

We estimated the fair value of each award using the Black-Scholes option-pricing model based on the date of grant of such award with the following assumptions:

	Options			ESPP		
	Year Ended December 31,			Year Ended December 31,		
	2019	2018	2017	2019	2018	2017
Expected term (years)	5.0-6.3	5.5-6.3	5.5-6.3	0.5	0.5	0.5
Expected volatility	67-68%	68-70%	66-70%	64-67%	47-94%	42-94%
Risk-free interest rate	1.6-2.5%	2.6-2.9%	1.9-2.2%	1.6-2.4%	1.4-2.5%	1.0-1.4%
Expected dividend yield	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

The expected term of options granted represents the period of time that we expect options granted to remain outstanding, which we determined using the simplified method as we have insufficient historical information to provide a basis for estimate. The expected term of the ESPP rights is equal to the six-month look-back period. Volatility for options granted is based on the historical volatility of our stock price since we became publicly traded. Volatility for ESPP rights is equal to our historical volatility over the six-month look-back period. The risk-free interest rate for the expected term of the options is based on the U.S. Treasury yield curve with a maturity equal to the expected term in effect at the time of grant. We have not paid, and do not anticipate paying, cash dividends on our shares of common stock; therefore, the expected dividend yield is zero.

Stock Option Exchange Program

On July 1, 2019, we commenced a tender offer to our employees, excluding named executive officers, to exchange eligible stock options for replacement stock options with modified terms, or our exchange offer. Pursuant to the exchange offer, we offered employees, excluding named executive officers, who held outstanding stock options granted on or before June 6, 2018 with an exercise price equal to or greater than \$18.00 per share, or eligible options, the opportunity to tender each eligible option in exchange for a new stock option with modified terms, or new options.

The exchange offer expired at 6:00 p.m., Pacific time, on July 29, 2019. As of the expiration of the exchange offer, there were 510,932 shares of our common stock underlying the eligible options. Pursuant to the exchange offer, 55 employees elected to exchange outstanding stock options, and we accepted for cancellation stock options to purchase an aggregate of 436,648 shares of common stock, representing approximately 85% of the total shares of common stock underlying the eligible options. On July 29, 2019, immediately following the expiration of the exchange offer, we granted new options to purchase 235,419 shares of common stock, each with an exercise price of \$5.06 per share, which was the closing price per share of our common stock on Nasdaq on the grant date. As a result, 201,229 shares of common stock returned to the 2013 Plan reserve and became available for future issuance. Each new option vests in equal monthly amounts over either one or three years, depending on whether the tendered eligible option was fully vested as of July 29, 2019, has a maximum term of seven years and was granted as a nonqualified stock option under our 2013 Plan.

The exchange of stock options was treated as a modification for accounting purposes. We are recognizing the incremental expense of \$0.2 million for new options using the Black-Scholes option-pricing model over the new service period that began on the grant date of July 29, 2019. We are recognizing the unamortized expense remaining on the tendered options of \$1.6 million as of December 31, 2019 over the remainder of the original requisite service period.

7. Earnings per Share

The computation of basic loss per share is based on the weighted-average number of our common shares outstanding. The computation of diluted loss per share is based on the weighted-average number of our common shares outstanding and dilutive potential common shares, which include shares that may be issued under our equity incentive plans, determined using the treasury stock method.

The following table sets forth the computation of basic and diluted net loss (in thousands, except per share data):

	Year Ended December 31,		
	2019	2018	2017
Numerator:			
Net loss	\$ (137,202)	\$ (140,447)	\$ (150,222)
Denominator:			
Denominator for basic loss			
per share - weighted-average shares	34,970	33,976	27,945
Denominator for diluted loss per share	34,970	33,976	27,945
Basic and diluted net loss per share	\$ (3.92)	\$ (4.13)	\$ (5.38)

We excluded the following securities from the calculation of diluted net loss per share as the effect would have been antidilutive (in thousands):

	Year Ended December 31,		
	2019	2018	2017
Options to purchase common stock	3,760	3,710	3,843
RSAs	1,273	880	886
Total	5,033	4,590	4,729

8. License and Collaboration Agreements

The following table presents changes during the year ended December 31, 2019 in the balances of our contract assets, including receivables from collaboration partners, and contract liabilities, including deferred revenue.

(in thousands)	Contract Assets
Balance at January 1, 2019	\$ 5,096
Additions	9,392
Deductions	(10,391)
Balance at December 31, 2019	\$ 4,097

(in thousands)	Contract Liabilities
Balance at January 1, 2019	\$ 11,893
Additions for advance billings	2,264
Deductions for performance obligations satisfied in current period	(5,975)
Deductions for performance obligations satisfied in the prior periods in connection with updates to the measure of progress	(1,773)
Balance at December 31, 2019	\$ 6,409

Bristol-Myers Squibb Company

Immuno-Oncology Research Collaboration

In March 2014, we entered into a research collaboration and license agreement, or the immuno-oncology research collaboration, with Bristol-Myers Squibb Company, or BMS, to carry out a research program to (i) discover novel interacting proteins in two undisclosed immune checkpoint pathways, which we refer to as the checkpoint pathways, using our target discovery platform; (ii) further the understanding of target biology with respect to targets in these checkpoint pathways; and (iii) discover and pre-clinically develop compounds suitable for development for human therapeutic uses against targets in these checkpoint pathways. Under the immuno-oncology research collaboration, we granted to BMS an exclusive, worldwide license to research, develop and commercialize products directed towards certain targets in the checkpoint pathways. BMS has an option to take exclusive licenses to additional targets we may identify in these checkpoint pathways pursuant to the research plan under the immuno-oncology research collaboration. Based on data arising from our activities under the research plan, in January 2016, we amended the immuno-oncology research collaboration to add an additional checkpoint pathway to the research program, for a total of three immune checkpoint pathways.

We received an upfront payment of \$20.0 million from BMS in April 2014 in connection with our entry into the immuno-oncology research collaboration. BMS was obligated to pay us \$9.5 million in research funding over the course of the three-year research term based on the research activities then planned under the research plan. BMS had the option to extend the research term for two additional one-year periods on a year-by-year basis for an additional \$2.1 million for each extension, during which extensions we would be obligated to perform additional services as agreed to with BMS and BMS would be obligated to pay us research funding with respect to such services. The initial research term under the immuno-oncology research collaboration expired in March 2017. In each of December 2016 and December 2017, BMS exercised its option to extend the research term for an additional year to March 2018 and March 2019, respectively. In connection with entering into the immuno-oncology research collaboration, BMS purchased 994,352 shares of our common stock at a price per share of \$21.16, for an aggregate purchase price of \$21.0 million. We determined that the purchase price of \$21.16 per share exceeded the fair value of our common stock by \$2.4 million and, therefore, recorded the \$2.4 million as deferred revenue that we are recognizing in the same manner as the \$20.0 million upfront payment and research funding. We are eligible to receive certain contingent payments with respect to each target subject to the immuno-oncology research collaboration and royalties on sales of products related to such targets, if any. In December 2017, we recognized \$5.0 million related to a developmental contingent payment.

The immuno-oncology research collaboration will terminate upon the expiration of all payment obligations under the collaboration. In addition, BMS may terminate the immuno-oncology research collaboration in its entirety or on a collaboration target-by-collaboration target basis at any time with advance written notice, and either party may terminate the collaboration in its entirety or on a collaboration target-by-collaboration target basis with written notice for the other party's material breach if such other party fails to timely cure the breach or immediately upon certain insolvency events.

We identified one performance obligation under the immuno-oncology research collaboration for the research license to access our technology, the exclusive commercial license and research activities. BMS's options to select additional collaboration targets are not priced at a discount and therefore do not represent performance obligations for which the transaction price would be allocated. The transaction price of \$36.1 million includes the \$20.0 million non-refundable upfront fee, \$13.7 million of research funding and \$2.4 million of equity premium. We concluded that the transaction price should not include the variable consideration related to maintenance fees and unachieved clinical and regulatory development milestones as this consideration was considered to be constrained as it is probable that the inclusion of such variable consideration could result in a significant reversal in revenue in the future. We will recognize any consideration related to sales-based payments (including milestones and royalties) when the related sales occur, as we have determined that these amounts relate predominantly to the license granted and therefore will be recognized on the later to occur of satisfaction of the performance obligation, or the occurrence of the related sales. We will re-evaluate the transaction price at each reporting period. For year ended December 31, 2019, no adjustments were made to the transaction price.

Upon adoption of Topic 606, we recognized an additional \$0.7 million of revenue through a decrease to deferred revenue and an increase to beginning retained earnings, based on the difference between the input method currently used under Topic 606 and the ratable recognition method previously used under Topic 605. Under the input method, we recognize revenue on the basis of our efforts or inputs applicable to the satisfaction of a performance obligation (e.g., resources consumed, labor hours expended, costs incurred, or time elapsed) relative to the total expected inputs applicable to the satisfaction of that performance obligation. We concluded that we will recognize revenue based on actual costs incurred as a percentage of total budgeted costs as we complete our performance obligation. As of March 31, 2019, the performance obligation was fully satisfied and the transaction price of \$36.1 million was fully recognized as collaboration revenue. Revenue recognized from the performance obligation was \$1.5 million for the year ended December 31, 2019.

For the years ended December 31, 2019, 2018, and 2017, we recognized \$1.5 million, \$6.1 million and \$12.0 million, respectively, of revenue under the immuno-oncology research collaboration. As of December 31, 2019 and 2018, we had deferred revenue relating to the immuno-oncology research collaboration of \$0 and \$1.5 million, respectively.

License and Collaboration Agreement

On October 14, 2015, we entered into a license and collaboration agreement, or the cabiralizumab collaboration agreement, pursuant to which we granted BMS exclusive global rights to develop and commercialize certain colony stimulating factor-1 receptor, or CSF1R, antibodies, including our monoclonal CSF1R inhibiting antibody that we refer to as cabiralizumab, and all modifications, derivatives, fragments, or variants of such antibodies, each of which we refer to as a licensed antibody. Under the terms of the cabiralizumab collaboration agreement, BMS is responsible, at its expense, for developing products containing licensed antibodies, each of which we refer to as a licensed product, under a development plan, subject to our option, at our own expense, to conduct certain studies, including registration-enabling studies to support approval of cabiralizumab. BMS is responsible for manufacturing and commercializing each licensed product and we retain rights to a U.S. co-promotion option. The cabiralizumab collaboration agreement supersedes the clinical trial collaboration agreement we entered into with BMS in November 2014, or the original collaboration agreement. We assessed the two agreements separately as standalone agreements under Topic 606.

In February 2020, BMS informed us that its randomized, controlled multi-arm Phase 2 clinical trial testing cabiralizumab in combination with *Opdivo*, with and without chemotherapy, in second-line patients with pancreatic cancer (NCT03336216) did not meet its primary endpoint. BMS informed us that while it has no near-term plans for additional sponsored development of cabiralizumab, it will continue to support the evaluation of cabiralizumab in select, ongoing investigator-sponsored trials and may continue to assess future development opportunities for cabiralizumab.

We received an upfront payment of \$30.0 million from BMS in December 2014 in connection with our entry into the original collaboration agreement. We completed enrollment and treatment of patients in our Phase 1a/1b clinical trial to evaluate the safety, tolerability and preliminary efficacy of combining *Opdivo*, BMS's programmed-death 1 (PD-1) immune checkpoint inhibitor, with cabiralizumab in multiple tumor types, which we commenced under the original collaboration agreement. BMS bears all costs and expenses relating to this trial, including manufacturing costs for the supply of cabiralizumab, except that we are responsible for our own internal costs, including internal personnel costs.

Under the original collaboration agreement, we identified one performance obligation for the execution of a Phase 1a/1b clinical trial of cabiralizumab in combination with *Opdivo*. The transaction price consists of the \$30.0 million non-refundable upfront fee under the original collaboration agreement.

We used the input method to measure progress toward completion of the performance obligation and concluded that we will recognize revenue based on actual costs incurred by our CRO as a percentage of total budgeted costs as we complete our performance obligation. We will recognize revenue from reimbursements when we have the right to invoice BMS. No adjustment was necessary upon adoption of Topic 606. We recognized \$4.4 million of the transaction price as revenue for the year ended December 31, 2019. Total revenue recognized for reimbursements for the year ended December 31, 2019 was \$4.6 million. Through December 31, 2019, we recognized \$29.2 million of the transaction price as collaboration revenue under the original collaboration agreement. The remaining transaction price of \$0.8 million is recorded in deferred revenue as of December 31, 2019 and will be recognized as revenue under the input method over the estimated performance period.

Under the cabiralizumab collaboration agreement, we identified the following performance obligations: (1) license grant to BMS and (2) transfer of licensed know-how to BMS. The transaction price consists of the \$350.0 million non-refundable up-front fee. We concluded that the transaction price should not yet include milestone payments that may become due as they are fully constrained. We will recognize any consideration related to royalties when the related sales occur, as we have determined that these amounts relate predominantly to the license granted and therefore will be recognized upon the occurrence of the related sales. We will re-evaluate the transaction price in each reporting period as uncertain events are resolved and other changes in circumstances occur. For the year ended December 31, 2019, no adjustments were made to the transaction price.

