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

FORM 10-K

(Mark One)

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

For the fiscal year ended December 31, 2020

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 No. 001-38800

Harpoon Therapeutics, Inc.
(Exact name of registrant as specified in its charter)

Delaware	**47-3458693**
(State or other jurisdiction of incorporation or organization)	**(I.R.S. Employer Identification Number)**

131 Oyster Point Blvd, Suite 300
South San Francisco, CA 94080
(Address of principal executive offices)
Registrant's telephone number, including area code: (650) 443-7400

SECURITIES REGISTERED PURSUANT TO SECTION 12(b) OF THE ACT:

Title of Each Class	Trading Symbol(s)	Name of Each Exchange On Which Registered
Common Stock, par value $0.0001 per share	**HARP**	**NASDAQ Global Select Market**

SECURITIES REGISTERED PURSUANT TO SECTION 12(g) OF THE ACT: NONE

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes ☐ No ☒
Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes ☐ No ☒
Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ☒ No ☐
Indicate by check mark whether the registrant has submitted electronically, every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§ 232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes ☒ No ☐

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

Large accelerated filer	☐	Accelerated filer	☐
Non-accelerated filer	☒	Smaller reporting company	☒
Emerging growth company	☒		

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

Indicate by check mark whether the registrant has filed a report on and attestation to its management's assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C. 7262(b)) by the registered public accounting firm that prepared or issued its audit report. Yes ☐ No ☒

Indicate by check mark whether the Registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). YES ☐ NO ☒

The aggregate market value of the voting and non-voting common equity held by non-affiliates of the Registrant, based on the closing price of the shares of common stock on The Nasdaq Stock Market on June 30, 2020, was $141,576,271.

The number of outstanding shares of the Registrant's common stock, par value $0.0001, as of February 28, 2021 was 32,408,849.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the definitive proxy statement, or the Proxy Statement, for the 2021 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, 2020

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SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

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

- the timing of the initiation, progress and expected results of our preclinical studies, clinical trials and our research and development programs;
- our ability to advance product candidates into, and successfully complete, preclinical studies and clinical trials;
- the timing or likelihood of regulatory filings and approvals;
- the commercialization of our product candidates, if approved;
- the pricing, coverage and reimbursement of our product candidates, if approved;
- the implementation of our business model, strategic plans for our business and product candidates;
- the scope of protection we are able to establish and maintain for intellectual property rights covering our technology platforms, including TriTAC and ProTriTAC, and product candidates, including the projected terms of patent protection;
- our ability to enter into strategic arrangements and/or collaborations and the potential benefits of such arrangements;
- our ability to retain the continued service of our key executives and to identify, hire and retain additional qualified professionals;
- our estimates regarding the market opportunity for our product candidates;
- our estimates regarding expenses, capital requirements and needs for additional financing and our ability to obtain additional capital;
- our financial performance; and
- developments relating to our competitors and our industry, including competing therapies.

These forward-looking statements are based on our management’s current expectations, estimates, forecasts and projections about our business and the industry in which we operate, and management’s beliefs and assumptions and are not guarantees of future performance or development. These forward-looking statements are subject to a number of risks, uncertainties and assumptions, including those described in the “Risk Factor Summary” below and under the heading “Risk Factors” and elsewhere in this Annual Report on Form 10-K. Moreover, we operate in a very competitive and rapidly changing environment, and new risks emerge from time to time. It is not possible for our management to predict all risks, nor can we assess the impact of all factors on our business or the extent to which any factor, or combination of factors, may cause actual results to differ materially from those contained in any forward-looking statements we may make. In light of these risks, uncertainties and assumptions, the forward-looking events and circumstances discussed in this annual report may not occur and actual results could differ materially and adversely from those anticipated or implied in the forward-looking statements.

In addition, statements that “we believe” and similar statements reflect our beliefs and opinions on the relevant subject. These statements are based on information available to us as of the date of this report. While we believe that information provides a reasonable basis for these statements, that information may be limited or incomplete. Our statements should not be read to indicate that we have conducted an exhaustive inquiry into, or review of, all relevant information.

You should not rely upon forward-looking statements as predictions of future events. Although we believe that the expectations reflected in the forward-looking statements are reasonable, we cannot guarantee that the future results, levels of activity, performance, or events and circumstances reflected in the forward-looking statements will be achieved or occur. We undertake no obligation to update publicly any forward-looking statements for any reason after the date of this report to conform these statements to new information, actual results or changes in our expectations, except as required by law.

Unless the context otherwise requires, references in this Annual Report on Form 10-K to the “company,” “Harpoon,” “we,” “us” and “our” refer to Harpoon Therapeutics, Inc.“TriTAC” is a registered trademark and “Harpoon Therapeutics,” “Harpoon,” the Harpoon logo and ProTriTAC are trademarks, all owned by Harpoon Therapeutics, Inc. This report also contains trademarks and trade names that are property of their respective owners.

RISK FACTOR SUMMARY

Investing in common stock involves numerous risks, including the risks described in "Item 1A. Risk Factors" of this Annual Report on Form 10-K. Below are some of these risks, any one of which could materially adversely affect our business, financial condition, results of operations and prospects.

- All of our product candidates are in preclinical or early-stage clinical development. Clinical drug development is a lengthy and expensive process with uncertain timelines and uncertain outcomes. If clinical trials of our product candidates are prolonged or delayed, we or any collaborators may be unable to obtain required regulatory approvals, and therefore be unable to commercialize our product candidates on a timely basis or at all.
- Interim, topline or preliminary data from our clinical trials that we announce or publish from time to time may change as more patient data become available and are subject to audit and verification procedures that could result in material changes in the final data.
- Our TriTAC and ProTriTAC platforms are unproven, novel classes of T cell engagers and may not result in approvable or marketable products, which exposes us to unforeseen risks and makes it difficult for us to predict the time and cost of product development and potential for regulatory approval.
- Results of earlier preclinical studies of our product candidates may not be predictive of future trial results.
- We depend on enrollment of patients in our clinical trials for our product candidates. If we experience delays or difficulties enrolling in our clinical trials, our research and development efforts and business, financial condition and results of operations could be materially adversely affected.
- Our product candidates may have serious adverse, undesirable or unacceptable side effects or other properties which may delay or prevent marketing approval. If such side effects are identified during the development of our product candidates or following approval, if any, we may need to abandon our development of such product candidates, the commercial profile of any approved label may be limited, or we may be subject to other significant negative consequences following marketing approval, if any.
- Monitoring safety of patients receiving our product candidates is challenging, which could adversely affect our ability to obtain regulatory approval and commercialize.
- We may not be successful in our efforts to use and expand our technology platforms, including TriTAC and ProTriTAC, to build a pipeline of product candidates.
- We are an early clinical-stage company and have incurred significant losses since our inception. We expect to incur losses for the foreseeable future and may never achieve or maintain profitability.
- We will require additional funding in order to complete development of our product candidates and commercialize our products, if approved. If we are unable to raise capital when needed, we could be forced to delay, reduce or eliminate our product development programs or commercialization efforts.
- We depend heavily on the success of our current product candidates, and we cannot guarantee that any of these product candidates will receive regulatory approval, which is necessary before they can be commercialized. If we, or any strategic partners we may enter into collaboration agreements with for the development and commercialization of our product candidates, are unable to commercialize our product candidates, or experience significant delays in doing so, our business, financial condition and results of operations will be materially adversely affected.
- Our limited operating history may make it difficult for you to evaluate the success of our business to date and to assess our future viability.
- Raising additional capital may cause dilution to our stockholders, restrict our operations or require us to relinquish rights to our technologies or product candidates.
- Our business operations and current and future relationships with healthcare professionals, principal investigators, consultants, vendors, customers and third-party payors in the United States and elsewhere are subject to applicable anti-kickback, fraud and abuse, false claims, physician payment transparency, information privacy and security and other healthcare laws and regulations, which could expose us to substantial penalties.

- The development and commercialization of biopharmaceutical products is subject to extensive regulation, and the regulatory approval processes of the FDA and comparable foreign authorities are lengthy, time consuming and inherently unpredictable. If we are ultimately unable to obtain regulatory approval for our product candidates on a timely basis if at all, our business will be substantially harmed. An investment in our common stock involves a high degree of risk. Below is a summary of material factors that make an investment in our common stock speculative or risky. Importantly, this summary does not address all of the risks that we face.
- We are subject to government regulations and contractual obligations related to privacy and information security. Our actual or perceived failure to comply with such obligations could harm our business. Additionally, cyber-attacks or information security breaches that compromise our data or those of our partners or vendors could expose us to liability, affect our reputation and otherwise harm our business.

Please refer to “Risk Factors” below for additional discussion of the risks summarized in this risk factor summary, as well as other risks that we face.

PART I

Item 1. Business

Overview

We are a clinical-stage immunotherapy company developing a novel class of T cell engagers that harness the power of the body's immune system to treat patients suffering from cancer and other diseases. T cell engagers are engineered proteins that direct a patient's own T cells to kill target cells that express specific proteins, or antigens, carried by the target cells.We are developing a pipeline of novel T cell engagers using our proprietary TriTACs, initially focused on the treatment of solid tumors and hematologic malignancies. We have also nominated our first clinical candidate using our proprietary ProTriTAC platform, a prodrug version of our TriTAC platform, designed to expand the target space for T cell engagers and bring the benefits of TriTACs to a broader number of patients. Since commencing operations in 2015, we have created four TriTAC product candidates that are all in clinical development.

A summary of our four TriTAC product candidates is as follows:

- HPN424, currently in the dose-escalation portion of a Phase 1/2a clinical trial for the treatment of metastatic castration-resistant prostate cancer, or mCRPC. Presentation of Phase 1 data and initiation of an expansion cohort is planned for the first half of 2021. Interim data from this expansion cohort is anticipated by the end of 2021.
- HPN536, currently in the dose-escalation portion of a Phase 1/2a clinical trial for the treatment of ovarian and pancreatic cancers and other mesothelin-, or MSLN-, expressing solid tumors. Initiation of an expansion cohort is anticipated in the second half of 2021, with a presentation of Phase 1 data by year-end 2021.
- HPN217, currently in a Phase 1/2 clinical trial targeting B-cell maturation antigen, or BCMA, for the treatment of multiple myeloma, as well as entered into a Development and Option Agreement with AbbVie Biotechnology Ltd., or AbbVie. Under our agreement with AbbVie, we have already received an upfront payment of $30 million and a development milestone payment of $50 million, as we dosed our first patient in the Phase 1/2 clinical trial of HPN217 in April 2020. Additionally, we are eligible to receive future payments totaling up to $430 million upon AbbVie's exercise of an exclusive license option and achievement of certain development, regulatory, and commercial milestones, in addition to receipt of royalties on commercial sales. We are responsible for conducting the Phase 1/2 clinical trial of HPN217 under our agreement with AbbVie. In January 2021, HPN217 received orphan drug designation for the treatment of multiple myeloma. A presentation of interim data is anticipated in 2021, with initiation of a dose expansion cohort in the second half of 2021.
- HPN328, currently in a Phase 1/2 clinical trial for the treatment of small cell lung cancer, or SCLC, and other DLL3-expressing tumors. Presentation of initial data is planned for the second half of 2021.