The \$350.0 million non-refundable upfront fee was fully recognized concurrent with the transfer of the license and know-how in 2015. As such, no adjustment to revenue was necessary under Topic 606. In January 2018, we recognized \$25.0 million related to a milestone achieved for the dosing of the first patient in BMS's randomized Phase 2 clinical trial of cabiralizumab in combination with *Opdivo*, with and without chemotherapy, as a treatment for patients with second-line pancreatic cancer. For the year ended December 31, 2019, no milestones were achieved.

For the years ended December 31, 2019, 2018, and 2017, we recognized \$9.0 million, \$38.4 million and \$23.7 million, respectively, of revenue under the license and collaboration agreements. As of December 31, 2019 and 2018, we had deferred revenue relating to the license and collaboration agreements of \$0.8 million and \$5.2 million, respectively.

Zai Lab China License and Collaboration Agreement

In December 2017, we entered into a license and collaboration agreement, or the China collaboration agreement, with Zai Lab, pursuant to which we granted Zai Lab an exclusive license to develop and commercialize bemarituzumab, and all fragments, conjugates, derivatives and modifications thereof, or the licensed antibody, in China, Hong Kong, Macau and Taiwan, each a region and collectively, the territory.

Under the terms of the China collaboration agreement, Zai Lab will be responsible, at its expense, for (i) developing and commercializing products containing the licensed antibody, each, a licensed product, under a territory development plan and (ii) performing certain development activities to support our global development and registration of licensed products, including our Phase 3 FIGHT trial, in the territory under a global development plan. Under the terms of the China collaboration agreement, Zai Lab paid us a \$5.0 million non-refundable and non-creditable upfront fee (\$4.2 million after netting of value-added tax withholdings of \$0.8 million) in January 2018. Pursuant to the China collaboration agreement, with respect to each licensed product, we are eligible to receive up to \$39.0 million of specified developmental and regulatory milestone payments. Zai Lab will also be obligated to pay us a royalty, on a licensed product-by-licensed product and region-by-region basis. In addition, Zai Lab agreed to reimburse us for certain global development activities, which is limited to a maximum of \$10.0 million, and certain costs for the development of companion diagnostics.

We identified the following performance obligations: (1) license grant to Zai Lab together with the transfer of licensed know-how, development drug supply and global development activities, or the license grant, and (2) development of companion diagnostics. Zai Lab has the option to purchase commercial drug supply from us pursuant to a separate commercial supply agreement to be negotiated in the future. The commercial drug supply will be accounted for as a separate contract when Zai Lab exercises this option. In our evaluation of the transaction price upon the adoption of Topic 606, the \$4.2 million non-refundable upfront fee and \$8.3 million of expected reimbursement from Zai Lab for global development activities were included as part of the transaction price of \$12.5 million. We estimated the \$8.3 million of expected reimbursements from Zai Lab based on the probability-weighted amounts of a range of possible consideration amounts. In September 2018, we recorded a \$1.7 million receivable related to Zai Lab's \$2.0 million clinical development milestone payment, net of value-added tax and other withholdings of \$0.3 million, which became due upon dosing of the first patient in the Phase 3 FIGHT trial. As a result, at such time we re-evaluated the transaction price and increased the transaction price by \$2.2 million to \$14.7 million which includes the \$4.2 million non-refundable upfront fee, \$8.8 million of expected reimbursement from Zai Lab for global development activities and the \$1.7 million clinical development milestone payment. We have not included the remaining regulatory milestone payments in the transaction price as all such milestone amounts are fully constrained. We will recognize any consideration related to royalties when the related sales occur, as we determined that these amounts relate predominantly to the license granted and therefore will be recognized upon the occurrence of the related sales. We concluded that the reimbursement of costs incurred for the development of companion diagnostics qualifies for the practical expedient under Topic 606, which allows us to recognize revenue in the amount for which we have a right to invoice if our right to consideration is an amount that corresponds directly to the value to Zai Lab of our performance completed to date. We therefore effectively bypass the steps of determining the transaction price and allocating that transaction price to the performance obligation. We will re-evaluate the transaction price in each reporting period as uncertain events are resolved and other changes in circumstances occur.

We use the input method to measure progress toward completion of the performance obligation for the license grant. We concluded that revenue will be recognized based on actual costs incurred by our CRO as a percentage of total budgeted costs as we complete our performance obligation. We will recognize revenue from reimbursements for the development of companion diagnostics when we have the right to invoice Zai Lab.

No adjustment was necessary upon adoption of Topic 606. Total revenue recognized for the companion diagnostics development performance obligation was \$3.0 million. No revenue was recognized for the license grant for year ended December 31, 2019. Of the remaining transaction price of \$11.5 million, we recorded \$5.1 million in deferred revenue, which we will recognize over the estimated performance period for satisfaction of the performance obligations.

GlaxoSmithKline LLC

Respiratory Diseases and Muscle Diseases Collaborations

In April 2012, we entered into a research collaboration and license agreement, or the respiratory diseases collaboration, with Glaxo Group Limited, or GSK, to identify new therapeutic approaches to treat refractory asthma and chronic obstructive pulmonary disease, or COPD, with a particular focus on identifying novel protein therapeutics and antibody targets. In January 2016, we amended our respiratory diseases collaboration to extend the research term by three months to July 2016 to allow additional validation of the protein targets we discovered and to increase the research funding. In July 2010, we entered into a research collaboration and license agreement, or the muscle diseases collaboration, with GlaxoSmithKline LLC, to identify potential drug targets and drug candidates to treat skeletal muscle diseases. We conducted three customized cell-based screens and one *in vivo* screen of our protein libraries under the muscle diseases collaboration. The research term under the muscle diseases collaboration ended in May 2014 and the agreement terminated in April 2018.

Based on our assessment of the respiratory diseases collaboration and the muscle diseases collaboration under Topic 606, we identified one performance obligation under each collaboration for the research license and research activities. The non-refundable upfront fees, the equity premiums and the variable consideration for research activities are included as part of the transaction prices for each collaboration. The clinical and regulatory development milestone payments have not been included in the transaction prices, as all such milestone amounts are fully constrained. We will recognize any consideration related to sales-based payments (including milestones and royalties) when the related sales occur, as we have determined that these amounts relate predominantly to the license granted and therefore will be recognized on the later to occur of satisfaction of the performance obligation, or the occurrence of the related sales. Under the respiratory diseases collaboration, additional research funding that GSK had the option to add was also not included in the transaction price. As the muscle diseases collaboration with GlaxoSmithKline LLC terminated in April 2018, we are no longer eligible to receive milestone payments or royalties under that collaboration. We will re-evaluate the transaction price for the respiratory diseases collaboration in each reporting period as uncertain events are resolved and other changes in circumstances occur. For year ended December 31, 2019, no adjustments were made to the transaction prices of the collaborations with GSK or GlaxoSmithKline LLC.

Under the respiratory diseases collaboration and the muscle diseases collaboration, the non-refundable upfront fees, the equity premiums and the payment for research activities were fully recognized in 2016 and 2014, respectively. As the performance obligations were fully satisfied in prior years, no adjustment to revenue was necessary under Topic 606.

For the years ended December 31, 2019 and 2018, we recognized no milestone revenue, and for the year ended December 31, 2017, we recognized \$0.5 million. No revenue was recognized for progress made toward the performance obligation for years ended December 31, 2019, 2018 and 2017 under the respiratory diseases collaboration.

UCB Fibrosis and CNS Collaboration

In March 2013, we entered into a research collaboration and license agreement, or the fibrosis and CNS collaboration, with UCB Pharma, S.A., or UCB, to identify potential biologics targets and therapeutics in the areas of fibrosis-related immunologic diseases and central nervous system, or CNS, disorders.

Under the terms of the fibrosis and CNS collaboration, UCB paid us an upfront payment of \$6.0 million in March 2013. In addition, UCB agreed to pay us \$6.6 million for a technology fee and \$2.0 million for research funding. As of December 31, 2015, we fully collected the technology fees and research funding under the fibrosis and CNS collaboration. We are eligible to receive certain evaluation and selection fees and contingent payments for each protein target with respect to which UCB elects to obtain an exclusive license, and royalties on the sales of products related to such targets, if any. Our initial research activities under this collaboration were completed in March 2016. Upon the completion of those research activities, UCB had up to a two-year evaluation period, which ended in March 2018, during which we were obligated to perform additional services at the request of UCB.

The fibrosis and CNS collaboration will terminate upon the expiration of the royalty terms of any products that incorporate or target a protein exclusively licensed under the collaboration. In addition, UCB may terminate the fibrosis and CNS collaboration at any time with advance written notice, and either party may terminate the fibrosis and CNS collaboration with written notice for the other party's material breach if such other party fails to timely cure the breach or upon certain insolvency events.

Based on our assessment of the fibrosis and CNS collaboration under Topic 606, we identified research activities as our only performance obligation. UCB's options to select additional collaboration targets and to license exclusive rights to selected targets are not priced at a discount and therefore do not represent performance obligations for which the transaction price would be allocated. The transaction price of \$15.6 million includes the \$6.0 million non-refundable upfront fee, the \$6.6 million technology access fee, the \$1.0 million reimbursement for reagent costs and the \$2.0 million of research funding. We have not included the clinical and regulatory development milestone payments in the transaction price as all such milestone amounts are fully constrained. We will recognize any consideration related to sales-based payments (including milestones and royalties) when the related sales occur, as we have determined that these amounts relate predominantly to the license granted and therefore will be recognized on the later to occur of satisfaction of the performance obligation, or the occurrence of the related sales. We will re-evaluate the transaction price in each reporting period as uncertain events are resolved and other changes in circumstances occur. For the year ended December 31, 2019, there was no change in the transaction price.

Upon adoption of Topic 606, we recognized an additional \$0.6 million of revenue through a decrease to deferred revenue and an increase to beginning retained earnings, based on the difference between the input method currently used under Topic 606 and the ratable recognition method previously used under Topic 605. We use the input method to measure progress toward completion of the performance obligation and concluded that revenue will be recognized based on actual full time equivalent labor hours expended as a percentage of total budgeted costs. The \$0.6 million adjustment recorded upon the adoption of Topic 606 recognized the remainder of the transaction price.

For the years ended December 31, 2019, 2018 and 2017, we recognized \$0, \$0.3 million and \$0.3 million, respectively, in target evaluation and selection fees. For the years ended December 31, 2019 and 2018, no revenue was recognized for the performance obligation and \$3.0 million in revenue was recognized for the performance obligation for the year ended December 31, 2017. As of December 31, 2017, we had deferred revenue of \$0.6 million which was fully recognized upon adoption of Topic 606.

9. Acquired Technologies

Galaxy Biotech, LLC

In December 2011, we entered into an exclusive license agreement with Galaxy Biotech, LLC, or Galaxy, for the development, manufacturing, and commercialization of certain anti-FGFR2b monoclonal antibodies. Under the terms of the agreement, we agreed to pay Galaxy an upfront license payment of \$3.0 million. We paid the upfront payment in two equal installments in January 2012 and July 2012. As we had full access to the technology and materials upon execution of the agreement, the lead compound was in an early stage of development, and the underlying technology has no alternative future uses, we recorded the entire upfront payment to research and development expenses in our statement of operations for the year ended December 31, 2011. We are also required to make additional payments based upon the achievement of certain intellectual property, development, regulatory, and commercial milestones, as well as royalties on future net sales of products resulting from development of this purchased technology, if any. In May 2016, we amended the license agreement to revise certain milestone definitions, reduce certain milestone payments and add certain development-related milestone payments that were triggered by dosing of certain patients in the Phase 1 clinical trial of bemarituzumab. We made milestone payments to Galaxy totaling \$0, \$9.5 million and \$0 in 2019, 2018 and 2017, respectively. In May 2017, we further amended the license agreement to align the net sales definition under the agreement to the net sales definition under any sublicense we may grant under the agreement and to amend the termination provisions to allow for a direct license between Galaxy and any sublicensee upon termination of the agreement.

BioWa, Inc. and Lonza Sales AG

In February 2012, we entered into a license agreement with BioWa, Inc. and Lonza Sales AG, or BioWa-Lonza, pursuant to which BioWa-Lonza granted us a non-exclusive license to use their Potelligent® CHOK1SV technology, including the CHOK1SV cell line, and a non-exclusive license to related know-how and patents. This license is necessary to produce our bemarituzumab antibody.

In November 2015, we entered into a separate license agreement for the same technology with BioWa-Lonza for our FPA150 antibody program.

We are obligated to pay BioWa-Lonza aggregate milestone payments of up to \$24.5 million and \$25.4 million, respectively, for development, regulatory and commercialization milestones achieved in our bemarituzumab and FPA150 antibody programs. We are also obligated to pay BioWa-Lonza tiered royalties on net sales up to mid-single digit percentages. We made milestone payments to BioWa-Lonza under both agreements totaling \$0, \$1.2 million and \$0 in 2019, 2018 and 2017, respectively.

Our license agreements with BioWa-Lonza will remain in effect until the expiration of our royalty obligations under each agreement, unless earlier terminated. For each licensed product under each agreement, we are obligated to pay BioWa-Lonza royalties on net sales of such licensed product on a country-by-country basis for the longer of the life of the licensed patents covering such licensed product in such country or 10 years after the first commercial sale of such licensed product in a major market country, which includes the United States.

INBRX 110 LP

In July 2015, we entered into a research collaboration and license agreement with INBRX 110 LP, or Inhibrx, to obtain (a) an exclusive, worldwide license to antibodies to GITR for therapeutic and diagnostic uses, and (b) an exclusive option to obtain exclusive, worldwide licenses to multi-specific antibodies developed by Inhibrx that bind to both GITR and other targets.

We recorded an expense of \$5.0 million for a milestone payment to Inhibrx when the milestone was achieved in May 2017.

On August 28, 2017, we delivered to Inhibrx written notice of termination of the agreement for convenience. Pursuant to the terms of the agreement, the termination became effective on December 27, 2017.

10. Income Taxes

For the years ended December 31, 2019 and 2018, we did not record any income tax expense as compared to an income tax expense of \$1.7 million for the year ended December 31, 2017.

For the year ended December 31, 2017, the income tax expense related to deficiency interest was based on the Internal Revenue Service reducing our tentative net operating loss carryback refund claim filed in March 2017.

The components of our income tax expense (benefit) were as follows:

	Year Ended December 31,		
	2019	2018	2017
Current tax expense			
Federal	\$ —	\$ —	\$ 1,703
State	—	—	1
Total current expense	—	—	1,704
Deferred tax expense			
Federal	—	—	—
State	—	—	—
Total deferred tax expense	—	—	—
Total tax expense	\$ —	\$ —	\$ 1,704

The income tax expense (benefit) differs from the amount computed by applying the statutory federal income tax rate as follows (in thousands):

	Year Ended December 31,		
	2019	2018	2017
Federal statutory income tax	\$ (28,812)	\$ (29,495)	\$ (51,981)
State statutory income tax	1	1	1
Stock compensation	4,055	3,698	(4,847)
Nontaxable equity premiums	(20)	(85)	(168)
Change in valuation allowance	32,540	38,953	41,633
Remeasurement of deferred taxes	—	—	27,122
Research and orphan drug credits	(8,015)	(13,192)	(11,029)
Interest charge, net of federal benefit	—	—	1,107
Other permanent items	251	120	(134)
Income tax expense	\$ —	\$ —	\$ 1,704

On December 22, 2017, the Tax Cuts and Jobs Act of 2017, or the Tax Act, was signed into law. The Tax Act reduces the corporate tax rate from a top marginal rate of 35% to a flat rate of 21%. Although the Tax Act generally became effective on January 1, 2018, GAAP requires recognition of the tax effects of new legislation during the reporting period that includes the enactment date of December 22, 2017. Because of the impacts of the Tax Act, the SEC issued Staff Accounting Bulletin No. 118 Income Tax Accounting Implications of the Tax Cuts and Jobs Act (SAB 118) that allows us to record provisional amounts for those impacts, with the requirement that the accounting be completed in a period not to exceed one year from the date of enactment. As a result, as of December 31, 2017, we performed a provisional estimate of the effect of the Tax Act in the financial statements. In the fourth quarter of 2018, we completed our analysis to determine the effect of the Tax Act. No material adjustments were noted from the completion of the analysis as of December 31, 2018. The primary impact of the Tax Act resulted from the re-measurement of deferred tax assets and liabilities due to the change in the corporate tax rate, reducing our deferred tax assets by \$27.1 million with a corresponding reduction in our valuation allowance, which had no effect on our effective tax rate.

The tax effects of temporary differences and carryforwards that give rise to significant portions of the deferred tax assets consist of the following (in thousands):

	As of December 31,	
	2019	2018
Net operating loss carryforwards	\$ 85,928	\$ 60,566
Research and orphan drug credits	68,053	58,614
Deferred revenue	1,372	2,410
Stock-based compensation	7,562	7,698
Capitalized license and depreciation basis differences	3,196	3,412
Reserves, accruals and tenant improvement allowances	1,389	5,639
Operating lease liability	10,619	—
Total deferred tax assets	178,119	138,339
Less: valuation allowance	(168,691)	(134,492)
Net deferred tax assets	\$ 9,428	\$ 3,847
Capitalized license and depreciation basis differences	(2,374)	(3,396)
Operating right-of-use asset	(6,621)	—
Prepaid expenses	(433)	(451)
Total deferred tax liabilities	\$ (9,428)	\$ (3,847)
Total net deferred tax assets	\$ —	\$ —

Based on all available objective evidence, we determined it is more likely than not that we will not fully realize all our net deferred tax assets. The available objective evidence considered was our inability to further recover any taxes previously paid and expectation of future taxable income. Accordingly, we recorded a valuation allowance against all our net deferred tax assets for the years ended December 31, 2019 and 2018. We will continue to maintain a full valuation allowance on our net deferred tax assets until there is sufficient positive evidence to support the reversal of all or some portion of this allowance. Our valuation allowance increased by \$34.2 million and \$40.2 million during 2019 and 2018, respectively.

As of December 31, 2019, our total net deferred tax assets, net of gross deferred tax liabilities, were \$168.7 million. Due to our lack of earnings history, the net deferred tax assets have been fully offset by a valuation allowance. In assessing the realizability of deferred tax assets, we considered whether it is more likely than not that some portion or all of the deferred tax assets will not be realized. The ultimate realization of deferred tax assets is dependent upon the generation of future taxable income during the periods in which the temporary differences representing net future deductible amounts become deductible. Due to our history of losses, and lack of other positive evidence, we determined that it is more likely than not that our net deferred tax assets will not be realized, and therefore, the net deferred tax assets are fully offset by a valuation allowance.

The deferred tax assets were primarily comprised of federal and state tax net operating losses and tax credit carryforwards. As of December 31, 2019, we had federal net operating loss carryforwards of approximately \$375.5 million, which will start to expire beginning in 2024, and state net operating loss carryforwards of approximately \$161.9 million, which will start to expire beginning in 2028. In addition, as of December 31, 2019, we had federal research and development and orphan drug credit carryforwards of approximately \$61.7 million, which will start to expire in 2026, and state research and development credit carryforwards of approximately \$23.5 million, which can be carried forward indefinitely.

Utilization of the net operating loss carryforwards and credits may be subject to a substantial annual limitation due to the ownership change limitations provided by Section 382 and Section 383 of the Internal Revenue Code of 1986, as amended, and by similar state provisions. The annual limitation may result in the expiration of net operating losses and credits before utilization. Under the Tax Act, the carry forward period of net operating losses generated

from 2018 forward is indefinite. However, the carryforward period for net operating losses generated prior to 2018 remains the same. To date, we have reduced our tax attributes (NOLs and tax credits) by approximately \$1.4 million as a result of ownership changes. Any additional ownership change, if identified, may further limit the available tax attributes to offset our future taxable income in future periods.

We had \$18.4 million, \$16.7 million, and \$13.6 million of unrecognized tax benefits as of December 31, 2019, 2018, and 2017, respectively. The unrecognized tax benefits are primarily tax credits for all years and state net operating loss carryover related for certain prior years. For the years ended December 31, 2019 and 2018, we recorded no interest or penalties related to income taxes. A reconciliation of our unrecognized tax benefits for the years ended December 31, 2019, 2018, and 2017 is as follows (in thousands):

	Unrecognized Income Tax Benefits
Balance as of December 31, 2016	\$ 9,403
Additions for prior year tax positions	691
Additions for current year tax positions	3,490
Balance as of December 31, 2017	13,584
Additions for prior year tax positions	622
Additions for current year tax positions	2,454
Balance as of December 31, 2018	16,660
Additions for prior year tax positions	11
Additions for current year tax positions	1,722
Balance as of December 31, 2019	\$ 18,393

In the event we are able to recognize these uncertain positions, most of the \$18.4 million of the unrecognized tax benefits would reduce our effective tax rate. We currently have a full valuation allowance against our deferred tax assets, which would impact the timing of the effective tax rate benefit, should any of these uncertain positions be favorably settled in the future. We do not believe it is reasonably possible that our unrecognized tax benefits will significantly change within the next twelve months.

We file U.S. and state income tax returns with varying statutes of limitations. The tax years from 2003 forward remain open to examination due to the carryover of unused net operating losses and tax credits. We have no ongoing tax examinations by tax authorities at this time.

11. Commitments and Contingencies

Operating Leases

We adopted ASU 2016-02, effective January 1, 2019, using the updated modified retrospective transition method, in which the new standard is applied as of the date of initial adoption. We recognized and measured agreements executed prior to the date of initial adoption that were considered leases on January 1, 2019. No cumulative effect adjustment of initially applying the standard to the opening balance of retained earnings was made upon adoption. We elected the package of practical expedients permitted under the transition guidance that will retain the lease classification and initial direct costs for any leases that exist prior to adoption of the standard. We have elected to account for each separate lease component and the non-lease components associated with that lease component as a single lease component. We have not reassessed whether any contracts entered into prior to adoption are leases. In addition, we elected the accounting policy of not recording short-term leases with a lease term at the commencement date of twelve months or less on the balance sheet as permitted by the new standard.

When available, we use the rate implicit in the lease to discount lease payments to present value. However, our leases do not provide a readily determinable implicit rate. Therefore, we must estimate our incremental borrowing rate to discount the lease payments based on information available at lease commencement.

We entered into a lease agreement for our corporate office and laboratory facility in December 2016, which we refer to as the facility lease. We moved into our corporate office and laboratory facility in December 2017. The facility lease has an initial term of 10 years, beginning on the rent commencement date, with an option to extend the lease for an additional period of five years. We did not have to pay rent until the rent commencement date of January 1, 2018, and rent was reduced by 50% for the first six months. The facility lease contains scheduled rent increases over the lease term. We received lease incentives from our landlord for a portion of the costs of leasehold improvements we made to the premises. In addition, the facility lease required us to deliver an irrevocable standby letter of credit in an amount of \$1.5 million to the landlord for the period commencing on the effective date of the facility lease until at least 60 days after the expiration of the lease, subject to 50% reduction on January 1, 2023 if certain conditions are met. In October 2019, we commenced a corporate restructuring to extend our cash runway and ensure long-term sustainability. As part of the restructuring, we are initiating activities to reduce our corporate facilities footprint by either subletting a significant portion of our current leased space or subletting our current building and relocating to smaller facilities.

In July 2018, we entered into a lease agreement for the installation, operational qualifications and performance qualifications of four sequencing instruments to support our bemarituzumab program, which we refer to as the instruments lease. The instruments lease has two 3-year terms based on delivery dates for the first three instruments in July 2018 and the fourth instrument in February 2019. The lease contains consistent rent payments over the terms of the lease.

We have evaluated our leases and determined that, effective upon the adoption of ASU 2016-02, they were all operating leases. The classification of our leases is consistent with our determination under the previous accounting standard. The balance sheet classification of our lease assets and liabilities is presented on our balance sheet. We recognize operating lease cost as a single lease cost, calculated so that the cost of the lease is allocated over the lease term on a straight-line basis. Variable lease payments that are not included in the lease liability are recognized on the statement of operations in the period in which the obligation for those payments is incurred. For the year ended December 31, 2019, we recognized operating lease cost of \$6.1 million and variable lease cost of \$1.8 million. Cash paid for amounts included in the measurement of operating lease liabilities was \$6.7 million for the year ended December 31, 2019.

The weighted-average discount rate of our operating leases is 7%, and the weighted-average remaining lease term of our operating leases is eight years as of December 31, 2019.

The table below reconciles the undiscounted cash flows for each of the first five years and the total of the remaining years to the operating lease liabilities recorded on the balance sheet.

	Operating Leases
2020	\$ 7,589
2021	7,723
2022	7,799
2023	8,064
2024	8,341
2025 and beyond	26,825
Total minimum lease payments	\$ 66,341
Less: amount of lease payments representing interest	(16,729)
Present value of future minimum lease payments	\$ 49,612
Less: operating lease obligations, current portion	(4,080)
Operating lease obligations, long-term portion	\$ 45,532

Indemnifications

As permitted under Delaware law and in accordance with our bylaws, we have agreed to indemnify our officers and directors for certain events or occurrences, subject to certain limits, while the officer or director is or was serving at our request in such capacity. The term of the indemnification period is equal to the officer's or director's lifetime.

The maximum amount of potential future indemnification is unlimited. However, we currently hold director and officer liability insurance, which limits our exposure and may enable us to recover a portion of any future amounts paid. We believe that the fair value of these indemnification obligations is minimal. Accordingly, we have not recognized any liabilities relating to these obligations for any period presented.

We have certain agreements with service providers and other parties with which we do business that contain indemnification provisions pursuant to which we have agreed to indemnify the party against certain types of third-party claims. We accrue for known indemnification issues when a loss is probable and can be reasonably estimated. We would also accrue for estimated incurred but unidentified indemnification issues based on historical activity. As we have not incurred any indemnification losses to date, there were no accruals for or expenses related to indemnification issues for any period presented.