A summary of our ProTriTAC product candidate is as follows:

- HPN601, currently in preclinical development, is the first drug candidate from the ProTriTAC platform. HPN601 targets the epithelial cell adhesion molecule (EpCAM), and is being developed for the treatment of multiple solid tumor indications.

Our TriTACs are designed to advance the therapeutic potential of T cell engagers, a therapeutic approach with an established and proven mechanism of action. The first bi-specific T cell engager, or BiTE, to be approved by the FDA was Amgen's Blincyto. Blincyto was approved in 2014 as a monotherapy for the treatment of acute lymphoblastic leukemia. Since then, other BiTEs have shown promising therapeutic potential in clinical trials. We developed our proprietary TriTAC platform to incorporate the strengths of BiTEs and improve upon their critical shortcomings, such as a short half-life. We believe our TriTAC platform offers the following features for the discovery and development of novel immunotherapies to treat a wide array of diseases, including cancer:

- ***Active at Low Levels of Target Expression.*** We designed TriTACs to be active at low levels of antigen expression where other treatment modalities lose efficacy. In our preclinical studies, TriTACs did not require high levels of target antigen expression to engage T cells to kill disease cells.
- ***MHC Independence.*** We designed TriTACs to specifically direct T cells to kill target cells independent of major histocompatibility complex, or MHC expression. Tumor cells frequently acquire mutations that change the MHC molecule or reduce the level of MHC expressed on their surfaces, thus making the tumor cells less susceptible to being killed by either endogenous T cells or engineered T cells that require MHC recognition. We believe that because TriTACs do not require a T cell clone with specific T cell receptor or MHC recognition to kill tumor cells, they will be able to generate greater and more durable therapeutic responses than MHC dependent approaches.

- ***Extended Half-Life and Stability.*** We designed TriTACs to be stable in the bloodstream and to have a long-serum half-life in order to achieve efficacy without requiring the continuous IV administration that is a limiting requirement of other T cell engagers, such as BiTEs.
- ***Small Size and Tissue Penetration.*** TriTACs are small in size, and we believe this is critical for their efficient penetration of, and diffusion within, solid tumors.
- ***Modularity.*** The TriTAC structure is modular and its antigen binding domain can easily be switched out to enable the rapid discovery and development of new TriTAC product candidates across a wide variety of targets.
- ***Safety Design Elements.*** We designed TriTACs to enable T cell engagement while minimizing off-target toxicity and the potential for CRS, which is a potentially lethal reaction of the body to the hypersecretion of inflammatory cytokines.
- ***Conventional Manufacturing.*** TriTACs are "off-the-shelf" therapies, the manufacturing of which is significantly less complex than that of personalized or cell-based therapies.

We seek to selectively collaborate with leading biopharmaceutical companies to leverage our technology platforms. For example, in November 2019 we entered into a Development and Option Agreement with AbbVie, pursuant to which we granted to AbbVie an option to license worldwide exclusive rights to HPN217. We will be responsible for developing HPN217 through a Phase 1/2 clinical trial. Upon exercise of the option, which AbbVie may exercise following delivery by the Company of a specified data package arising from the Phase 1/2 trial, AbbVie would be responsible for all future clinical development, manufacturing and commercialization activities. The Development and Option Agreement represents a potential transaction value of up to $510 million in upfront, option and milestone payments, of which $80 million has been received to date, plus royalties on potential global commercial sales.

In addition, in November 2019, we expanded our existing collaboration with AbbVie by entering into an Amended and Restated Discovery Collaboration and License Agreement, or the Restated Collaboration Agreement, which agreement amends and restates the Discovery Collaboration and License Agreement we had entered into with AbbVie in October 2017, or the Original Collaboration Agreement. The expansion of the collaboration grants to AbbVie the right to select two additional targets and an option to select up to four further targets, in addition to the two targets previously selected by AbbVie under the Collaboration Agreement. Consistent with the Collaboration Agreement, we and AbbVie will conduct certain initial research and discovery activities for each designated target, after which AbbVie will be solely responsible for further development and commercialization efforts. We have received a total of $37 million of upfront payments under this collaboration to date. In addition, we are eligible to receive up to an aggregate of $2.4 billion in potential development, regulatory and commercial milestone payments under the Restated Collaboration Agreement, plus royalties on global commercial sales.

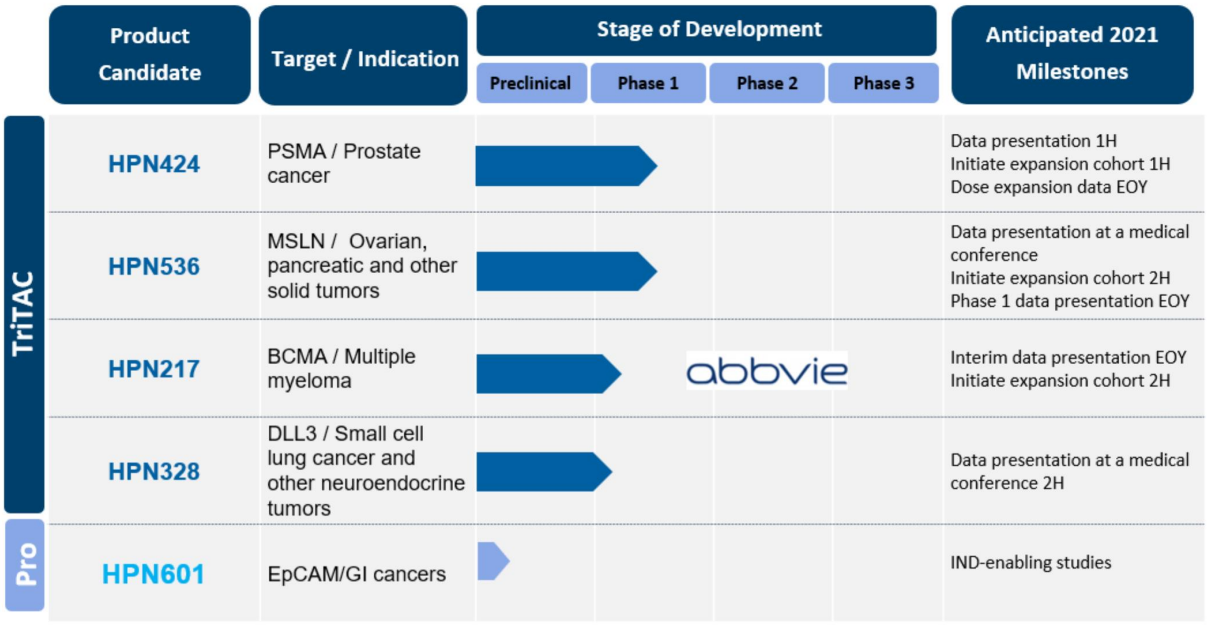
COVID-19 Impact

Our assessment to date continues to support that we have not experienced any material delays or significant financial impacts directly related to the pandemic other than some minor disruptions to clinical operations, including patient enrollment in some of our clinical trials. We will continue to monitor the overall impact of the COVID-19 pandemic on our business, assets and operations, including our personnel, programs, expected timelines, expenses, third-party contract manufacturing, contract research organizations and clinical trials.

While we are currently continuing our clinical trials we have underway in sites in the United States, the United Kingdom, and Europe, we expect that COVID-19 precautions may directly or indirectly impact the timeline for some of our clinical trials, as a result of potential delays or difficulties in enrolling or assessing patients in our clinical trials, clinical site initiation, diversion of healthcare resources away from the conduct of clinical trials, interruption of key clinical trial activities, among other factors. We could also see an impact on our ability to interact with regulators, ethics committees or other important agencies due to limitations in regulatory authority, personnel resources or otherwise. In addition, in response to the ongoing spread of COVID-19, we have established testing protocols for personnel access to our headquarter offices and laboratory, although substantially all of our employees and contractors that continue to telecommute. The effects of the COVID-19 pandemic could adversely impact our business, assets, operations and clinical trials, particularly if the COVID-19 pandemic continues and persists for an extended period of time. See *"Risk factors—Our business could be adversely affected by the effects of health epidemics, including the recent outbreak of the novel coronavirus. A COVID-19 pandemic is ongoing in many parts of the world and may result in significant disruptions which could materially affect our operations, including at our headquarters in the San Francisco Bay Area and at our clinical trial sites."* for more information regarding the potential impact of the COVID-19 pandemic on our business and operations. We continue to actively monitor this situation and the possible effects on our business and operations

Our Pipeline

We are leveraging our proprietary TriTAC and ProTriTAC platforms to discover and develop product candidates to treat cancer and other diseases. The following table summarizes key information about our product candidates to date, all of which were developed using our TriTAC platform. We own the intellectual property rights to both our TriTAC and ProTriTAC platforms and the underlying critical components of our product candidates.



Our Strategy

Our strategy is to harness innovations in immunotherapy and protein engineering to rapidly advance our novel TriTAC product candidates through clinical development, regulatory approval and commercialization, with an initial focus on cancer. This strategy encompasses the following key elements:

- ***Advance our TriTAC product candidates directed at clinically validated targets from discovery through clinical development and regulatory approval.*** We have developed a robust and efficient internal research effort that is focused on advancing a portfolio of therapeutic product candidates from initial discovery through clinical development, and ultimately, to treat patients suffering from cancer. We have discovered and advanced four product candidates to treat solid and hematologic malignancies, two of which are currently in the clinic. We expect to advance our third and fourth programs into the clinic in 2020. These programs are directed against targets that are both clinically validated and which are ideally suited for our TriTAC platform due to limited expression on healthy tissue.
- ***Expand the pipeline of oncology candidates for our TriTAC technology platform and develop other novel platforms.*** Our current research efforts are focused on evaluating potential new product candidates based on our TriTAC technology. In addition, we are actively exploring new technologies, which may improve the safety of certain therapeutic approaches or expand our ability to address therapeutic targets with increased specificity to diseased tissues.
- ***Leverage our novel technology platforms to target a broad range of disease.*** Our TriTAC and other platforms may have the ability to address disease targets outside of oncology. We intend to evaluate opportunities to expand our research to other therapeutic areas, such as autoimmune diseases and anti-infectives either internally or through strategic partnerships.