12. Restructuring and Other Charges

In January 2019, we implemented a corporate restructuring, or the January restructuring, to focus our resources on clinical development and late-stage research programs. Pursuant to the January restructuring, 41 employee positions were eliminated, representing approximately 20% of our then-current headcount, primarily in areas relating to research, pathology and manufacturing. Restructuring charges related to the January 2019 restructuring were incurred primarily during the first quarter of 2019 and amounted to approximately \$1.8 million for severance and other benefit costs related to the restructuring.

On October 10, 2019, we announced another corporate restructuring, or the October restructuring, to extend our cash runway and ensure long-term sustainability. As part of the October restructuring, we are reducing our workforce by approximately 70 positions across all functions through the second quarter of 2020. In addition, we are initiating activities to reduce our corporate facilities footprint by either subletting a significant portion of our current leased space or subletting our current building and relocating to smaller facilities. We expect the October restructuring to be completed by the end of 2020. During the year ended December 31, 2019, we incurred approximately \$2.7 million for severance, other termination costs and employee retention costs related to the October restructuring.

Asset Impairment Charge

In conjunction with the restructuring activities undertaken in 2019, we evaluated our laboratory equipment and determined that the carrying value of \$5.9 million is no longer recoverable and its estimated fair value is \$3.9 million. Thus, an impairment loss of \$2.0 million is recognized in our research and development costs in operating expenses within our statement of operations.

The following table summarizes management's estimates of costs that are expected to be incurred that are probable and can be estimated as of December 31, 2019 and the actual costs incurred for the year ended December 31, 2019:

	2019 Restructuring Plan	
	Total Estimated Restructuring Costs	Total Restructuring Cost Incurred For Year Ended December 31, 2019
	in thousands	
Employee retention, severance and termination benefits	\$ 6,834	\$ 4,528
Asset impairments and other costs	2,087	2,087
	<u>\$ 8,921</u>	<u>\$ 6,615</u>

The following table presents the components of restructuring and other related costs for the year ended December 31, 2019 and where they are recognized under operating expenses:

	Employees' Retention, Severance, & Termination Benefits	Asset Impairments and Other Costs	Total Restructuring Cost
	in thousands		
Research and development	\$ 4,126	\$ 2,087	\$ 6,213
General and administrative	402	—	402
Total	<u>\$ 4,528</u>	<u>\$ 2,087</u>	<u>\$ 6,615</u>

The following table presents the activity in the accrued personnel-related expense liability associated with the restructurings for the year ended December 31, 2019:

	2019 Restructuring Plan
	Total Severance and Retention Costs
	in thousands
Accrued balance as of January 1, 2019	\$ —
Charges	4,528
Cash payments	(3,346)
Accrued balance as of December 31, 2019	<u>\$ 1,182</u>

13. Subsequent Events

On January 15, 2020, the compensation and management development committee of our Board, or the compensation committee, approved the grant of a retention bonus to each of David Smith, Executive Vice President and Chief Financial Officer, Francis Sarena, Chief Strategy Officer and Secretary, and Helen Collins, M.D., Executive Vice President and Chief Medical Officer, each an executive. Each executive will be entitled to receive a retention bonus on December 31, 2020 equal to such executive's bonus target for the 2020 calendar year, as set forth in the company's annual bonus plan, effective January 1, 2018, or the bonus plan, subject to such executive's continued employment in good standing with the company through December 31, 2020 and our achievement of at least one prespecified business development-related performance trigger on or prior to December 31, 2020. The retention bonus will be in addition to any bonus such executive may earn with respect to 2020 performance under the bonus plan. The grants of the retention bonuses to each executive were approved in January 2020. As such, we will analyze

the probability of achieving the performance triggers in the first quarter of 2020 and will then determine if an accrual is necessary. In addition, if an executive's employment is involuntarily terminated before December 31, 2020, the company will pay to such executive, in addition to any other benefits to which such executive is entitled, an amount equal to the executive's bonus target for the 2020 calendar year, subject to such executive's execution of a general release of claims in favor of the company.

In February 2020, we entered into a global license agreement with Seattle Genetics, Inc. to develop and commercialize novel antibody-drug conjugate, or ADC, therapies using monoclonal antibodies directed to a single target that we developed. Under the agreement, we will receive a \$5 million upfront payment and are eligible to receive progress-dependent development and regulatory milestone payments as well as cumulative commercial milestone payments. Cumulative milestones may reach up to \$295 million for the first ADC product that is developed and commercialized. The agreement was fully executed in February 2020.

On February 24, 2020, the compensation committee approved the grant to each executive of (i) 15,000 shares of restricted common stock of the company and (ii) an option to purchase 90,000 shares of the company's common stock, in each case pursuant to our 2013 Omnibus Incentive Plan. The shares subject to each executive's restricted stock award will vest with respect to 1/3 of the shares subject to such award on each of February 24, 2021; February 24, 2022; and February 24, 2023, in each case, subject to such executive's continued service with the company on the applicable vest date. The shares subject to such executive's option award will vest with respect to (i) 25% of the shares subject to such option award on February 24, 2021; and (ii) 1/48 of the shares subject to such retention option award monthly commencing on March 24, 2021, in each case, subject to such executive's continued service with the company on the applicable vest date.

14. Selected Quarterly Financial Information (Unaudited)

The following amounts are in thousands, except per share amounts:

Quarterly Results of Operations	Quarter Ended			
	March 31, 2019	June 30, 2019	September 30, 2019	December 31, 2019
	(Unaudited)			
Revenue	\$ 5,347	\$ 3,333	\$ 2,984	\$ 3,210
Net loss	(35,385)	(34,391)	(36,069)	(31,357)
Basic and diluted net loss per share	(1.02)	(0.99)	(1.03)	(0.90)

Quarterly Results of Operations	Quarter Ended			
	March 31, 2018	June 30, 2018	September 30, 2018	December 31, 2018
	(Unaudited)			
Revenue	\$ 32,486	\$ 7,580	\$ 5,771	\$ 4,031
Net loss	(20,390)	(34,060)	(47,244)	(38,753)
Basic and diluted net loss per share	(0.63)	(0.99)	(1.37)	(1.12)

Basic and diluted net loss per share is computed independently for each of the quarters presented. Therefore, the sum of quarterly basic and diluted per share amounts may not equal annual basic and diluted net loss per share amounts.

**DESCRIPTION OF THE REGISTRANT'S SECURITIES
REGISTERED PURSUANT TO SECTION 12 OF THE
SECURITIES EXCHANGE ACT OF 1934**

The following description summarizes selected information regarding our capital stock, as well as relevant provisions of: (i) our amended and restated certificate of incorporation; (ii) our amended and restated bylaws; and (iii) the General Corporation Law of the State of Delaware, or the DGCL. The following summary is qualified in its entirety by, and should be read in conjunction with, the amended and restated certificate of incorporation and the amended and restated bylaws, copies of which have been filed as exhibits to our Annual Report on Form 10-K to which this exhibit is attached, and the applicable provisions of the DGCL.

General

Under our amended and restated certificate of incorporation, we are authorized to issue up to 100,000,000 shares of common stock, par value \$0.001 per share, and 10,000,000 shares of preferred stock, par value \$0.001 per share, all of which shares of preferred stock are undesignated. Our board of directors may establish the rights and preferences of the preferred stock from time to time.

Common Stock

Voting Rights

Each holder of common stock is entitled to one vote for each share on all matters submitted to a vote of the stockholders. The affirmative vote of holders of at least 66 2/3% of the voting power of all of the then-outstanding shares of capital stock, voting as a single class, will be required to amend certain provisions of our amended and restated certificate of incorporation, including provisions relating to amending our amended and restated bylaws, the classified board, the size of our board, removal of directors, director liability, vacancies on our board, special meetings, stockholder notices, actions by written consent and exclusive jurisdiction.

Dividends

Subject to preferences that may apply to any outstanding preferred stock, holders of our common stock are entitled to receive ratably any dividends that our board of directors may declare out of funds legally available for that purpose on a non-cumulative basis.

Liquidation

In the event of our liquidation, dissolution or winding up, holders of our common stock are entitled to share ratably in all assets remaining after payment of liabilities and the liquidation preference of any outstanding preferred stock.

Rights and Preferences

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

Preferred Stock

Pursuant to our amended and restated certificate of incorporation, our board of directors has the authority, without further action by our stockholders, to issue up to 10,000,000 shares of preferred stock in one or more series and to fix the number, rights, preferences, privileges and restrictions thereof. These rights, preferences and privileges could include dividend rights, conversion rights, voting rights, terms of redemption, liquidation preferences and sinking fund terms, and the number of shares constituting any series or the designation of such series, any or all of which may be greater than the rights of holders of our common stock. The issuance of our preferred stock could adversely affect the voting power of holders of common stock and the likelihood that such holders would receive dividend payments and payments upon liquidation. In addition, the issuance of preferred stock could have the effect of delaying, deferring or

preventing a change of control or other corporate action, or make the removal of management more difficult. Additionally, the issuance of preferred stock may have the effect of decreasing the market price of our common stock.

Anti-Takeover Provisions

Section 203 of the General Corporation Law of the State of Delaware

We are subject to Section 203 of the General Corporation Law of the State of Delaware, or the DGCL, which prohibits a Delaware corporation from engaging in any business combination with any interested stockholder for a period of three years after the date that such stockholder became an interested stockholder, unless any of the following exceptions apply:

- before such date, the board of directors of the corporation approved either the business combination or the transaction that resulted in the stockholder becoming an interested stockholder;
- upon completion of the transaction that resulted in the stockholder becoming an interested stockholder, the interested stockholder owned at least 85% of the voting stock of the corporation outstanding at the time the transaction began, excluding for purposes of determining the voting stock outstanding, but not the outstanding voting stock owned by the interested stockholder, those shares owned (i) by persons who are directors and also officers of the applicable corporation and (ii) employee stock plans in which employee participants do not have the right to determine confidentially whether shares held subject to the plan will be tendered in a tender or exchange offer; or
- on or after such date, the business combination is approved by the board of directors and authorized at an annual or special meeting of the stockholders, and not by written consent, by the affirmative vote of at least 66 2/3% of the outstanding voting stock that is not owned by the interested stockholder.

In general, Section 203 defines a “business combination” to include the following:

- any merger or consolidation involving the corporation and the interested stockholder;
- any sale, transfer, pledge or other disposition of 10% or more of the assets of the corporation involving the interested stockholder;
- subject to certain exceptions, any transaction that results in the issuance or transfer by the corporation of any stock of the corporation to the interested stockholder;
- any transaction involving the corporation that has the effect of increasing the proportionate share of the stock or any class or series of the corporation beneficially owned by the interested stockholder; or
- the receipt by the interested stockholder of the benefit of any loans, advances, guarantees, pledges or other financial benefits by or through the corporation.

In general, Section 203 defines an “interested stockholder” as an entity or person who, together with the entity or person’s affiliates and associates, beneficially owns, or is an affiliate or associate of the corporation and within three years prior to the time of determination of interested stockholder status did own, 15% or more of the outstanding voting stock of the corporation.

Amended and Restated Certificate of Incorporation and Amended and Restated Bylaws

Among other things, our amended and restated certificate of incorporation and amended and restated bylaws will:

- permit our board of directors to issue up to 10,000,000 shares of preferred stock, with any rights, preferences and privileges as they may designate, including the right to approve an acquisition or other change in control;
 - provide that the authorized number of directors may be changed only by resolution of our board of directors;
 - provide that our board of directors will be classified into three classes of directors;
 - provide that, subject to the rights of any series of preferred stock to elect directors, directors may only be removed for cause, which removal may be effected, subject to any limitation imposed by law, by the holders of at least a majority of the voting power of all of our then-outstanding shares of the capital stock entitled to vote generally at an election of directors;
-

- provide that all vacancies, including newly created directorships, may, except as otherwise required by law, be filled by the affirmative vote of a majority of directors then in office, even if less than a quorum;
- require that any action to be taken by our stockholders must be effected at a duly called annual or special meeting of stockholders and may not be taken by written consent or electronic transmission;
- provide that stockholders seeking to present proposals before a meeting of stockholders or to nominate candidates for election as directors at a meeting of stockholders must provide advance notice in writing, and also specify requirements as to the form and content of a stockholder's notice;
- provide that special meetings of our stockholders may be called only by the chairman of our board of directors, our chief executive officer or president or by our board of directors pursuant to a resolution adopted by a majority of the total number of authorized directors; and
- not provide for cumulative voting rights, therefore allowing the holders of a majority of the shares of common stock entitled to vote in any election of directors to elect all of the directors standing for election, if they should so choose.

The amendment of any of these provisions would require approval by the holders of at least 66 2/3 % of the voting power of all our then-outstanding common stock entitled to vote generally in the election of directors, voting together as a single class.

The combination of these provisions will make it more difficult for our stockholders to replace our board of directors as well as for a third party to obtain control of us by replacing our board of directors. Because our board of directors has the power to retain and discharge our officers, these provisions could also make it more difficult for our stockholders or a third party to effect a change in management. In addition, the authorization of undesignated preferred stock makes it possible for our board of directors to issue preferred stock with voting or other rights or preferences that could impede the success of any attempt to change our control.

These provisions are intended to enhance the likelihood of continued stability in the composition of our board of directors and its policies and to discourage coercive takeover practices and inadequate takeover bids. These provisions are also designed to reduce our vulnerability to hostile takeovers and to discourage certain tactics that may be used in proxy fights. However, such provisions could have the effect of discouraging others from making tender offers for our shares and may have the effect of delaying changes in our control or management. As a consequence, these provisions may also inhibit fluctuations in the market price of our stock that could result from actual or rumored takeover attempts. We believe that the benefits of these provisions, including increased protection of our potential ability to negotiate with the proponent of an unfriendly or unsolicited proposal to acquire or restructure our company, outweigh the disadvantages of discouraging takeover proposals, because negotiation of takeover proposals could result in an improvement of their terms.

Choice of Forum

Our amended and restated certificate of incorporation provides that unless we consent in writing to the selection of an alternative forum, the Court of Chancery of the State of Delaware will be the exclusive forum for (1) any derivative action or proceeding brought on our behalf, (2) any action asserting a breach of fiduciary duty owed by, or other wrongdoing by, any director, officer, employee or agent to us or our stockholders, (3) any action asserting a claim against us arising pursuant to the DGCL or our certificate of incorporation or bylaws, (4) any action to interpret, apply, enforce or determine the validity of our certificate of incorporation or bylaws, or (5) any action asserting a claim against us that is governed by the internal affairs doctrine.



December 20, 2019

Mr. William R. Ringo
VIA ELECTRONIC MAIL

Dear Bill,

This letter amends the employment offer letter we entered into with you on October 4, 2019, as amended October 8, 2019.

We will reimburse you for or pay the expenses of (i) up to one commercial roundtrip flight (any class of service and including any change fees) per month between San Francisco International Airport (SFO) and Indianapolis International Airport (IND) for each of you and your spouse during your employment as interim Chief Executive Officer (each such trip a "Monthly Flight") and (ii) ground transportation (including by taxi or other on-demand transportation service or executive car service) to and from your short-term residence in San Francisco, California, and SFO and to and from your residence in the Indianapolis, Indiana, area and IND ("Ground Transportation") in connection with any Monthly Flight. In addition, we will reimburse you for or pay the expenses of (i) the commercial flights (for any class of service and including any change fees) you or your spouse have taken between San Francisco International Airport (SFO) and Indianapolis International Airport (IND) during your employment as interim Chief Executive Officer and (ii) any related Ground Transportation. We will pay you a gross-up amount to the extent any such reimbursements or payments referred to in the preceding sentences are deemed income to you to cover the amount of withholding taxes that would be due on such deemed income.

To accept this amendment to your offer letter, please sign, date and return this letter to Francis Sarena, Chief Strategy Officer and Secretary of Five Prime.

Sincerely,

Five Prime Therapeutics, Inc.

/s/ Peder Jensen
Peder Jensen
Chairman of the Compensation and Management Development Committee
of the Board of Directors

Accepted:

/s/ William R. Ringo

William R. Ringo



December 12, 2019

Dear Francis,

As you know, you are a party to that certain Executive Severance Benefits Agreement dated February 18, 2011, as amended on May 8, 2013 (the “**Severance Agreement**”), with Five Prime Therapeutics, Inc. (the “**Company**”), pursuant to which you are entitled to certain severance benefits upon a Change in Control Termination (as defined in the Severance Agreement) or a Covered Termination (as defined in the Severance Agreement).

The Company’s Board of Directors has approved the adoption of an Executive Severance Benefit Plan (the “**Severance Plan**”), pursuant to which you are eligible for certain specified severance benefits upon certain covered termination events. You hereby agree that, effective upon the full execution and delivery of this letter agreement, your right to severance benefits shall be determined entirely by the Severance Plan, except in the following respect: If, at any time other than during the Change in Control Determination Period (as defined in the Plan), you experience an Involuntary Termination (as defined in the Plan), you will be eligible for the stock award acceleration benefit set forth in Section 3.4 of the Severance Agreement (subject to the terms and conditions of the Severance Plan) in lieu of the stock award acceleration benefit set forth in Section 4.1.3 of the Severance Plan.

You expressly acknowledge and agree that, except as expressly set forth herein, effective upon the full execution and delivery of this letter agreement, the Severance Agreement shall have no further force or effect, and that you are expressly waiving any right to benefits under the Severance Agreement except as expressly set forth herein.

Please sign below to indicate your acceptance of these terms.

Sincerely,

Five Prime Therapeutics, Inc.

/s/ William R. Ringo
William R. Ringo
Chief Executive Officer

UNDERSTOOD, ACCEPTED AND AGREED:

/s/ Francis Sarena

Francis Sarena

December 12, 2019

Date

December 12, 2019

Dear David,

As you know, you are a party to that certain Executive Severance Benefits Agreement dated November 26, 2018 (the “**Severance Agreement**”) with Five Prime Therapeutics, Inc. (the “**Company**”), pursuant to which you are entitled to certain severance benefits upon a Change in Control Termination (as defined in the Severance Agreement) or a Covered Termination (as defined in the Severance Agreement).

The Company’s Board of Directors has approved the adoption of an Executive Severance Benefit Plan (the “**Severance Plan**”), pursuant to which you are eligible for certain specified severance benefits upon certain covered termination events. You hereby agree that, effective upon the full execution and delivery of this letter agreement, your right to severance benefits shall be determined entirely by the Severance Plan, except in the following respect: If, at any time other than during the Change in Control Determination Period (as defined in the Plan), you experience an Involuntary Termination (as defined in the Plan), you will be eligible for the stock award acceleration benefit set forth in Section 3.4 of the Severance Agreement (subject to the terms and conditions of the Severance Plan) in lieu of the stock award acceleration benefit set forth in Section 4.1.3 of the Severance Plan.

You expressly acknowledge and agree that, except as expressly set forth herein, effective upon the full execution and delivery of this letter agreement, the Severance Agreement shall have no further force or effect, and that you are expressly waiving any right to benefits under the Severance Agreement except as expressly set forth herein.

Please sign below to indicate your acceptance of these terms.

Sincerely,

Five Prime Therapeutics, Inc.

/s/ William R. Ringo
William R. Ringo
Chief Executive Officer

UNDERSTOOD, ACCEPTED AND AGREED:

/s/ David Smith

David Smith

December 12, 2019

Date



January 15, 2020

David Smith
Via Hand Delivery

Re: Retention Bonus

Dear David,

We view your contribution as an Executive Team member and an employee of Five Prime Therapeutics, Inc. ("Five Prime" or "we") as important to our long-term success. To show our appreciation for your contribution to the success of Five Prime and as a further incentive to your continued employment with Five Prime, Five Prime is entering into this letter agreement (this "Retention Agreement") with you.

Subject to (i) your continued employment in good standing with Five Prime through December 31, 2020, (ii) Five Prime's (A) [***], (B) [***], or (C) [***], in each case on or before December 31, 2020 ((A), (B) or (C) a "Performance Trigger"), and (iii) the terms and conditions of this Retention Agreement, you will earn and we will pay to you on December 31, 2020, a retention bonus (the "Retention Bonus") in an amount equal to your Bonus Target (as that term is defined in Five Prime's Annual Bonus Plan) for the 2020 calendar year. The Retention Bonus will be in addition to any bonus you may earn with respect to calendar year 2020 performance under our Annual Bonus Plan. The Retention Bonus will be subject to all applicable taxes and withholdings. If we do not achieve any of the Performance Triggers on or before December 31, 2020, the Retention Bonus will not be due and payable and you will forfeit any right to the Retention Bonus.

Notwithstanding the foregoing or anything else in this Retention Agreement, if prior to December 31, 2020 your employment with Five Prime terminates due to an Involuntary Termination (as such term is defined in Five Prime's Executive Severance Benefit Plan, effective November 20, 2019 (the "ESBP")), then following the date of such Involuntary Termination, Five Prime will pay you, in addition to any other benefits you may be entitled to under that certain letter agreement, dated December 12, 2019, between Five Prime and you or the ESBP, an amount equal to your Bonus Target for the 2020 calendar year. Any amount that would be payable pursuant to the preceding sentence would be contingent on your signing, and not revoking, Five Prime's form of release agreement, and Five Prime would pay such amount promptly in the next pay period following the effective date of your release agreement but not earlier than 10 days following such effective date.

If your employment with Five Prime terminates for any reason other than an Involuntary Termination before December 31, 2020, then you would not receive any portion of the Retention Bonus.

You agree that the Retention Bonus will not be "grossed up" and will be subject to all applicable payroll withholdings and deductions.

Phone + 1 415 365 5600
fiveprime.com

Five Prime Therapeutics, Inc.
111 Oyster Point Boulevard
South San Francisco, CA 94080

Except as otherwise provided in this Retention Agreement, all the other terms and conditions of your employment relationship with Five Prime will continue to apply. This Retention Agreement is not intended to change the at-will nature of your employment with Five Prime. You will be free to terminate your employment with Five Prime at any time and for any reason whatsoever simply by notifying us. Likewise, we will be free to terminate your employment at any time for any reason whatsoever, with or without cause or advance notice.

To indicate your acceptance of the terms of this Retention Agreement, please sign and date this Retention Agreement in the space provided below and return it to Andrea Danforth.

Sincerely,

Five Prime Therapeutics, Inc.

/s/ William R. Ringo

William R. Ringo
Chief Executive Officer

/s/ David Smith

David Smith
January 20, 2020

Date



January 15, 2020

Helen Collins, M.D.
Via Hand Delivery

Re: Retention Bonus

Dear Helen,

We view your contribution as an Executive Team member and an employee of Five Prime Therapeutics, Inc. ("Five Prime" or "we") as important to our long-term success. To show our appreciation for your contribution to the success of Five Prime and as a further incentive to your continued employment with Five Prime, Five Prime is entering into this letter agreement (this "Retention Agreement") with you.

Subject to (i) your continued employment in good standing with Five Prime through December 31, 2020, (ii) Five Prime's (A) [***], (B) [***], or (C) [***], in each case on or before December 31, 2020 ((A), (B) or (C) a "Performance Trigger"), and (iii) the terms and conditions of this Retention Agreement, you will earn and we will pay to you on December 31, 2020, a retention bonus (the "Retention Bonus") in an amount equal to your Bonus Target (as that term is defined in Five Prime's Annual Bonus Plan) for the 2020 calendar year. The Retention Bonus will be in addition to any bonus you may earn with respect to calendar year 2020 performance under our Annual Bonus Plan. The Retention Bonus will be subject to all applicable taxes and withholdings. If we do not achieve any of the Performance Triggers on or before December 31, 2020, the Retention Bonus will not be due and payable and you will forfeit any right to the Retention Bonus.

Notwithstanding the foregoing or anything else in this Retention Agreement, if prior to December 31, 2020 your employment with Five Prime terminates due to an Involuntary Termination (as such term is defined in Five Prime's Executive Severance Benefit Plan, effective November 20, 2019 (the "ESBP")), then following the date of such Involuntary Termination, Five Prime will pay you, in addition to any other benefits you may be entitled to under that certain letter agreement, dated December 12, 2019, between Five Prime and you or the ESBP, an amount equal to your Bonus Target for the 2020 calendar year. Any amount that would be payable pursuant to the preceding sentence would be contingent on your signing, and not revoking, Five Prime's form of release agreement, and Five Prime would pay such amount promptly in the next pay period following the effective date of your release agreement but not earlier than 10 days following such effective date.

If your employment with Five Prime terminates for any reason other than an Involuntary Termination before December 31, 2020, then you would not receive any portion of the Retention Bonus.

You agree that the Retention Bonus will not be "grossed up" and will be subject to all applicable payroll withholdings and deductions.

Phone + 1 415 365 5600
fiveprime.com

Five Prime Therapeutics, Inc.
111 Oyster Point Boulevard
South San Francisco, CA 94080

Except as otherwise provided in this Retention Agreement, all the other terms and conditions of your employment relationship with Five Prime will continue to apply. This Retention Agreement is not intended to change the at-will nature of your employment with Five Prime. You will be free to terminate your employment with Five Prime at any time and for any reason whatsoever simply by notifying us. Likewise, we will be free to terminate your employment at any time for any reason whatsoever, with or without cause or advance notice.

To indicate your acceptance of the terms of this Retention Agreement, please sign and date this Retention Agreement in the space provided below and return it to Andrea Danforth.

Sincerely,

Five Prime Therapeutics, Inc.

/s/ William R. Ringo

William R. Ringo
Chief Executive Officer

/s/ Helen Collins, M.D.

Helen Collins, M.D

January 30, 2020

Date



January 15, 2020

Francis Sarena
Via Hand Delivery

Re: Retention Bonus

Dear Francis,

We view your contribution as an Executive Team member and an employee of Five Prime Therapeutics, Inc. ("Five Prime" or "we") as important to our long-term success. To show our appreciation for your contribution to the success of Five Prime and as a further incentive to your continued employment with Five Prime, Five Prime is entering into this letter agreement (this "Retention Agreement") with you.