- ***Selectively collaborate with leading biopharmaceutical companies to leverage our platforms, expand our portfolio, advance our product candidates and maximize their commercial potential.*** While we intend to retain significant ownership of our current pipeline product candidates, we recognize the benefits of collaborations. We seek collaborations that can:

    1) Broaden the reach of our technology platforms to other novel targets in oncology or other areas that are not a focus for our company. For example, we entered into a collaboration with AbbVie in October 2017, which was expanded in November 2019, that widens the utility for our TriTAC platform by developing candidates against novel soluble T cell receptor, or TCR, and antibody targets for the treatment of cancer.

    2) Provide us with strategic access to clinical and commercial capabilities, particularly in geographic areas we are unlikely to pursue on our own. For example, multiple myeloma is an indication with several therapeutic approaches competing both clinically and commercially. AbbVie has an extensive presence in hematologic malignancies, including multiple myeloma, which can benefit us as we develop a clinical plan that best positions HPN217 for commercial success.

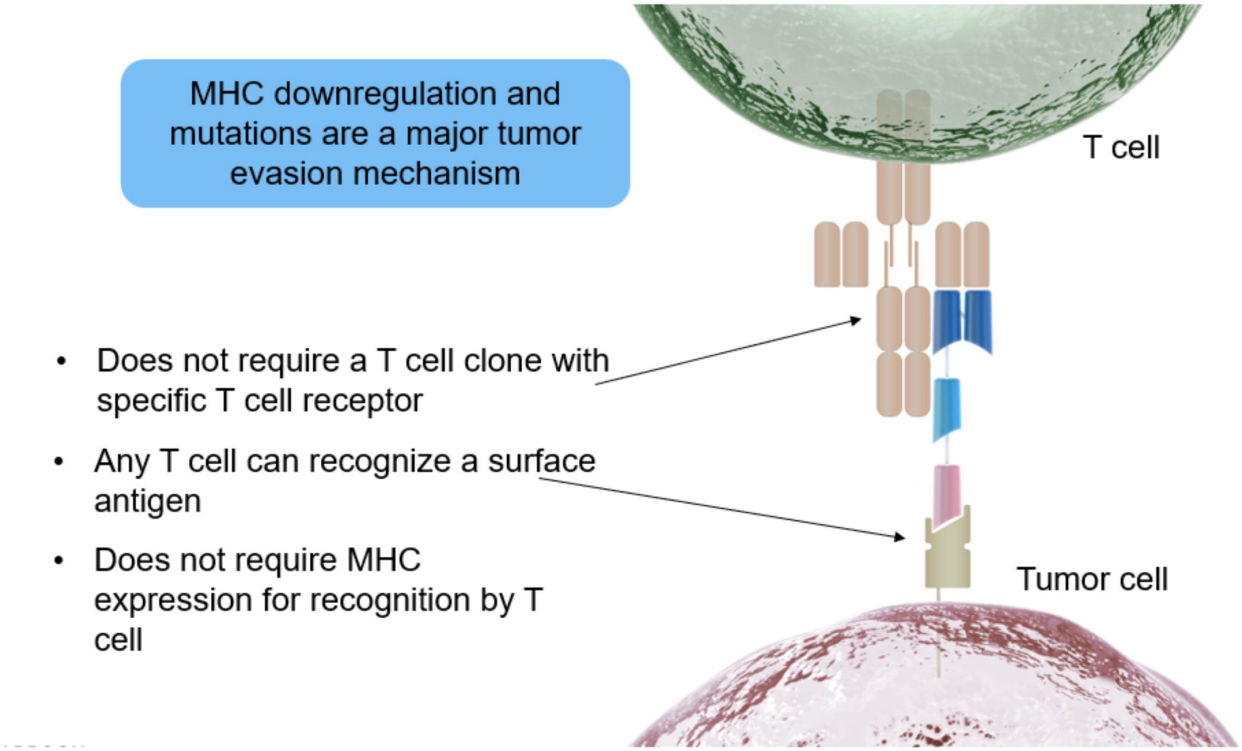
    3) Expedite commercial presence and distribution of our products, if approved. Utilizing an existing commercial marketing and distribution organization may be more cost effective in certain indications and geographies we are pursuing, rather than building our own commercial infrastructure.

Our TriTAC Platform

Our proprietary TriTAC platform offers the potential to develop drugs that could dramatically change the way in which we combat a variety of diseases. It is well accepted that the immune system can be harnessed to eradicate and prevent the proliferation of cancer cells. Recent successes using immunologic approaches have revealed methods of modulating a cancer patient’s immune system to battle the growth and spread of tumors. In most cases, T cells have been central to this approach, and the pathways to unleash the tumor-killing properties of T cells have resulted in multiple recent drug approvals.

We believe our TriTACs represent the evolution of a validated cancer-killing modality that engages T cells to kill tumors. The first approved T cell engager, a BiTE developed by Amgen and marketed as Blincyto, was approved in 2014 for the treatment of acute lymphoblastic leukemia. With our TriTAC platform, we set out to design a T cell engager that incorporates the strengths of BiTEs (including small size and activity at low levels of antigen expression) and improves upon their critical shortcomings (including short half-life and limited stability).

We designed our TriTAC product candidates with three primary components: a CD3 binding domain for T cell engagement, a proprietary half-life extension domain and an antigen-bonding domain. TriTACs consist of a single-chain polypeptide designed to bind to a cancer surface antigen, human serum albumin and the CD3 epsilon subunit of the TCR. Tumor-targeting and albumin-binding are achieved by single domain antibodies, or sdAbs, while CD3 is bound by a single-chain variable fragment, or scFv. When TriTACs simultaneously bind cell surface antigens and T cells, they induce the formation of a cytolytic synapse that mimics the natural interaction between TCRs and MHCs. This interaction activates T cells to kill target cells, as demonstrated in the figure below.



Our TriTAC Product Candidates

HPN424: PSMA-targeting TriTAC

We are developing our lead TriTAC product candidate, HPN424, for the treatment of prostate cancer. HPN424 targets PSMA, a protein for which expression is largely restricted to both normal and malignant prostate-derived cells. HPN424 provides a differentiated mechanism of action compared to the current standard of care, as this targeted approach is designed to safely engage and direct T cells to kill cancer cells. In April 2019, data presented at the American Society of Clinical Oncology demonstrated the encouraging clinical responses of Amgen's BiTE targeting PSMA in mCRPC patients. However, this product candidate, AMG212, requires continuous IV infusion, which could limit its adoption and accessibility. In December 2020, we announced that as of the December 1, 2020 data cutoff date, 69 patients have been dosed across 14 cohorts at fixed doses of 1.3 to 160ng/kg and in step dosing cohorts up to 300ng/kg administered as a weekly intravenous infusion. Enrolled patients had a median of 6 prior systemic therapies, and 76% of patients had prior chemotherapy in the metastatic castration-resistant setting. Ten of 44 patients (23%) with treatment start dates at least 6 months prior remained on study treatment for more than 24 weeks.

At the highest fixed dose tested to date, 160ng/kg, one patient out of 7 experienced a confirmed partial response with target lesion reduction of 43%. 3 of 7 patients have had serum PSA declines from baseline, one of which was a PSA reduction of 50%.

HPN424 was generally well tolerated amongst patients and cytokine-related adverse events have been manageable. Reported Grade 3 or higher adverse events have included cytokine release syndrome (CRS) (9%), using CRS grading criteria described by Lee, et al (2014), ALT increase (11%) and AST increase (11%). CRS events and transaminitis have been transient and have not resulted in treatment discontinuation. Dose-limiting toxicities (DLTs) have been observed and have not limited escalation. A maximum tolerated dose (MTD) has not been identified. Presentation of Phase 1 data and initiation of an expansion cohort is planned for the first half of 2021. Interim data from this expansion cohort is anticipated by the end of 2021.

Market Opportunity

The Surveillance, Epidemiology and End Results Program of the National Cancer Institute, or SEER, estimates that there will be over 191,000 new diagnoses and over 33,000 deaths as a result of prostate cancer in the United States in 2020. Prostate cancer is expected to have the third-highest cancer incidence rate in 2020 and is the second leading cause of male cancer death in the United States.

While the five-year survival rate of local and regional prostate cancer is nearly 98%, more aggressive forms of the disease, of which approximately 22% are initially diagnosed, have a five-year survival rate of approximately 30%. While these more aggressive forms of prostate cancer can initially be treated, nearly all of these patients experience a recurrence in tumor growth that results in the subsequent development of mCRPC. Nearly all prostate cancer-specific deaths occur after patients develop mCRPC, for which the median overall survival period is only 13 months. Later-generation anti-androgen drugs such as Johnson & Johnson's Zytiga, Pfizer's/Astellas' Xtandi, Janssen's Erleada, and Bayer's Nubeqa have widely become the standard of care and generated combined global sales of over $6 billion in 2020. While these therapies have addressed a portion of the population, there remains a significant need for treatments that offer a novel mechanism of action with the potential to modify or cure the disease.

Clinical Development Plan

In August 2018, we initiated a Phase 1, multicenter, open-label dose escalation and dose expansion trial of the safety, tolerability and pharmacokinetics of HPN424 in mCRPC patients. Eligible patients must have mCRPC, have received at least two prior treatment regiments for mCRPC and have evidence of disease progression on the most recent systemic treatment regimen. The dose escalation phase is currently using a 3+3 design with dose cohorts that enroll three to six patients per cohort. The trial is designed to determine the maximum tolerated dose and a recommended Phase 2 dose. Our primary objective is to assess safety and tolerability at increasing dose levels. Our secondary objectives include pharmacokinetics and pharmacodynamics, as well as preliminary potential anti-tumor activity and biomarker data. We continue to enroll patients in the dose-escalation portion of the clinical trial. Presentation of Phase 1 data and initiation of an expansion cohort is planned for the first half of 2021. Interim data from this expansion cohort is anticipated by the end of 2021.