Subject to (i) your continued employment in good standing with Five Prime through December 31, 2020, (ii) Five Prime's (A) [***], (B) [***], or (C) [***], in each case on or before December 31, 2020 ((A), (B) or (C) a "Performance Trigger"), and (iii) the terms and conditions of this Retention Agreement, you will earn and we will pay to you on December 31, 2020, a retention bonus (the "Retention Bonus") in an amount equal to your Bonus Target (as that term is defined in Five Prime's Annual Bonus Plan) for the 2020 calendar year. The Retention Bonus will be in addition to any bonus you may earn with respect to calendar year 2020 performance under our Annual Bonus Plan. The Retention Bonus will be subject to all applicable taxes and withholdings. If we do not achieve any of the Performance Triggers on or before December 31, 2020, the Retention Bonus will not be due and payable and you will forfeit any right to the Retention Bonus.

Notwithstanding the foregoing or anything else in this Retention Agreement, if prior to December 31, 2020 your employment with Five Prime terminates due to an Involuntary Termination (as such term is defined in Five Prime's Executive Severance Benefit Plan, effective November 20, 2019 (the "ESBP")), then following the date of such Involuntary Termination, Five Prime will pay you, in addition to any other benefits you may be entitled to under that certain letter agreement, dated December 12, 2019, between Five Prime and you or the ESBP, an amount equal to your Bonus Target for the 2020 calendar year. Any amount that would be payable pursuant to the preceding sentence would be contingent on your signing, and not revoking, Five Prime's form of release agreement, and Five Prime would pay such amount promptly in the next pay period following the effective date of your release agreement but not earlier than 10 days following such effective date.

If your employment with Five Prime terminates for any reason other than an Involuntary Termination before December 31, 2020, then you would not receive any portion of the Retention Bonus.

You agree that the Retention Bonus will not be "grossed up" and will be subject to all applicable payroll withholdings and deductions.

Phone + 1 415 365 5600
fiveprime.com

Five Prime Therapeutics, Inc.
111 Oyster Point Boulevard
South San Francisco, CA 94080

Except as otherwise provided in this Retention Agreement, all the other terms and conditions of your employment relationship with Five Prime will continue to apply. This Retention Agreement is not intended to change the at-will nature of your employment with Five Prime. You will be free to terminate your employment with Five Prime at any time and for any reason whatsoever simply by notifying us. Likewise, we will be free to terminate your employment at any time for any reason whatsoever, with or without cause or advance notice.

To indicate your acceptance of the terms of this Retention Agreement, please sign and date this Retention Agreement in the space provided below and return it to Andrea Danforth.

Sincerely,

Five Prime Therapeutics, Inc.

/s/ William R. Ringo

William R. Ringo
Chief Executive Officer

/s/ Francis Sarena

Francis Sarena
January 20, 2020
Date



December 12, 2019

Dear Helen,

As you know, you are a party to that certain Executive Severance Benefits Agreement dated March 20, 2017 (the “**Severance Agreement**”) with Five Prime Therapeutics, Inc. (the “**Company**”), pursuant to which you are entitled to certain severance benefits upon a Change in Control Termination (as defined in the Severance Agreement) or a Covered Termination (as defined in the Severance Agreement).

The Company’s Board of Directors has approved the adoption of an Executive Severance Benefit Plan (the “**Severance Plan**”), pursuant to which you are eligible for certain specified severance benefits upon certain covered termination events. You hereby agree that, effective upon the full execution and delivery of this letter agreement, your right to severance benefits shall be determined entirely by the Severance Plan, except in the following respect: If, at any time other than during the Change in Control Determination Period (as defined in the Plan), you experience an Involuntary Termination (as defined in the Plan), you will be eligible for the stock award acceleration benefit set forth in Section 3.4 of the Severance Agreement (subject to the terms and conditions of the Severance Plan) in lieu of the stock award acceleration benefit set forth in Section 4.1.3 of the Severance Plan.

You expressly acknowledge and agree that, except as expressly set forth herein, effective upon the full execution and delivery of this letter agreement, the Severance Agreement shall have no further force or effect, and that you are expressly waiving any right to benefits under the Severance Agreement except as expressly set forth herein.

Please sign below to indicate your acceptance of these terms.

Sincerely,

Five Prime Therapeutics, Inc.

/s/ William R. Ringo
William R. Ringo
Chief Executive Officer

UNDERSTOOD, ACCEPTED AND AGREED:

/s/ Helen Collins, M.D.

Helen Collins, M.D.

December 12, 2019

Date

**Five Prime Therapeutics, Inc.
Executive Severance Benefit Plan
and Summary Plan Description**

(Effective November 20, 2019)

1. **Introduction.** The purpose of this Five Prime Therapeutics, Inc. Executive Severance Benefit Plan (the “Plan”) is to provide assurances of specified severance benefits to eligible executives of the Company whose employment is terminated by the Company or a successor under certain circumstances. This Plan is an “employee welfare benefit plan,” as defined in Section 3(1) of ERISA (as defined below). Except as otherwise expressly set forth herein, this Plan shall supersede any individual agreement between the Company and any Covered Employee (as defined below) and any other plan, policy or practice, whether written or unwritten, maintained by the Company with respect to a Covered Employee, in each case to the extent that such agreement, plan, policy or practice provides for severance benefits upon the Covered Employee’s separation from the Company. This document constitutes both the written instrument under which the Plan is maintained and the required summary plan description for the Plan.

2. **Definitions.** For purposes of the Plan, the terms below are defined as follows:

2.1. “Administrator” means the Compensation Committee or another duly constituted committee of members of the Board, or officers of the Company as delegated by the Board, or any person to whom the Administrator has delegated any authority or responsibility pursuant to Section 10, but only to the extent of such delegation.

2.2. “Board” means the Board of Directors of the Company.

2.3. “Cause” means the termination of a Covered Employee’s employment with the Company or its subsidiaries due to (i) dishonest statements or acts with respect to the Company or any subsidiary or any affiliate of the Company; (ii) commission of or indictment for (A) a felony or (B) any misdemeanor (excluding minor traffic violations) involving moral turpitude, deceit, dishonesty or fraud (“indictment,” for these purposes, meaning an indictment, probable cause hearing or any other procedure pursuant to which an initial determination of probable or reasonable cause with respect to such offense is made); (iii) gross negligence, willful misconduct or insubordination with respect to the Company, any subsidiary or any affiliate of the Company; (iv) material breach of any of the Covered Employee’s obligations under any agreement to which the Covered Employee and the Company or any subsidiary are a party; (v) material violation of the Company’s employment policies, including (without limitation) its policies on discrimination and harassment; or (vi) death or Disability. With respect to item (iv), the Covered Employee will be given notice and a 30-day period in which to cure such breach, only to the extent such breach can be reasonably expected to be able to be cured within such period; provided that the breach of any non-solicitation or confidentiality obligation to the Company or any subsidiary shall not be curable to any extent. The determination that a termination of the Covered Employee’s employment is either for Cause or without Cause shall be made by the Company, in its sole discretion.

2.4. “Change in Control” shall be as defined in the 2013 Omnibus Incentive Plan.

2.5. “Change in Control Determination Period” means the time period beginning with the date three months prior to the date on which a Change in Control becomes effective and ending 12 months following the effective date of a Change in Control.

- 2.6. “COBRA” means the Consolidated Omnibus Budget Reconciliation Act of 1985, as amended.
- 2.7. “Company” means Five Prime Therapeutics, Inc. and any successor.
- 2.8. “Compensation Committee” means the Compensation and Management Development Committee of the Board.
- 2.9. “Covered Employee” means an individual who is employed by the Company or any parent or subsidiary of the Company in the role of Vice President or higher.
- 2.10. “Disability” means total and permanent disability as defined in Section 22(e)(3) of the Internal Revenue Code of 1986, as amended (the “Code”).
- 2.11. “Effective Date” means November 20, 2019.
- 2.12. “ERISA” means the Employee Retirement Income Security Act of 1974, as amended.
- 2.13. “Good Reason” means the Covered Employee’s resignation from all positions the Covered Employee then holds with the Company within 90 days following any of the following events taken without the Covered Employee’s consent, provided the Covered Employee has given the Company written notice of such event within 30 days after the first occurrence of such event and the Company not cured such event within 30 days thereafter:
- (i) a decrease in the Covered Employee’s total target cash compensation (i.e. the sum of such Covered Employee’s annual base salary and annual target bonus) of more than 10% (including by reductions in such Covered Employee’s annual base salary or annual target bonus), other than in connection with a comparable decrease in compensation for all comparable executives of the Company;
 - (ii) the Covered Employee’s duties or responsibilities are materially diminished (not simply a change in title or reporting relationships); provided, however that the Covered Employee shall not be deemed to have a “Resignation for Good Reason” if the Company survives as a separate legal entity or business unit following the Change in Control and the Covered Employee holds materially the same position in such legal entity or business unit as before the Change in Control;
 - (iii) an increase in the Covered Employee’s round-trip driving distance of more than 50 miles from the Covered Employee’s principal personal residence to the principal office or business location at which the Covered Employee is required to perform services (except for required business travel to the extent consistent with Executive’s prior business travel obligations); or
 - (iv) the failure of the Company to obtain a satisfactory agreement from any successor to materially assume and materially agree to perform under the terms of this Plan.
- 2.14. “Involuntary Termination” means either a termination of a Covered Employee by the Company (or any parent or subsidiary of the Company) without Cause or a resignation by a Covered Employee for Good Reason.
- 2.15. “Severance Benefits” means the compensation and other benefits the Covered Employee will be provided pursuant to either Section 4 or 5, as applicable.
-

2.16. “Target Bonus” means the greater of (i) the average annual bonus paid to the Covered Employee for the three calendar years preceding the date of the Covered Employee’s Involuntary Termination (or such lesser number of years during which the Covered Employee has been employed by the Company), or (ii) the annual target bonus, as in effect immediately prior to the Involuntary Termination.

2.17. “Termination Date” means the Covered Employee’s last day of employment with the Company.

2.18. “Tier 1 Covered Employee” means the Chief Executive Officer of the Company.

2.19. “Tier 2 Covered Employee” means a Covered Employee with the title of President (if such Covered Employee is not the Chief Executive Officer), Senior Vice President, Executive Vice President or a Chief officer (e.g., Chief Financial Officer, Chief Medical Officer or Chief Scientific Officer) other than the Chief Executive Officer.

2.20. “Tier 3 Covered Employee” means a Covered Employee with the title of Vice President.

3. Eligibility for Severance Benefits. An individual is eligible for severance benefits under the Plan, in the amounts set forth in Sections 4 and 5, only if such individual is a Covered Employee on the date they experiences an Involuntary Termination.

4. Severance Benefits.

4.1. Involuntary Termination. If, at any time other than during the Change in Control Determination Period, a Covered Employee experiences an Involuntary Termination, then subject to such Covered Employee’s compliance with Section 6, such Covered Employee shall receive the following Severance Benefits from the Company:

4.1.1. Cash Severance Benefits. The Covered Employee shall receive cash severance equal to the product of (i) the sum of such Covered Employee’s (A) annual base salary rate as in effect on the date of the Involuntary Termination (disregarding for this purpose any decrease in such Covered Employee’s annual base salary contributing to Good Reason) and (B) Target Bonus (disregarding for this purpose any decrease in such Covered Employee’s annual target bonus contributing to Good Reason) with respect to the year in which the Involuntary Termination occurs, and (ii) the relevant factor below:

Tier 1: 1.00

Tier 2: 0.75

Tier 3: 0.50

This cash amount shall be paid in the form of equal installments on the Company’s regular payroll dates, less deductions and withholdings, over the number of months set forth below.

Tier 1: Paid over 12 months

Tier 2: Paid over 9 months

Tier 3: Paid over 6 months

No amount shall be paid prior to the 60th day following the Termination Date. Instead, on the first regular payroll date following the 60th day following the Termination Date the Company will pay the Covered Employee the aggregate cash severance amount that the Covered Employee would otherwise have received on or prior to such date but for the 60-day delay, with the balance of the severance amount being paid as scheduled.

4.1.2. COBRA Premiums. Provided the Covered Employee is eligible for and timely makes the necessary elections for continuation coverage pursuant to COBRA, the Company shall pay the applicable premiums (inclusive of premiums for the Covered Employee's dependents) for such coverage following the date of the Covered Employee's Involuntary Termination for up to the number of months set forth below (but in no event after such time as the Covered Employee is eligible for coverage under a health, dental or vision insurance plan of a subsequent employer or as the Covered Employee and the Covered Employee's dependents are no longer eligible for COBRA coverage). The Covered Employee shall notify the Company promptly after the Covered Employee becomes covered by a health, dental, or vision insurance plan of a subsequent employer or if the Covered Employee's dependents are no longer eligible for COBRA coverage.

Tier 1: 12 months

Tier 2: 9 months

Tier 3: 6 months

4.1.3. Equity Vesting. The portion of each of the Covered Employee's then outstanding equity awards that would vest with the passage of time shall accelerate and become vested and exercisable as though the Covered Employee had remained employed by the Company beyond the date of the Covered Employee's Involuntary Termination for the applicable number of months set forth below. Subject to Section 6, the accelerated vesting described in this paragraph shall be effective as of the Termination Date. For sake of clarity, the acceleration described in this Section 4.1.3 shall not apply to any portion of an unvested equity award the vesting of which is dependent upon the achievement of a performance-based vesting event.