Phase 1 Preliminary Results

In January 2019, we announced preliminary data from seven patients in our ongoing dose escalation study, treated at doses ranging from 1.3 to 24 ng/kg, as of December 31, 2018, which supports the proposed mechanism of action of HPN424. All seven patients were treated previously with a second-generation anti-androgen therapy. From those seven patients, we noted preliminary pharmacokinetic analysis supports weekly dosing, T cell engagement via transient and dose-dependent increases in peripheral cytokines and chemokines and a reduction in circulating tumor cells, or CTC, in several of the evaluable patients. Adverse events were consistent with the expected mechanism of action, with three patients reporting grade 2 rigors or fevers that were manageable. One patient from the fourth cohort experienced what was initially categorized as a grade 3 CRS event (rigors and hypotension), which resolved within eight hours of dosing. This patient was re-administered HPN424 consistent with protocol guidelines. The patient experienced no further reactions. No dose limiting toxicities had been observed, with four dose levels tested. In August 2019, we provided an update on our HPN424 trial that focused on our experience in managing cytokine-related events. Consistent with the TriTAC mechanism of action, we had observed adverse events associated with T cell activation and cytokine induction, which prompted us to explore the use of dexamethasone as a premedication to limit potential adverse events. We had found that the addition of weekly dexamethasone premedication, tapered over several weeks, had successfully limited adverse events. Several patients had completed the scheduled taper and had successfully continued treatment with HPN424 in the absence of dexamethasone. In December 2020, we announced that as of the December 1, 2020 data cutoff date, 69 patients have been dosed across 14 cohorts at fixed doses of 1.3 to 160ng/kg and in step dosing cohorts up to 300ng/kg administered as a weekly intravenous infusion. Enrolled patients had a median of 6 prior systemic therapies, and 76% of patients had prior chemotherapy in the metastatic castration-resistant setting. Ten of 44 patients (23%) with treatment start dates at least 6 months ago remained on study treatment for more than 24 weeks.

HPN536: MSLN-Targeting TriTAC

We are developing HPN536 for the treatment of ovarian cancer and other MSLN-expressing tumors, which include mesothelioma, pancreatic carcinoma, non-small cell lung carcinoma, or NSCLC, and triple-negative breast cancer, or TNBC, among others. HPN536 targets MSLN, a cell-surface protein whose normal expression is largely restricted to mesothelial cell layers lining certain organs. MSLN is attractive for target-based therapeutics because it is expressed on a wide variety of tumor cells but has limited expression in normal tissue. Early signs of clinical efficacy generated by other treatment modalities have validated MSLN as an attractive tumor target, but therapies with improved efficacy are required to treat MSLN-expressing tumors. In 2018, we completed an IND-enabling, multi-dose GLP toxicology study in animals. HPN536, which has been observed to bind to cynomolgus monkey MSLN with comparable affinities as human MSLN, delivered clear histological evidence of target engagement. In April 2019, we initiated a Phase 1/2a, multicenter, open-label dose escalation and dose expansion trial of the safety, tolerability and pharmacokinetics of

HPN536 and are actively recruiting patients with ovarian and pancreatic cancer in the dose-escalation portion of the trial. In December 2020, we provided an update on HPN536. We highlighted that dosing had occurred across 9 fixed-dose cohorts of 6 to 280ng/kg and 1 step dose cohort up to 600ng/kg. Tumor types treated include late-stage ovarian and pancreatic cancers and peritoneal mesothelioma. Enrolled patients had a median of four prior systemic therapies, and 66% of patients had progressive disease as best response to their most recent prior therapy. Pharmacokinetic analysis shows median half-life of more than 70 hours. Among the relapsed/refractory ovarian cancer patients with at least one post-baseline scan, 8 of 12 (67%) patients showed stability of target lesions.

HPN536 appears to be well tolerated. One CRS grade 3 occurred in the absence of dexamethasone premedication treatment. The CRS resolved, and the patient continued on study with dexamethasone premedication. As of the December 1, 2020 data cutoff date, no DLTs have been observed. Initiation of an expansion cohort is anticipated in the second half of 2021, with a presentation of Phase 1 data by year-end 2021.

Market Opportunity

MSLN-expressing tumors include ovarian cancer, NSCLC, pancreatic carcinoma, mesothelioma and TNBC, among others. While MSLN is found in approximately 30% of all cancers, these specific cancers have particularly high levels of MSLN expression. The following table shows the MSLN expression level of, and the number of patients diagnosed in the United States in 2020 with, each of these cancers:

Cancer Type	New Patients Diagnosed in the United States		MSLN Expression Level (%)
Ovarian Cancer	21,750		60-65
Non-Small Cell Lung Cancer	194,000	***	60-65 *
Pancreatic Carcinoma	57,600		80-85
Mesothelioma	3,000		85-90
Triple Negative Breast Cancer	41,000	**	34-42

* Represents MSLN expression levels across all lung cancer types.
** Calculated as 15% of SEER-estimated breast cancer incidence.
*** Calculated as 85% of SEER-estimated lung cancer incidence

Ovarian cancer is the fifth leading cause of cancer-related death among women in the United States, and is the deadliest of gynecologic cancers with more than 70% of patients diagnosed with an advanced stage and over 14,000 patients dying from the disease each year. According to SEER, the five-year survival rate for women diagnosed with ovarian cancer is approximately 49%. NSCLC is the most common type of lung cancer, estimated to comprise 80-85% of all lung cancer diagnoses. The five-year survival rate for NSCLC is about 20%. Pancreatic cancer is one of the most fatal cancers in the world. In 2016, the seven major markets (the United States, France, Germany, Italy, Spain, the United Kingdom and Japan) saw 149,780 new cases of pancreatic cancer and in 2020, there were approximately 57,000 new cases in the United States. SEER estimates that fewer than 9% of patients diagnosed with pancreatic cancer survive five years. Mesothelioma is a rare and aggressive cancer that affects the lining or membrane that covers and protects certain organs in the body. Effective treatment options for patients with mesothelioma are very limited. TNBC is referred to as “triple-negative” because it is ER-, PR- and HER2-, and is unlikely respond to hormonal or HER2-targeted therapies. TNBC accounts for 10-20% of all breast cancers and is more aggressive and likely to recur compared to receptor-positive breast cancers. The five-year survival rate for TNBC is 77% as compared to >90% for other types of breast cancers.

Clinical Development Plan

In April 2019, we initiated a Phase 1/2a, multicenter, open-label dose escalation and dose expansion trial of the safety, tolerability and pharmacokinetics of HPN536 and are actively recruiting patients with ovarian and pancreatic cancer. The study consists of two phases, an initial dose escalation phase with ovarian and pancreatic cancer patients, followed by an expansion phase of up to three additional parallel cohorts of 20 patients each with ovarian, pancreatic and mesothelioma cancer. We are collecting data to evaluate the safety, tolerability, pharmacokinetics, pharmacodynamics and preliminary clinical activity of HPN536. The dose escalation phase is designed to determine the maximum tolerated dose and a recommended Phase 2 dose. Once a recommended Phase 2 dose is determined, we expect to initiate the dose expansion phase with three parallel 20-patient cohorts, conducted according to a Simon 2-stage design. The cohorts will be indication-specific, and we expect to enroll patients with ovarian cancer, mesothelioma and pancreatic carcinoma. Initiation of an expansion cohort is anticipated by the second half of 2021, with a presentation of Phase 1 data by year end 2021.

HPN217: BCMA-Targeting TriTAC

We are developing HPN217 for the treatment of multiple myeloma. HPN217 targets BCMA, a clinically validated target. BCMA is a tumor necrosis factor receptor super family member and is a receptor protein expressed on nearly all multiple myeloma cells. Early data from CAR-T and ADC have clinically validated the target.

In December 2020, we announced that relapsed/refractory multiple myeloma patients have been treated across 6 fixed dose cohorts of 5 to 810µg, reflecting a more than 100-fold increase in dose in 8 months. HPN217 has been well-tolerated, and no DLTs have been observed as of the December 1, 2020 cutoff date. In January 2021, HPN217 received orphan drug designation for the treatment of multiple myeloma. A presentation of interim data is anticipated in 2021, with initiation of a dose expansion cohort in the second half of 2021.

In November 2019, we entered into an exclusive worldwide Development and Option Agreement with AbbVie for HPN217. Under the terms of the agreement, we granted to AbbVie an option to license worldwide exclusive rights to HPN217. We will be responsible for agreed-upon development activities of HPN217 through an initial Phase 1/2 clinical trial. Upon exercise of the option, AbbVie will be responsible for all future clinical development, manufacturing and commercialization activities. AbbVie may exercise its license option at any time during a period commencing on the effective date of the agreement and expiring after a specified period following delivery by us of a specified data package arising from the first Phase 1/2 trial for the HPN217 products. AbbVie paid an upfront payment of $30 million and a development milestone payment of $50 million triggered upon dosing the first patient in the Phase 1/2 clinical trial within a specified time period, which we expect to occur in the first half of 2020. If AbbVie exercises its option, AbbVie will pay us an option exercise fee of $200 million, and potential future payments of $230 million for the achievement of certain development, regulatory and commercial sales milestones for HPN217 Products along with high single-digit to very low double-digit royalties on commercial sales.

Market Opportunity

Multiple myeloma is a type of blood cancer formed by the accumulation of malignant plasma cells in the bone marrow, crowding out normal plasma cells that play an important role in the immune system. Multiple myeloma is the second most prevalent blood cancer after Non-Hodgkin's lymphoma. There are approximately 229,000 people living with myeloma worldwide, with 114,000 new cases diagnosed and 87,000 deaths each year. The American Cancer Society estimates that approximately 32,000 new cases will be diagnosed and approximately 13,000 deaths are expected to occur from multiple myeloma in the United States in 2020. Despite advances in the treatment of multiple myeloma over the past decade, we believe there remains a significant unmet need as the five-year survival rate is only approximately 50%.

HPN328: DLL3-Targeting TriTAC

We are developing HPN328 for the treatment of SCLC and other neuroendocrine tumors associated with DLL3 expression. DLL3 is a protein highly expressed in a majority of SCLC tumors and cancer stem cells, but not expressed in normal tissue. This selective expression makes DLL3 an attractive drug target for T cell engagers. In January 2021, we announced that the first patient had been dosed with HPN328 in a Phase 1/2 clinical trial as an investigational treatment of SCLC and other tumors associated with DLL3 expression. We continue to enroll patients in the Phase 1/2 clinical trial and plan to present initial data in the second half of 2021.

Market Opportunity

Approximately 30,000 patients are diagnosed with SCLC annually in the United States, representing 10-15% of lung cancer diagnoses. The five-year relative survival rate for patients with Stage I, II, III and IV SCLC is approximately 31%, 19%, 8% and 2%, respectively. T cell targeting checkpoint inhibitors, such as Tecentriq, Imfinzi and Keytruda have been approved for use in SCLC patients, supporting immunotherapy as a new treatment alternative for SCLC. We believe there is still a significant unmet need remains for new therapies for these patients.

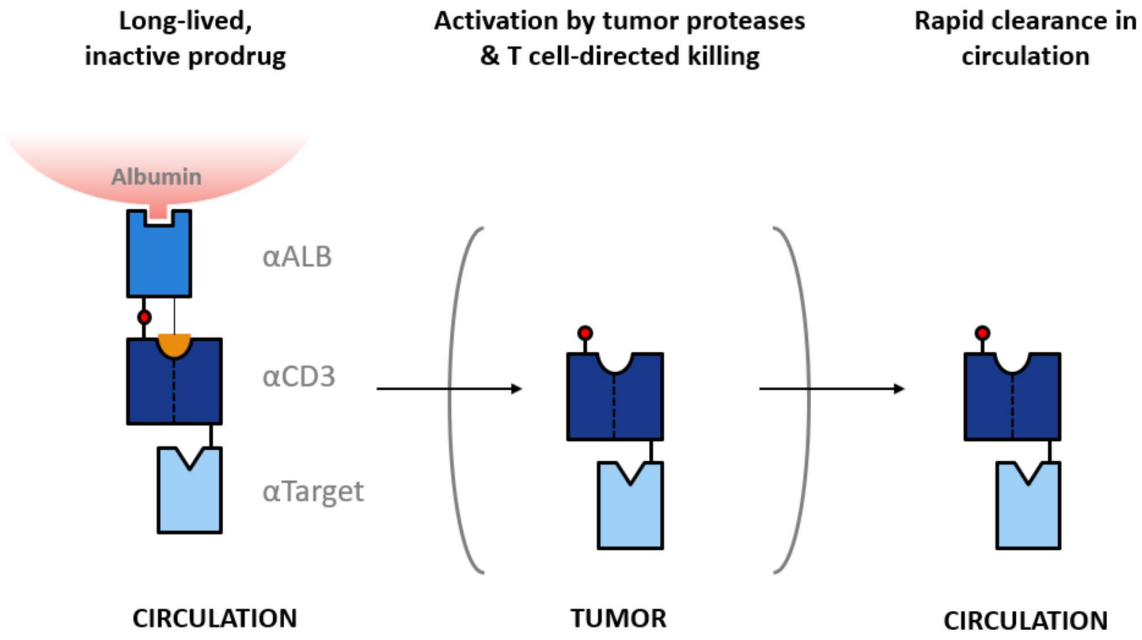
Preclinical Data

In October 2019, we presented data on HPN328 for the treatment of SCLC at the AACR-NCI-EORTC International Conference on Molecular Targets and Cancer Therapeutics. HPN328 was well-tolerated in cynomolgus monkeys at 1 and 10 mg/kg and pharmacokinetic data supported the potential for once weekly dosing. When administered to mice bearing human SCLC xenografts and human T cells, HPN328 eradicated the tumors.

Our ProTriTAC Platform

ProTriTAC—An Expansion of TriTAC's Capabilities

In order to expand the universe of addressable targets and indications, we are actively developing our proprietary ProTriTAC platform. Our ProTriTAC platform applies a prodrug concept to create a therapeutic T cell engager that remains inactive until it reaches the tumor. ProTriTACs therefore have the potential for additional tumor specificity and enhanced safety profiles because they are designed to have limited interaction with their molecular targets in healthy tissue, allowing us to target tumor-associated antigens that may be more broadly expressed. When a ProTriTAC penetrates a tumor, tumor-associated proteases cleave off the blocking domain of the ProTriTAC, thereby enabling the engagement of T cells to subsequently kill tumor cells. This activation process also diminishes the half-life of the resulting T cell engager so active molecules that leave the tumor are rapidly eliminated from circulation without causing off-tissue side effects.



Our ProTriTAC Product Candidate

HPN601

HPN601 is currently in preclinical development, and it is the first drug candidate from our ProTriTAC platform. HPN601 targets the epithelial cell adhesion molecule (EpCAM), and is being developed for the treatment of multiple solid tumor indications. EpCAM is a tumor antigen that is broadly and uniformly expressed in many solid tumors; however, expression on some normal tissues has hindered its potential as a therapeutic target due to on-target, off-tumor toxicity as observed in clinical studies from past EpCAM targeted T cell engagers. The goal of developing HPN601, a conditionally active T cell engager, is to target all EpCAM-positive metastatic tumors by systemic administration and have an acceptable safety profile.

Market Opportunity

EpCAM is a tumor antigen that is broadly and uniformly expressed in many solid tumors. Thyroid, small cell lung cancer, non-small cell lung cancer, prostate, ovarian, endometrial, pancreatic, gastric, gallbladder, biliary, esophageal, colorectal, and breast cancer all have greater than 70% prevalence for EpCAM expression. These cancers combined represent approximately 345,000 patient deaths in the US each year.

Preclinical Data

In November 2020, we presented preclinical data on HPN601 for the treatment of solid tumors at the 35th Society for Immunotherapy of Cancer (SITC) virtual annual meeting. The oral presentation highlighted the following data:

- The successful use of a humanized rodent tumor xenograft model to assess therapeutic index by simultaneously measuring efficacy and toxicity in the same tumor-bearing animal
- A surrogate EpCAM ProTriTAC has a 10x improved therapeutic index compared to its corresponding constitutively active T cell engager control when measuring efficacy and toxicity in the same animal
- Improved tolerability of HPN601 in non-human primates and more potent anti-tumor activity in a rodent tumor model over the corresponding constitutively active T cell engager control
- Potent anti-tumor activity across multiple EpCAM-expressing tumor models, demonstrating the ability of HPN601 to be activated in multiple tumor types

Collaboration and License Agreements

Development and Option Agreement with AbbVie Biotechnology

On November 20, 2019, we entered into a Development and Option Agreement with AbbVie in connection with our HPN217 program, which targets B cell maturation antigen, or BCMA. Pursuant to such Agreement, we granted to AbbVie an option to a worldwide, exclusive license under our patents and know-how applicable to the HPN217 program to develop, manufacture and commercialize products arising from the HPN217 program targeting BCMA, or HPN217 Products. Under the Development and Option Agreement, we will file an IND for HPN217 and conduct development activities pursuant to a mutually-agreed development plan, including conducting a Phase 1/2 clinical trial of HPN217, in order for AbbVie to determine whether it wishes to exercise its option to take a worldwide, exclusive license to such HPN217 program.

Under the Development and Option Agreement, AbbVie may exercise its license option at any time during a period commencing on the effective date of the agreement, and expiring after a specified period, following delivery by us of a specified data package arising from the first Phase 1/2 trial for the HPN217 Products. Following AbbVie's exercise of its option, and except for completion of certain development activities by us under the development plan, AbbVie will be solely responsible, at its cost, for the development, manufacture and commercialization of HPN217 Products and any other HPN217 Products. AbbVie is required to use commercially reasonable efforts to develop and obtain regulatory approval for one HPN217 product, for at least one indication, for use in each Major Market (as defined in the Development and Option Agreement).

AbbVie paid an upfront payment of $30 million and a development milestone payment of $50 million in June 2020 as we dosed our first patient in the Phase 1/2 clinical trial of HPN217 in April 2020. If AbbVie exercises its option, AbbVie will pay us an option exercise fee of $200 million. Following option exercise, AbbVie will be required to make further payments to us of up to $230 million in the aggregate for the achievement of specified development, regulatory and commercial sales milestones for HPN217 Products. We will also receive tiered royalties on net sales by AbbVie, its affiliates and sublicensees of HPN217 Products at percentages ranging from the high single digits to the very low double digits, subject to specified offsets and reductions. Royalties will be payable under the Development and Option Agreement on a product-by-product and country-by-country basis commencing on the date of first commercial sale of each HPN217 Product, and ending on the later of expiration of all valid claims of specified licensed patents in such country, expiration of regulatory exclusivity in such country, or ten years following first commercial sale of such HPN217 Product in such country.

The Development and Option Agreement will terminate upon the date of the expiration of all AbbVie's royalty payment obligations in all countries, or upon expiration of the license option period and the failure of AbbVie to exercise its license option. The Development and Option Agreement may be terminated by either party immediately for the insolvency of the other party or on 90 days' written notice for an uncured material breach of the Development and Option Agreement by the other party. AbbVie may also terminate the Development and Option Agreement in its entirety or on a country-by-country basis for any reason on 90 days' written notice to us.

Amended and Restated Discovery Collaboration Agreement with AbbVie Biotechnology

On November 20, 2019, we entered into an Amended and Restated Discovery Collaboration and License Agreement, or the Restated Collaboration Agreement, with AbbVie, which agreement amends and restates the Discovery Collaboration and License Agreement entered into between us and AbbVie, dated October 10, 2017 and amended April 3, 2019, or the Original Collaboration Agreement. Pursuant to the Original Collaboration Agreement, we granted to AbbVie worldwide exclusive rights to develop and commercialize products that incorporate our proprietary TriTAC technology together with soluble TCRs provided by AbbVie that bind to targets accepted by the parties. Under the terms of the Original Collaboration Agreement, AbbVie had the right to designate up

to two targets for development of TriTAC constructs, which it selected in 2017 and 2019, respectively. Pursuant to the Restated Collaboration Agreement, the worldwide, exclusive license granted to AbbVie under the Original Collaboration Agreement to develop and commercialize products that incorporate our proprietary Tri-specific T-cell Activating Construct, or TriTAC, platform technology together with soluble T cell receptors, or TCRs, provided by AbbVie has been expanded to cover products that incorporate antibodies provided by AbbVie or by us. The expansion of the collaboration also allows AbbVie to designate up to six additional targets, selected during a specified period following the effective date, to be the subject of activities under the collaboration. During a period of up to four years following the date of AbbVie's designation of each target for the products, and confirmation of target availability, we and AbbVie will conduct certain research and discovery activities under a mutually agreed discovery and research plan in connection with the creation and evaluation of constructs comprising our proprietary TriTAC technology, in conjunction with the soluble TCR or antibody sequences directed at the agreed upon targets of interest. We may not, including through any third party, develop or commercialize any competing product that binds to any of the included targets. As was the case under the Original Collaboration Agreement, following the discovery phase, AbbVie will be solely responsible, at its cost, for the development, manufacture and commercialization of the products that arise from the activities under the discovery plan. AbbVie is required to use commercially reasonable efforts to develop and commercialize one such product directed to each target for which the discovery activities were completed in each Major Market (as defined in the Restated Collaboration Agreement).