Tier 1: 12 months

Tier 2: 9 months

Tier 3: 6 months

Notwithstanding the foregoing, for those Covered Employees who, prior to the Effective Date, were granted equity awards that were, as of immediately prior to the Effective Date, subject to accelerated vesting in connection with an Involuntary Termination pursuant to an agreement by and between such Covered Employee and the Company, those equity awards will be accelerated per the terms set forth in the applicable agreement as opposed to the acceleration set forth in this Section 4.1.3.

5. Change in Control Severance Benefits.

5.1 Involuntary Termination in Connection with a Change in Control. If, at any time within the Change in Control Determination Period, a Covered Employee experiences an Involuntary Termination then, subject to the Covered Employee's compliance with Section 6, the Covered Employee shall receive the following Change in Control Severance Benefits from the Company:

5.1.1. Cash Severance Benefits. The Covered Employee shall receive cash severance equal to the product of (i) the sum of such Covered Employee's (A) annual base salary rate as in effect on the date of the Involuntary Termination (disregarding for this purpose any decrease in such Covered Employee's annual base salary contributing to Good Reason) and (B) Target Bonus (disregarding for this purpose any decrease in such Covered Employee's annual target cash bonus contributing to Good Reason) with respect to the year in which the Involuntary Termination occurs, and (ii) the relevant factor below:

Tier 1: 2.00

Tier 2: 1.5

Tier 3: 1.0

This cash amount shall be paid in a single lump sum payment on the 60th day following the Termination Date.

5.1.2. Continuation of Health Insurance. Provided the Covered Employee is eligible for and timely makes the necessary elections for continuation coverage pursuant to COBRA the Company shall pay the applicable premiums (inclusive of premiums for the Covered Employee's dependents) for such coverage following the date of the Covered Employee's Involuntary Termination for up to the number of months set forth below (but in no event after such time as the Covered Employee is eligible for coverage under a health, dental or vision insurance plan of a subsequent employer or as the Covered Employee and the Covered Employee's dependents are no longer eligible for COBRA coverage). The Covered Employee shall notify the Company immediately if the Covered Employee becomes covered by a health, dental, or vision insurance plan of a subsequent employer or if the Covered Employee's dependents are no longer eligible for COBRA coverage.

Tier 1: 24 months

Tier 2: 18 months

Tier 3: 12 months

5.1.3. Equity Vesting. Each of the Covered Employee's then outstanding equity awards, including awards that would otherwise vest only upon satisfaction of performance criteria, shall accelerate and become vested and exercisable as to 100% of the unvested shares subject to the equity award, except any award granted after the Effective Date that explicitly overrides this provision in writing. Subject to Section 6, the accelerated vesting described in this paragraph shall be effective as of the Termination Date. For purposes of this Section 5.1.3, any equity awards subject to performance-based vesting shall accelerate based on target performance.

6. Conditions to Receipt of Severance.

6.1 Release Agreement. As a condition to receiving the Severance Benefits, a Covered Employee must sign a waiver and release of all claims in favor of the Company and its subsidiaries and affiliates (the "Release") in such form as may be provided by the Company. The Release will include specific information regarding the amount of time the Covered Employee will have to consider the terms of the Release and return the signed agreement to the Company.

6.2 Other Requirements. A Covered Employee's receipt of Severance Benefits pursuant to Section 4 or 5 will be subject to such Covered Employee continued material compliance with the terms of the Release, any confidential information agreement, proprietary information and inventions agreement and any other agreement between the Covered Employee and the Company. Severance Benefits under this Plan shall terminate immediately for a Covered Employee if such Covered Employee is in material violation, at any time, of any legal or contractual obligation owed to the Company.

Section 280G. Any provision of the Plan to the contrary notwithstanding, if any payment or benefit a Covered Employee would receive from the Company and its Subsidiaries or an acquiror pursuant to the Plan or otherwise (a “Payment”) would (i) constitute a “parachute payment” within the meaning of Section 280G of the Code, and (ii) but for this sentence, be subject to the excise tax imposed by Section 4999 of the Code (the “Excise Tax”), then such Payment will be equal to the Higher Amount (defined below). The “Higher Amount” will be either (x) the largest portion of the Payment that would result in no portion of the Payment being subject to the Excise Tax or (y) the largest portion, up to and including the total, of the Payment, whichever amount, after taking into account all applicable federal, state and local employment taxes, income taxes, and the Excise Tax (all computed at the highest applicable marginal rate), results in Covered Employee’s receipt, on an after-tax basis, of the greater economic benefit notwithstanding that all or some portion of the Payment may be subject to the Excise Tax. If a reduction in payments or benefits constituting “parachute payments” is necessary so that the Payment equals the Higher Amount, reduction will occur in the manner that results in the greatest economic benefit for a Covered Employee. If more than one method of reduction will result in the same economic benefit, the items so reduced will be reduced pro rata. In no event will the Company, any Subsidiary or any stockholder be liable to any Covered Employee for any amounts not paid as a result of the operation of this Section 6.3. The Company will use commercially reasonable efforts to cause the accounting or law firm engaged to make the determinations hereunder to provide its calculations, together with detailed supporting documentation, to a Covered Employee and the Company within 15 calendar days after the date on which such Covered Employee’s right to a Payment is triggered (if requested at that time by such Covered Employee or the Company) or such other time as requested by such Covered Employee or the Company.

7. Non-Duplication of Benefits. Notwithstanding any other provision in the Plan to the contrary, the Severance Benefits provided to a Covered Employee are intended to be and are exclusive and in lieu of any other severance and change in control benefits or payments to which such Covered Employee may otherwise be entitled, either at law, tort, or contract, in equity, or under the Plan, in the event of any termination of such Covered Employee’s employment. The Covered Employee will be entitled to no severance or change in control benefits or payments upon a termination of employment that constitutes an Involuntary Termination other than those benefits expressly set forth herein and those benefits required to be provided by applicable law or as negotiated in accordance with applicable law (including any severance benefits that may be included in a severance agreement, employment agreement or similar contract between the Company or a subsidiary of the Company and the Covered Employee). Notwithstanding the foregoing, if a Covered Employee is entitled to any benefits other than the benefits under the Plan by operation of applicable law or as negotiated in accordance with applicable law, such Covered Employee’s benefits under the Plan shall be provided only to the extent more favorable than such other arrangement. The Administrator, in its sole discretion, shall have the authority to reduce or otherwise adjust an Covered Employee’s benefits under the Plan, in whole or in part, by any other severance benefits, pay and benefits in lieu of notice, or other similar benefits payable to such Covered Employee under the Plan that become payable in connection with the Covered Employee’s termination of employment pursuant to (i) any applicable legal requirement, including the Worker Adjustment and Retraining Notification Act (the “**WARN Act**”), the California Plant Closing Act or any other similar state law, or (ii) any policy or practice of the Company providing for the Covered Employee to remain on payroll for a limited period of time after being given notice of termination. The benefits provided under the Plan are intended to satisfy, in whole or in part, any and all statutory obligations of the Company that may arise out of a Covered Employee’s termination of employment, and the Plan Administrator shall so construe and implement the terms of the Plan.

8. Section 409A. Notwithstanding anything to the contrary in the Plan, no severance payments or benefits will become payable until the Covered Employee has a “separation from service” within the meaning of Section 409A of the Code and the final regulations and any guidance promulgated thereunder (“Section 409A”). Further, if a Covered Employee is subject to Section 409A and is a “specified employee” within the meaning of Section 409A at the time of such Covered Employee’s separation from service (other than due to death), then any separation benefits otherwise due to such Covered Employee on or within the six-month period following such Covered Employee’s separation from service will accrue during such six-month period and will become payable in a lump sum payment (less applicable withholding taxes) on the date six months and one day following the date of the Covered Employee’s separation from service if necessary to avoid adverse taxation under Section 409A. All subsequent payments, if any, will be payable in accordance with the payment schedule applicable to each payment or benefit. Notwithstanding anything herein to the contrary, if the Covered Employee dies following such Covered Employee’s separation from service but prior to the six-month anniversary of such Covered Employee’s date of separation, then any payments delayed in accordance with this paragraph will be payable in a lump sum (less applicable withholding taxes) to the Covered Employee’s estate as soon as administratively practicable after the date of such Covered Employee’s death and all other benefits will be payable in accordance with the payment schedule applicable to each payment or benefit. Each payment and benefit payable under the Plan is intended to constitute a separate payment for purposes of Section 409A. It is the intent of this Plan to comply with or be exempt from the requirements of Section 409A so that none of the severance payments and benefits to be provided hereunder will be subject to the additional tax imposed under Section 409A, and any ambiguities herein will be interpreted to so comply.

9. Withholding. The Company will withhold from any Severance Benefits all federal, state, local and other taxes required to be withheld therefrom and any other required payroll deductions.

10. Administration. The Plan will be administered and interpreted by the Administrator (in the Administrator’s sole discretion). The Administrator is the “named fiduciary” of the Plan for purposes of ERISA and will be subject to the fiduciary standards of ERISA when acting in such capacity. Any decision made or other action taken by the Administrator with respect to the Plan, and any interpretation by the Administrator of any term or condition of the Plan, or any related document, will be conclusive and binding on all persons and be given the maximum possible deference allowed by law. Any decision made or other action taken by the Administrator with respect to the Plan, and any interpretation by the Administrator of any term or condition of the Plan, or any related document that (i) does not affect the benefits payable under the Plan shall not be subject to review unless found to be arbitrary and capricious or (ii) does affect the benefits payable under the Plan shall not be subject to review unless found to be unreasonable or not to have been made in good faith. In accordance with Section 2.1, the Administrator may, in its sole discretion and on such terms and conditions as it may provide, delegate in writing to one or more officers of the Company all or any portion of its authority or responsibility with respect to the Plan; provided, however, that any Plan amendment or termination or any other action that could reasonably be expected to increase significantly the cost of the Plan must be approved by the Board or the Compensation Committee.

11. Eligibility to Participate. To the extent that the Administrator has delegated administrative authority or responsibility to one or more officers of the Company in accordance with Section 2.1 and Section 10, each such officer will not be excluded from participating in the Plan if otherwise eligible, but such officer is not entitled to act or pass upon any matters pertaining specifically to such officer’s own benefit or eligibility under the Plan. The Administrator will act upon any matters pertaining specifically to the benefit or eligibility of each such officer under the Plan.

12. Amendment or Termination. The Company, by action of the Administrator, reserves the right to amend or terminate the Plan at any time, without advance notice to any Covered Employee and without regard to the effect of the amendment or termination on any Covered Employee or on any other individual. Any amendment or termination of the Plan will be in writing. Notwithstanding the foregoing, a Covered Employee's rights to receive payments and benefits pursuant to this Plan in connection with an Involuntary Termination during a Change in Control Determination Period may not be adversely affected, without the Covered Employee's consent, by an amendment or termination of this Plan occurring during such Change in Control Determination Period.

13. Claims Procedure. Claims for benefits under the Plan shall be administered in accordance with Section 503 of ERISA and the Department of Labor Regulations thereunder. Any employee or other person who believes they are entitled to any payment under the Plan (a "claimant") may submit a claim in writing to the Administrator within 90 days of the earlier of (i) the date the claimant learned the amount of such claimant's severance benefits under the Plan or (ii) the date the claimant learned that they will not be entitled to any benefits under the Plan. In determining claims for benefits, the Administrator or its delegate has the authority to interpret the Plan, to resolve ambiguities, to make factual determinations, and to resolve questions relating to eligibility for and amount of benefits. If the claim is denied (in full or in part), the claimant will be provided a written notice explaining the specific reasons for the denial and referring to the provisions of the Plan on which the denial is based. The notice will also describe any additional information or material that the Administrator needs to complete the review and an explanation of why such information or material is necessary and the Plan's procedures for appealing the denial (including a statement of the applicant's right to bring a civil action under Section 502(a) of ERISA following a denial on review of the claim, as described below). The denial notice will be provided within 90 days after the claim is received. If special circumstances require an extension of time (up to 90 days), written notice of the extension will be given to the claimant (or representative) within the initial 90-day period. This notice of extension will indicate the special circumstances requiring the extension of time and the date by which the Administrator expects to render its decision on the claim. If the extension is provided due to a claimant's failure to provide sufficient information, the time frame for rendering the decision will be tolled from the date the notification is sent to the claimant about the failure to the date on which the claimant responds to the request for additional information. The Administrator has delegated the claims review responsibility to the Company's Head of Human Resources or such other individual designated by the Administrator, except in the case of a claim filed by or on behalf of the Company's Head of Human Resources or such other individual designated by the Administrator, in which case, the claim will be reviewed by the Company's Chief Executive Officer.