In addition to the upfront payment of $17 million already paid under the Original Collaboration Agreement, under the Restated Collaboration Agreement, we received an upfront payment of $20 million for AbbVie's right to select two additional targets and an option to select up to four further targets. AbbVie will be required to make payments to us, upon target selection, of $10 million for each target, up to four further targets selected by AbbVie. For each of the up to eight targets selected, we will receive up to $300 million in the aggregate for the achievement of specified development, regulatory and commercial sales milestones for licensed products indicated for human therapeutic or prophylactic use, totaling up to $2.4 billion in the aggregate, if such licensed products are successfully progressed against all-included targets and indications. We will also be eligible to receive tiered royalties on net sales by AbbVie, its affiliates and sublicensees of licensed products at percentages in the mid-single digits, subject to specified offsets and reductions. Royalties will be payable under the Restated Collaboration Agreement on a product-by-product and country-by-country basis commencing on the date of first commercial sale of each product, and ending on the later of expiration of all valid claims of specified licensed patents in such country, expiration of regulatory exclusivity in such country or ten years following first commercial sale of such product in such country. If licensed products are developed and commercialized for diagnostic or veterinary use, or certain screening or monitoring uses, the parties have agreed to negotiate an appropriate reduction in the economic terms applicable to such non-therapeutic and prophylactic applications.

The Restated Collaboration Agreement will terminate upon the date of the expiration of all AbbVie's royalty payment obligations in all countries. The Restated Collaboration Agreement may be terminated by either party immediately for the insolvency of the other party or on 90 days' written notice for an uncured material breach of such agreement by the other party. AbbVie may also terminate the Restated Collaboration Agreement in its entirety or on a target-by-target or country-by-country basis for any reason on 30 days' written notice to the Company. In addition, AbbVie may terminate the Restated Collaboration Agreement immediately in its entirety or on a target-by-target basis if AbbVie considers in good faith that there has been a failure of the discovery or development efforts with respect to such target, or that further development or commercialization of products directed to such target is not advisable as a result of a serious safety issue.

License Agreement with Werewolf Therapeutics, Inc.

In March 2018, we entered into an assignment and license agreement, or the Werewolf Agreement, with Werewolf Therapeutics, Inc., or Werewolf, a portfolio company of MPM Capital, Inc., a holder of more than 5% of our capital stock. Dr. Luke Evnin, a member of our Board until June 2020, is also the Chairman of the board of directors of Werewolf. Under the Werewolf Agreement, we assigned certain patents that relate to certain inducible polypeptides (and binding moiety for conditional activation of certain polypeptides) to Werewolf and granted to Werewolf a non-exclusive, royalty-bearing, sublicenseable license under certain other patents owned by us and relating to certain proteins, to make, use and commercialize products that are covered by such patents in the field of molecules comprising a certain polypeptide. Werewolf assigned certain patents to us relating to adoptive cell therapies and binding moieties for conditional activation of immunoglobulin and non-immunoglobulin molecules. Under the Werewolf Agreement, Werewolf paid us an upfront fee of $0.5 million. If Werewolf commercializes products covered by the licensed patents, then beginning on the first sale of such products, Werewolf will be obligated to pay to us a royalty on net sales of such products by Werewolf, its affiliates and licensees at a percentage in the low single digits, subject to an obligation to make a minimum annual royalty payment at an amount in the low hundreds of thousands of dollars.

In December 2019, we and Werewolf amended the Werewolf Agreement by entering into a Second Amended and Restated Assignment and License Agreement, or the Amended Werewolf Agreement, to include the grant to Werewolf of an exclusive, royalty-bearing, sublicensable license under certain patents owned by us and relating to certain proteins, to make, use, and commercialize products that are covered by such patents in the field of molecules comprising a certain protein. This license provides Werewolf with certain rights to enforce and defend these licensed patents. If Werewolf commercializes products covered by these licensed patents, then beginning on the first sale of such products, Werewolf will be obligated to pay to us a royalty on net sales of such products by Werewolf, its affiliates and licensees at a percentage in the low single digits, and this royalty cannot be added to any other royalty owed to us under the Amended Werewolf Agreement. In addition, each party granted to the other a non-exclusive, royalty-free, sublicensable, perpetual license under certain other patents relating to a certain binding domain of a certain protein, to make, use, and commercialize products that are covered by such patents in a field defined by a certain type of molecule for each party. The Amended Werewolf Agreement also includes a mutual release of claims regarding certain patent prosecution matters.

Royalties on net sales will be recognized when the underlying sales occur. No royalty revenue was recognized under the Werewolf Agreement as of December 31, 2020.

Asset Transfer Agreement with Maverick Therapeutics, Inc.

In December 2016, we entered into an asset transfer agreement, or the Asset Transfer Agreement, with Maverick Therapeutics, Inc., or Maverick. Under the Asset Transfer Agreement, we transferred one provisional patent application (and any subsequently filed patent applications that claim priority to the provisional patent application) and certain know-how to Maverick solely for use in connection with a specific type of conditionally active T cell engagers having an activation mechanism that we believe is not used by the T cell engagers that are incorporated in the products that we are developing (such permitted use by Maverick, the Maverick Field), and Maverick assumed liabilities from us relating to this transferred intellectual property and other transferred assets. Maverick granted back to us a royalty-free, non-exclusive, sublicenseable license under this transferred intellectual property for use in all fields outside of the Maverick Field, which include all fields in which we are developing products. We further granted Maverick royalty-free, exclusive and non-exclusive licenses to certain other patents that we own, in all cases solely for use in the Maverick Field. In consideration for our transfer and license of such intellectual property, Maverick issued a promissory note to us in the amount of $6.8 million, which we collected in full in January 2017, and all of its outstanding capital stock, which we then spun-off to our stockholders (such distribution, the “Distribution”). The Asset Transfer Agreement includes a covenant not to compete, which provides that we will not directly or indirectly research, develop, manufacture or commercialize products in the Maverick Field until December 2020. The Asset Transfer Agreement is not terminable and all rights transferred or licensed by a party to the other party under the Asset Transfer Agreement are irrevocable.

We are involved in significant litigation with Maverick regarding a dispute relating to our ProTriTAC program that arose under the Asset Transfer Agreement. For more information, see “Item 3. Legal Proceedings” elsewhere in this Form 10-K.

Agreements with AGC Biologics, Inc.

In October 2015, we entered into the AGC License Agreement with AGC, pursuant to which AGC granted us a non-exclusive, worldwide license under its proprietary Chinese hamster EF-1 protein expression technology, or the CHEF1 Technology, which is used in connection with the manufacturing process for HPN424, HPN536 and our other current preclinical product candidates, or collectively, the Products, for use in connection with our development of the Products, including our clinical trials. Subsequently, in July 2016, we entered into a development and manufacturing services agreement with AGC, or the Manufacturing Agreement, under which AGC conducts cGMP manufacturing of the Products utilizing the CHEF1 Technology. Under the terms of the AGC License Agreement, we have an option, exercisable for each Product, to be granted a non-exclusive license to use the CHEF1 Technology in connection with the commercialization of such Product for human therapeutics or diagnostics. If we exercise such option during a specified period, we will make a one-time upfront payment in the mid tens of thousands of dollars to AGC (solely in connection with the first Product) for such commercial license for the first Product, or if we exercise such commercial option after the expiration of such period, our commercial license will be subject to the payment of a higher option exercise fee.

We retain the right, at any time, to manufacture the Products using the CHEF1 Technology ourselves, or through an affiliate or third-party manufacturer for development purposes, and subject to exercising our commercial option, for commercialization purposes.

Under the terms of our agreements with AGC, so long as AGC is the exclusive manufacturer of our Products, we will not owe AGC any milestone or royalty payments to AGC under the AGC License Agreement for the use of the CHEF1 Technology. However, if AGC is no longer our exclusive manufacturer for the Products, and we still use the CHEF1 Technology, we will owe AGC specified development and regulatory milestones of up to $350,000 per Product, and a royalty on net sales of Products of less than 1%, payable for the longer of ten years from first commercial sale of such Product, or the expiration of the patent rights in the CHEF1 Technology covering such Product in the relevant country, subject to a reduction in the event of no patent coverage. If we are not using AGC as our exclusive manufacturer of a given Product, such that we owe a royalty to AGC, we have an option, exercisable at any time prior to the end of the first royalty period in which a royalty is due for such Product, to buy out our royalty obligations in lieu of an ongoing royalty payment, by making a one-time payment to AGC in a dollar amount in the mid-single digit millions.

The Manufacturing Agreement can be terminated by either party in the event of an uncured material breach by the other party, or in the event of insolvency. We have the right to terminate the Manufacturing Agreement or any portion of the services at any time on 60 business days' notice, and AGC has the right to terminate the agreement on 60 business days' notice if it reasonably concludes that the services are not scientifically or technically feasible despite its commercially reasonable efforts and after we and AGC attempt to resolve the scientific or technical problem in good faith. The AGC License Agreement expires on the later of the expiration of all licensed patents or our use of trade secrets relating to the CHEF1 Technology or manufacture of Products. The AGC License Agreement terminates immediately in the event of either party's insolvency, and AGC may terminate the AGC License Agreement for our material breach on 30 days' notice to us.

Manufacturing and Supply

We do not own or operate, and currently have no plans to establish, any GMP manufacturing facilities. We rely, and expect to continue to rely, on third parties for the manufacture of our product candidates for preclinical and clinical testing, as well as for commercial manufacture if any of our product candidates obtain marketing approval. We also rely, and expect to continue to rely, on third parties to package, label, store and distribute our investigational product candidates and, if marketing approval is obtained, our commercial products. We believe this strategy allows us to maintain a more efficient infrastructure by eliminating the need for us to invest in our own manufacturing facilities, equipment and personnel while also enabling us to focus our expertise and resources on the development of new product candidates.

To date, we have obtained bulk drug substance, or BDS, for HPN424, HPN536 and HPN217 from a single-source third-party contract manufacturer, AGC. While any reduction or halt in supply of BDS from this contract manufacturer could limit our ability to develop our product candidates until a replacement contract manufacturer is found and qualified, we believe that we have sufficient BDS to support our current clinical trial programs. We have obtained final drug product for these product candidates from one of two engaged third-party contract manufacturers. We are in the process of developing our supply chain for each of our product candidates and intend to put in place agreements under which our third-party contract manufacturers will generally provide us with necessary quantities of BDS and drug product on a project-by-project basis based on our development and commercial supply needs.

All of our TriTACs and ProTriTACs are or will be manufactured from a vial of a master cell bank of that product's production cell line. We have or intend to have one master cell bank for each TriTAC and ProTriTAC that was or will be produced and tested in accordance with current good manufacturing practice, or cGMP, and applicable regulations. Each master cell bank is or will be stored in two independent locations, and we intend to produce working cell banks for each product candidate later in product development. It is possible that we could lose multiple cell banks from multiple locations and have our manufacturing severely impacted by the need to replace the cell banks. However, we believe we have adequate backup should any particular cell bank be lost in a catastrophic event.

Competition

The pharmaceutical and biotechnology industries are characterized by rapidly advancing technologies, intense competition and a strong emphasis on proprietary products. While we believe that our technology, development experience and scientific knowledge provide us with competitive advantages, we face potential competition from many different sources, including large pharmaceutical and biotechnology companies, academic institutions, government agencies and other public and private research organizations that conduct research, seek patent protection and establish collaborative arrangements for the research, development, manufacturing and commercialization of cancer immunotherapies. Any product candidates that we successfully develop and commercialize will compete with new immunotherapies that may become available in the future.

We compete in the segments of the pharmaceutical, biotechnology and other related markets that develop immuno-oncology treatments. There are many other companies that have commercialized and/or are developing immuno-oncology treatments for cancer including large pharmaceutical and biotechnology companies, such as AbbVie, Amgen, AstraZeneca/MedImmune, Bristol-Myers Squibb, Johnson & Johnson, Merck, Novartis, Pfizer and Roche/Genentech.

We face significant competition from pharmaceutical and biotechnology companies that target specific tumor-associated antigens using immune cells or other cytotoxic modalities. These generally include immune cell redirecting therapeutics (*e.g.*, T cell engagers), adoptive cellular therapies (*e.g.*, CAR-Ts), antibody drug conjugates, targeted radiopharmaceuticals, targeted immunotoxin and targeted cancer vaccines.

With respect to HPN424, we are aware of other competing PSMA-targeting clinical stage therapeutics, which include, but are not limited to: T cell engagers from Amgen Inc. and Regeneron Pharmaceuticals, Inc.; CAR-Ts from Poseida Therapeutics, Inc., Sorrento Therapeutics, Inc. and Tmunity Therapeutics, Inc.; and radiopharmaceuticals from Endocyte Inc./Novartis AG and Bayer.

With respect to HPN536, we are aware of other competing MSLN-targeting clinical stage therapeutics, which include, but are not limited to: CAR-T from UPenn/Novartis AG, Atara Inc. and TCR2; antibody drug conjugates from Bayer AG and Bristol-Myers Squibb Company; and other modalities from AbbVie Inc., Bayer AG and Selecta Biosciences Inc.

With respect to HPN217, we are aware of other competing BCMA-targeting clinical stage therapeutics, which include, but are not limited to: T cell engagers from Amgen Inc., Pfizer Inc., Janssen Pharmaceuticals, Inc., Bristol-Myers Squibb Company, TeneoBio, Inc. and Regeneron Pharmaceuticals, Inc.; CAR-Ts from Autolus Therapeutics PLC, bluebird bio, Bristol-Myers Squibb Company, Legend Biotech/Janssen Pharmaceuticals, Inc. and Novartis AG, and Allogene Therapeutics; antibody drug conjugates from GlaxoSmithKline PLC and AstraZeneca/MedImmune LLC; and other modalities from Affimed N.V. and Unum Therapeutics Inc./Seattle Genetics Inc.

With respect to our earlier stage pipeline DLL3-targeting TriTAC product candidate, HPN328 we are aware of other competing DLL3-targeting clinical stage therapeutics. These include, but are not limited to: T cell engagers from Amgen Inc. and Boehringer Ingelheim; and CAR-T from Amgen Inc. and Boehringer Ingelheim; and Allogene Therapeutics.

We are also currently developing a pipeline of ProTriTACs and other protease-activated therapeutics that face increasing competition from other biologic prodrug developers, which include, but are not limited to, Akrevia Therapeutics Inc., Amunix Pharmaceuticals, Inc., Bayer AG, BioAtla, LLC, Chugai Pharmaceutical Co., Ltd., CytomX Therapeutics, Inc., Genentech, Inc., Nektar Therapeutics, Pandion Therapeutics, Inc., Revitope Oncology, Inc., Roche Holding AG and Seattle Genetics Inc.

Many of the companies against which we are competing or against which we may compete in the future have significantly greater financial resources and expertise in research and development, manufacturing, preclinical testing, conducting clinical trials, obtaining regulatory approvals and marketing approved drugs than we do. Mergers and acquisitions in the pharmaceutical, biotechnology and diagnostic industries may result in even more resources being concentrated among a smaller number of our competitors. 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 and management personnel and establishing clinical trial sites and enrolling subjects for our clinical trials, as well as in acquiring technologies complementary to, or necessary for, our programs.

We could see a reduction or elimination of our commercial opportunity if our competitors develop and commercialize products that are safer, more effective, have fewer or less severe side effects, are more convenient or are less expensive than any products that we or our collaborators may develop. Our competitors also may obtain FDA or foreign 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 or our collaborators are able to enter the market. The key competitive factors affecting the success of all our product candidates, if approved, are likely to be their efficacy, safety, convenience, price, the effectiveness of companion diagnostics, if required, the level of biosimilar or generic competition and the availability of reimbursement from government and other third-party payors.

Intellectual Property

The proprietary nature and protection of our platforms, product candidates and discovery programs, as well as our processes and know-how, are important to our business. We have sought patent protection in the United States and internationally for our TriTAC platform, binding domains and related TriTAC product candidates, as well as the proprietary technology in our ProTriTAC platform and any other inventions to which we have rights, where available and when appropriate. For our product candidates, we generally pursue patent protection covering compositions of matter, methods of use and manufacture. Our policy is to pursue, maintain and defend patent rights in strategic areas, whether developed internally or licensed from third parties, and to protect the technology, inventions and improvements that are commercially important to the development of our business. We may also rely on trade secrets that may be important to the development of our business.

To date, we have spent considerable effort securing intellectual property rights, including rights related to our TriTAC and ProTriTAC platforms, binding domains and specific targets pertaining to our product candidates. Below is a summary of how we view our protections and ongoing prosecution efforts.

TriTAC Platform

For our TriTAC platform, as of December 31, 2020 we own one patent family directed to composition-of-matter coverage and method of use of our core TriTAC platform technology. This family includes one issued U.S. patent, one U.S. non-provisional patent application and over ten foreign application counterparts. The issued patent in this family is projected to expire in 2036, not including any patent term adjustments and any patent term extensions.

In addition to patent protection on our core TriTAC platform technology, as of December 31, 2020, we owned two patent families that relate to the CD3 and albumin binding domains of the TriTAC platform. Specifically, these two families are directed to composition-of-matter, method of use and sequence coverage to our anti-CD3 single-variable fragment, scFv, and anti-albumin single domain antibody, sdAb, binding domains. These patent families include four issued U.S. patents, two U.S. non-provisional patent applications and over twenty foreign application counterparts. The issued patents in these two patent families are projected to expire in 2037, not including any patent term adjustments and extensions.

HPN424

For our lead TriTAC product candidate, HPN424, as of December 31, 2020, we owned [two] patent families directed to composition-of-matter coverage of HPN424, its PSMA binding domain and related molecules, as well as methods of use for prostate cancer. These patent families include two issued U.S. patents, two U.S. non-provisional patent applications and over twenty foreign application counterparts. The issued patents in these two patent families are projected to expire in 2037, not including any patent term adjustments and extensions. In addition to these two patent families, our patents on our core TriTAC platform technology and our anti-CD3 and albumin binding domains, provide additional patent coverage on HPN424.

HPN536

For our second TriTAC product candidate, HPN536, as of December 31, 2020, we owned [two] patent families directed to composition-of-matter coverage of HPN536, its MSLN-binding domain and related molecules, as well as methods of use for cancers. These patent families include two issued U.S. patents, two U.S. non-provisional patent applications and over twenty foreign application counterparts. The issued patents in these two patent families are projected to expire in 2038, not including any patent term adjustments and extensions. In addition to these two patent families, our patents on our core TriTAC platform technology and our anti-CD3 and albumin binding domains provide additional patent coverage on HPN536.

HPN217

For our pipeline BCMA-Targeting TriTAC product candidate HPN217, as of December 31, 2020, we owned [two] patent families directed to composition-of-matter coverage of HPN217, its BCMA binding domain and related molecules, as well as methods of use for cancers. These patent families include three U.S. non-provisional patent applications over fifty foreign application counterparts . Any patents issuing from these two patent families are projected to expire in 2038, not including any patent term adjustments and extensions. In addition to these two patent families, our patents on our anti-CD3 and albumin binding domains provide additional patent coverage on HPN217.

HPN328

For our pipeline DLL3-targeting TriTAC, HPN328, as of December 31, 2020, we owned one patent family directed to composition-of-matter coverage of this TriTAC, its DLL3 binding domain and related molecules, as well as methods of use for cancers. These patent families include one issued U.S. patent, one U.S. non-provisional patent application and one PCT international application. The issued patent from this family is projected to expire in 2039, not including any patent term adjustments and extensions. In addition to these two patent families, our patents on our anti-CD3 and albumin binding domains provide additional patent coverage on this TriTAC.

ProTriTAC Platform

Our patent portfolio for our ProTriTAC platform is at an early stage, with no issued patents as of December 31, 2020, and includes ten patent families directed to composition-of-matter coverage of the ProTriTAC binding moieties, applications in various protein and cellular therapy formats and methods of use thereof. These patent families include three U.S. non-provisional patent applications, four PCT international applications, three non-expired U.S. provisional patent applications and over ten foreign application counterparts. Any patents issuing from these ten patent families are projected to expire in 2039 or 2040, not including any patent term adjustments and extensions.

We are involved in a significant litigation with Maverick Therapeutics, Inc. regarding an intellectual property-based dispute relating to our ProTriTAC program. For more information, see “Item 3. Legal Proceedings” elsewhere in this Form 10-K.

Our commercial success will depend in part on obtaining and maintaining patent protection and trade secret protection of our current and future product candidates and the methods used to develop and manufacture them, as well as successfully defending these patents against any third-party challenges. Our ability to stop third parties from making, using, selling, offering to sell or importing our product candidates depends on the extent to which we have rights under valid and enforceable patents or trade secrets that cover these activities. We cannot be sure that patents will be granted with respect to any of our pending patent applications or with respect to any patent applications filed by us in the future, nor can we be sure that any of our existing patents or any patents that may be granted to us in the future will be commercially useful in protecting our product candidates, discovery programs and processes.