14. Appeal Procedure. If the claimant's claim is denied, the claimant (or such claimant's authorized representative) may apply in writing to an appeals official appointed by the Administrator (which may be a person, committee or other entity) for a review of the decision denying the claim. Review must be requested within 60 days following the date the claimant received the written notice of a claim denial or else the claimant will lose the right to such review. A request for review must set forth all the grounds on which such request is based, all facts in support of the request, and any other matters that the claimant feels are pertinent. In connection with the request for review, the claimant (or representative) has the right to review and obtain copies of all documents and other information relevant to the claim, upon request and at no charge, and to submit written comments, documents, records and other information relating to such claimant's claim. The review shall take into account all comments, documents, records and other information submitted by the claimant (or representative) relating to the claim, without regard to whether such information was submitted or considered in the initial benefit determination. The appeals official will provide written notice of its decision on review within 60 days after it receives a review request. If special circumstances require an extension of time (up to 60 days), written notice of the extension will be given to the claimant (or representative) within the initial 60-day period. This notice of extension will indicate the special circumstances requiring the extension of time

and the date by which the appeals official expects to render its decision. If the extension is provided due to a claimant's failure to provide sufficient information, the time frame for rendering the decision on review is tolled from the date the notification is sent to the claimant about the failure to the date on which the claimant responds to the request for additional information. If the claim is denied (in full or in part) upon review, the claimant will be provided a written notice explaining the specific reasons for the denial and referring to the provisions of the Plan on which the denial is based. The notice shall also include a statement that the claimant will be provided, upon request and free of charge, reasonable access to, and copies of, all documents and other information relevant to the claim and a statement regarding the claimant's right to bring an action under Section 502(a) of ERISA. The Administrator has delegated the appeals review responsibility to the Company's Head of Human Resources, except in the case of an appeal filed by or on behalf of the Company's Head of Human Resources, in which case, the appeal will be reviewed by the Company's Chief Executive Officer.

15. Arbitration. No arbitration proceeding shall be brought to recover benefits under the Plan until the claims procedures described in Sections 13 and 14 have been exhausted and the Plan benefits requested have been denied in whole or in part. Notwithstanding any other provision of the Plan, to ensure the timely and economical resolution of disputes, all disputes, claims, or causes of action arising from or relating to the enforcement, breach, performance or interpretation of this Plan will be resolved to the fullest extent permitted by law by final, binding and confidential arbitration, by a single arbitrator, in San Francisco, California, conducted by JAMS, Inc. ("JAMS") under the then-applicable JAMS rules (available at the following web address: <https://www.jamsadr.com/rules-employment>). By agreeing to this arbitration procedure, each Covered Employee and the Company waive the right to resolve any such dispute through a trial by jury or judge or administrative proceeding. Covered Employees will have the right to be represented by legal counsel at any arbitration proceeding. In addition, all claims, disputes, or causes of action under this section, whether by a Covered Employee or the Company, must be brought in an individual capacity, and shall not be brought as a plaintiff (or claimant) or class member in any purported class or representative proceeding, nor joined or consolidated with the claims of any other person or entity. The arbitrator may not consolidate the claims of more than one person or entity, and may not preside over any form of representative or class proceeding. To the extent that the preceding sentences regarding class claims or proceedings are found to violate applicable law or are otherwise found unenforceable, any claim(s) alleged or brought on behalf of a class shall proceed in a court of law rather than by arbitration. The arbitrator shall: (a) have the authority to compel adequate discovery for the resolution of the dispute and to award such relief as would otherwise be permitted by law; and (b) issue a written arbitration decision, to include the arbitrator's essential findings and conclusions and a statement of the award. The arbitrator shall be authorized to award any or all remedies that a Covered Employee or the Company would be entitled to seek in a court of law. The Company shall pay all JAMS' arbitration fees in excess of the amount of court fees that would be required of a Covered Employee if the dispute were decided in a court of law. Nothing in this paragraph is intended to prevent either a Covered Employee or the Company from obtaining injunctive relief in court to prevent irreparable harm pending the conclusion of any such arbitration. Any awards or orders in such arbitrations may be entered and enforced as judgments in the federal and state courts of any competent jurisdiction. Any arbitration must be commenced within one year after the Covered Employee's receipt of notification that their appeal was denied. The foregoing provisions shall apply to the extent consistent with and permitted by ERISA.

16. Source of Payments. All severance benefits will be paid in cash from the general funds of the Company; no separate fund will be established under the Plan, and the Plan will have no assets. No right of any person to receive any payment under the Plan will be any greater than the right of any other general unsecured creditor of the Company.

17. Inalienability. In no event may any current or former employee of the Company or any of its subsidiaries or affiliates sell, transfer, anticipate, assign or otherwise dispose of any right or interest under the Plan. At no time will any such right or interest be subject to the claims of creditors nor liable to attachment, execution or other legal process.

18. No Enlargement of Employment Rights. Neither the establishment nor maintenance of the Plan, any amendment of the Plan, nor the making of any benefit payment hereunder, will be construed to confer upon any individual any right to be continued as an employee of the Company. The Company expressly reserves the right to discharge any of its employees at any time, with or without cause. However, as described in the Plan, a Covered Employee may be entitled to benefits under the Plan depending upon the circumstances of such Covered Employee's termination of employment.

19. Successors. Any successor to the Company of all or substantially all of the Company's business or assets (whether direct or indirect and whether by purchase, merger, consolidation, liquidation or otherwise) will assume the obligations under the Plan and agree expressly to perform the obligations under the Plan in the same manner and to the same extent as the Company would be required to perform such obligations in the absence of a succession. For all purposes under the Plan, the term "Company:" will include any successor to the Company's business or assets which become bound by the terms of the Plan by operation of law, or otherwise.

20. Applicable Law. The provisions of the Plan will be construed, administered and enforced in accordance with ERISA and, to the extent applicable, the internal substantive laws of the State of California (except its conflict of laws provisions).

21. Severability. If any provision of the Plan is held invalid or unenforceable, its invalidity or unenforceability will not affect any other provision of the Plan, and the Plan will be construed and enforced as if such provision had not been included.

22. Headings. Headings in this Plan document are for purposes of reference only and will not limit or otherwise affect the meaning hereof.

23. Additional Information.

Plan Name:	Five Prime Therapeutics, Inc. Executive Severance Benefit Plan
Plan Sponsor:	Five Prime Therapeutics, Inc. 111 Oyster Point Boulevard South San Francisco, California 94080 (415) 365-5600
Identification Numbers:	EIN: 26-0038620 Plan Number: 502
Plan Year:	Company's fiscal year ending December 31
Plan Administrator:	Five Prime Therapeutics, Inc. Attention: Administrator of the Five Prime Therapeutics, Inc. Executive Severance Benefit Plan 111 Oyster Point Boulevard South San Francisco, California 94080

Agent for Service of
Legal Process: Five Prime Therapeutics, Inc.
Attention: Administrator of the Five Prime Therapeutics, Inc. Executive Severance Benefit Plan
111 Oyster Point Boulevard
South San Francisco, California 94080
(415) 365-5600

Service of process may also be made upon the Administrator.

Type of Plan: Severance Plan/Employee Welfare Benefit Plan

Plan Costs: The cost of the Plan is paid by the Company.

24. Statement of ERISA Rights.

As a Covered Employee under the Plan, you have certain rights and protections under ERISA:

(a) You may examine (without charge) all Plan documents, including any amendments and copies of all documents filed with the U.S. Department of Labor. These documents are available for your review in the Company's Human Resources Department.

(b) You may obtain copies of all Plan documents and other Plan information upon written request to the Administrator. A reasonable charge may be made for such copies.

In addition to creating rights for Covered Employees, ERISA imposes duties upon the people who are responsible for the operation of the Plan. The people who operate the Plan (called "fiduciaries") have a duty to do so prudently and in the interests of you and the other Covered Employees. No one, including the Company or any other person, may fire you or otherwise discriminate against you in any way to prevent you from obtaining a benefit under the Plan or exercising your rights under ERISA. If your claim for a severance benefit is denied, in whole or in part, you have a right to know why it was denied, to obtain copies of documents relating to the decision without charge, and to appeal any denial, all within certain time schedules. The claim review procedure is explained in Section 13 and Section 14 above.

Under ERISA, there are steps you can take to enforce the above rights. For instance, if you request a copy of Plan documents and do not receive them within 30 days, you may file suit in a federal court. In such a case, the court may require the Administrator to provide the materials and to pay you up to \$110 a day until you receive the materials, unless the materials were not sent because of reasons beyond the control of the Administrator. If you have a claim which is denied or ignored, in whole or in part, you may file suit in a federal court. If it should happen that you are discriminated against for asserting your rights, you may seek assistance from the U.S. Department of Labor, or you may file suit in a federal court. The court will decide who should pay court costs and legal fees. If you are successful, the court may order the person you have sued to pay these costs and fees. If you lose, the court may order you to pay these costs and fees, for example, if it finds your claim is frivolous.

If you have any questions regarding the Plan, please contact the Administrator. If you have any questions about this statement or about your rights under ERISA, you may contact the nearest office of the Employee Benefits Security Administration, U.S. Department of Labor, listed in your telephone directory, or the Division of Technical Assistance and Inquiries, Employee Benefits Security Administration, U.S. Department of Labor, 200 Constitution Avenue, N.W. Washington, D.C. 20210. You may also obtain certain publications about your rights and responsibilities under ERISA by calling the publications hotline of the Employee Benefits Security Administration at 1-866-444-3272.



Non-Employee Director Compensation Policy

Each member of the Board of Directors (the “Board”) of Five Prime Therapeutics, Inc. (“Five Prime”) who is not an employee of Five Prime will receive the cash and equity compensation described below.

Cash Compensation

Five Prime will pay non-employee Board members the annual fees set forth below in quarterly installments, pro-rated for any partial quarter service.

Chairperson of the Board	\$	80,000
Lead Independent Director	\$	60,000
Board member (other than the Chairperson or Lead Independent Director)	\$	45,000
Chairperson of the Audit or Compensation Committee	\$	20,000
Audit or Compensation Committee member (other than the Chairperson)	\$	10,000
Chairperson of the Nominating and Corporate Governance or Research and Development Committee	\$	15,000
Member of the Nominating and Corporate Governance or Research and Development Committee (other than the Chairperson)	\$	7,500

Equity Compensation

In connection with the appointment of a non-employee to the Board, Five Prime will grant to such non-employee Board member a one-time award of an option to purchase 40,000 shares of common stock of Five Prime, which will vest in equal annual installments over a three-year period, subject to such Board member’s continuous Service (as that term is defined in Five Prime’s 2013 Omnibus Incentive Plan).

Promptly after each annual meeting of stockholders of Five Prime, Five Prime will grant to each non-employee member of the Board an option to purchase 20,000 shares of common stock of Five Prime, which option will vest in its entirety on the earlier to occur of (i) the one-year anniversary of the grant date and (ii) the day before the subsequent annual meeting of stockholders, subject to such Board member’s continuous Service.

Five Prime will also reimburse each member of the Board for their travel expenses incurred in connection with attendance at meetings of the Board or its committees.

Effective November 21, 2019

Consent of Independent Registered Public Accounting Firm

We consent to the incorporation by reference in the following Registration Statements:

- (1) Registration Statement on Form S-3 (File No. 333-228206) of Five Prime Therapeutics, Inc.;
- (2) Registration Statements on Form S-8 (File Nos. 333-191700, 333-194820, 333-202854, 333-211216, 333-217737, 333-224748 and 333-231341) pertaining to the 2002 Equity Incentive Plan, 2010 Equity Incentive Plan, 2013 Omnibus Incentive Plan and the 2013 Employee Stock Purchase Plan of Five Prime Therapeutics, Inc.;

of our reports dated February 27, 2020, with respect to the financial statements of Five Prime Therapeutics, Inc. and the effectiveness of internal control over financial reporting of Five Prime Therapeutics, Inc. included in this Annual Report (Form 10-K) of Five Prime Therapeutics, Inc. for the year ended December 31, 2019.

/s/ Ernst & Young LLP

San Francisco, California
February 27, 2020

CERTIFICATION OF THE CHIEF EXECUTIVE OFFICER
Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002

I, William R. Ringo, certify that:

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

Dated: February 27, 2020

/s/ William R. Ringo

William R. Ringo
Chief Executive Officer
(Principal Executive Officer)

CERTIFICATION OF THE CHIEF FINANCIAL OFFICER
Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002

I, David V. Smith, certify that:

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

Dated: February 27, 2020

/s/ David V. Smith

David V. Smith

Executive Vice President and Chief Financial Officer
(Principal Financial Officer)

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

In connection with the Annual Report on Form 10-K of Five Prime Therapeutics, Inc. ("Five Prime") for the year ended December 31, 2019, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, William R. Ringo, Chief Executive Officer of Five Prime, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that to the best of my knowledge:

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

Dated: February 27, 2020

/s/ William R. Ringo

William R. Ringo
Chief Executive Officer
(Principal Executive Officer)

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

In connection with the Annual Report on Form 10-K of Five Prime Therapeutics, Inc. ("Five Prime") for the year ended December 31, 2019, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, David V. Smith, Executive Vice President and Chief Financial Officer of Five Prime, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that to the best of my knowledge:

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

Dated: February 27, 2020

/s/ David V. Smith

David V. Smith

Executive Vice President and Chief Financial Officer
(Principal Financial Officer)