The term of individual patents depends upon the legal term of the patents in the countries in which they are obtained. In most countries in which we file, the patent term is 20 years from the earliest date of filing a non-provisional patent application. In the United States, the patent term of a patent that covers an FDA-approved drug may also be eligible for patent term extension, which permits patent term restoration as compensation for the patent term lost during the FDA regulatory review process. The Hatch-Waxman Amendments permit a patent term extension of up to five years beyond the expiration of the patent. The length of the patent term extension is related to the length of time the drug is under regulatory review. Patent term extension cannot extend the remaining term of a patent beyond a total of 14 years from the date of product approval, only one patent applicable to an approved drug may be extended and only those claims covering the approved drug, a method for using it or a method for manufacturing it may be extended. Similar provisions are available in foreign jurisdictions to extend the term of a patent that covers an approved drug. In the future, if and when our product candidates receive FDA approval, we expect to apply for patent term extensions on patents covering those products. While we plan to seek patent term extensions on any of our issued patents in any jurisdiction where these are available, there is no guarantee that the applicable authorities, including the FDA in the United States, will agree with our assessment of whether such extensions should be granted and, if granted, the length of such extensions.

In addition to patent protection, we also rely on trademark registration, trade secrets, know how, other proprietary information and continuing technological innovation to develop and maintain our competitive position. We 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. Although we take steps to protect our proprietary information and trade secrets, including through contractual means with our employees and consultants, third parties may independently develop substantially equivalent proprietary information and techniques or otherwise gain access to our trade secrets or disclose our technology. We may therefore not be able to meaningfully protect our trade secrets. It is our policy to require our employees, consultants, outside scientific collaborators, sponsored researchers and other advisors to execute confidentiality agreements upon the commencement of employment or consulting relationships with us. These agreements provide that all confidential information concerning our business or financial affairs developed or made known to the individual during the course of the individual’s relationship with us is to be kept confidential and not disclosed to third parties except in specified circumstances. Our agreements with employees also provide that all inventions conceived by the employee in the course of employment with us or from the employee’s use of our confidential information are our exclusive property. However, such confidentiality agreements and invention assignment agreements can be breached and we may not have adequate remedies for any such breach.

The patent positions of biotechnology companies like ours are generally uncertain and involve complex legal, scientific and factual questions. Our commercial success will also depend in part on not infringing upon the proprietary rights of third parties. It is uncertain whether the issuance of any third-party patent would require us to alter our development, commercial strategies, drugs or processes, or to obtain licenses or cease certain activities. Our breach of any license agreements or our failure to obtain a license to proprietary rights required to develop or commercialize our future products may have a material adverse impact on us. If third parties prepare and file patent applications in the United States that also claim technology to which we have rights, we may have to participate in interference or derivation proceedings in the USPTO to determine priority of invention.

For more information on these risks and other comprehensive risks related to our intellectual property, see “Risk Factors—Risks Relating to Our Intellectual Property.”

Government Regulation

The FDA and other regulatory authorities at federal, state and local levels, as well as equivalent regulatory authorities in countries outside the U.S., extensively regulate, among other things, the research, development, testing, manufacture, quality control, import, export, safety, effectiveness, labeling, packaging, storage, distribution, record keeping, approval, advertising, promotion, marketing, post-approval monitoring and post-approval reporting of biologics such as those we are developing. We, along with third-party contractors, will be required to navigate the various preclinical, clinical and commercial approval requirements of the governing regulatory agencies of the countries in which we wish to conduct studies or seek approval or licensure of our product candidates. Moreover, compliance with government regulations governing personal information and information security requires the expenditure of substantial time and financial resources.

U.S. Biologics Regulation

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

- completion of preclinical laboratory tests and animal studies performed in accordance with the FDA's current Good Laboratory Practices, or GLP, regulation;
- submission to the FDA of an IND, which must become effective before clinical trials may begin and must be updated annually or when significant changes are made;
- approval by an independent IRB or ethics committee at each clinical site before the trial is commenced;
- performance of adequate and well-controlled human clinical trials to establish the safety, purity and potency of the proposed biologic product candidate for its intended purpose;
- preparation of and submission to the FDA of a BLA after completion of all pivotal clinical trials;
- a determination by the FDA within 60 days of its receipt of a BLA to file the application for review;
- satisfactory completion of an FDA Advisory Committee review, if applicable;
- satisfactory completion of an FDA pre-approval inspection of the manufacturing facility or facilities at which the proposed product is produced to assess compliance with current good manufacturing practices, or cGMPs, and to assure that the facilities, methods and controls are adequate to preserve the biological product's continued safety, purity and potency, and of selected clinical investigation sites to assess compliance with GCPs; and
- FDA review and approval of a BLA to permit commercial marketing of the product for particular indications for use in the United States.

Preclinical and Clinical Development

Prior to beginning the first clinical trial with a product candidate, we must submit an IND to the FDA. An IND is a request for authorization from the FDA to administer an investigational new drug or biologic product to humans. The central focus of an IND submission is on the general investigational plan and the protocol or protocols for preclinical studies and clinical trials. The IND also includes results of animal and *in vitro* studies assessing the toxicology, pharmacokinetics, pharmacology and pharmacodynamic characteristics of the product, chemistry, manufacturing and controls information, and any available human data or literature to support the use of the investigational product. An IND must become effective before human clinical trials may begin. The IND automatically becomes effective 30 days after receipt by the FDA, unless the FDA, within the 30-day period, raises safety concerns or questions about the proposed clinical trial. In such a case, the IND may be placed on clinical hold and the IND sponsor and the FDA must resolve any outstanding concerns or questions before the clinical trial can begin. Submission of an IND therefore may or may not result in FDA authorization to begin a clinical trial.

Clinical trials involve the administration of the investigational product to human subjects under the supervision of qualified investigators in accordance with GCPs, which include the requirement that all research subjects provide their informed consent for their participation in any clinical study. Clinical trials are conducted under protocols detailing, among other things, the objectives of the study, the parameters to be used in monitoring safety and the effectiveness criteria to be evaluated. A separate submission to the existing IND must be made for each successive clinical trial conducted during product development and for any subsequent protocol amendments. Furthermore, an independent IRB for each site proposing to conduct the clinical trial must review and approve the plan for any clinical trial and its informed consent form before the clinical trial begins at that site and must monitor the study until completed. Regulatory authorities, the IRB or the sponsor may suspend a clinical trial at any time on various grounds, including a finding that the subjects are being exposed to an unacceptable health risk or that the trial is unlikely to meet its stated objectives. Some studies also include oversight by an independent group of qualified experts organized by the clinical study sponsor, known as a data safety monitoring board, which provides authorization for whether or not a study may move forward at designated check points based on access to certain data from the study and may halt the clinical trial if it determines that there is an unacceptable safety risk for subjects or other grounds, such as no demonstration of efficacy. There are also requirements governing the reporting of ongoing preclinical studies and clinical trials and clinical study results to public registries.

For purposes of BLA approval, human clinical trials are typically conducted in three sequential phases that may overlap.

- *Phase 1.* The investigational product is initially introduced into healthy human subjects or patients with the target disease or condition. These studies are designed to test the safety, dosage tolerance, absorption, metabolism and distribution of the investigational product in humans, the side effects associated with increasing doses, and, if possible, to gain early evidence on effectiveness.
- *Phase 2.* The investigational product is administered to a limited patient population with a specified disease or condition to evaluate the preliminary efficacy, optimal dosages and dosing schedule and to identify possible adverse side effects and safety risks. Multiple Phase 2 clinical trials may be conducted to obtain information prior to beginning larger and more expensive Phase 3 clinical trials.
- *Phase 3.* The investigational product is administered to an expanded patient population to further evaluate dosage, to provide statistically significant evidence of clinical efficacy and to further test for safety, generally at multiple geographically dispersed clinical trial sites. These clinical trials are intended to establish the overall risk/benefit ratio of the investigational product and to provide an adequate basis for product approval.

In some cases, the FDA may require, or companies may voluntarily pursue, additional clinical trials after a product is approved to gain more information about the product. These so-called Phase 4 studies may be made a condition to approval of the BLA. Concurrent with clinical trials, companies may complete additional animal studies and develop additional information about the biological characteristics of the product candidate and must finalize a process for manufacturing the product in commercial quantities in accordance with cGMP requirements. The manufacturing process must be capable of consistently producing quality batches of the product candidate and, among other things, must develop methods for testing the identity, strength, quality and purity of the final product, or for biologics, the safety, purity and potency. Additionally, appropriate packaging must be selected and tested and stability studies must be conducted to demonstrate that the product candidate does not undergo unacceptable deterioration over its shelf life.

BLA Submission and Review

Assuming successful completion of all required testing in accordance with all applicable regulatory requirements, the results of product development, nonclinical studies and clinical trials are submitted to the FDA as part of a BLA requesting approval to market the product for one or more indications. The BLA must include all relevant data available from pertinent preclinical studies and clinical trials, including negative or ambiguous results as well as positive findings, together with detailed information relating to the product's chemistry, manufacturing, controls, and proposed labeling, among other things. The submission of a BLA requires payment of a substantial application user fee to the FDA, unless a waiver or exemption applies.

Once a BLA has been submitted, the FDA's goal is to review standard applications within ten months after it accepts the application for filing, or, if the application qualifies for priority review, six months after the FDA accepts the application for filing. In both standard and priority reviews, the review process is often significantly extended by FDA requests for additional information or clarification. The FDA reviews a BLA to determine, among other things, whether a product is safe, pure and potent and the facility in which it is manufactured, processed, packed or held meets standards designed to assure the product's continued safety, purity and potency. The FDA may convene an advisory committee to provide clinical insight on application review questions. Before approving a BLA, the FDA will typically inspect the facility or facilities where the product is manufactured. The FDA will not approve an application unless it determines that the manufacturing processes and facilities are in compliance with cGMP requirements and adequate to assure consistent production of the product within required specifications. Additionally, before approving a BLA, the FDA will typically inspect one or more clinical sites to assure compliance with GCPs. If the FDA determines that the application, manufacturing process or manufacturing facilities are not acceptable, it will outline the deficiencies in the submission and often will request additional testing or information. Notwithstanding the submission of any requested additional information, the FDA ultimately may decide that the application does not satisfy the regulatory criteria for approval.

After the FDA evaluates a BLA and conducts inspections of manufacturing facilities where the investigational product and/or its drug substance will be produced, the FDA may issue an approval letter or a Complete Response letter. An approval letter authorizes commercial marketing of the product with specific prescribing information for specific indications. A Complete Response letter will describe all of the deficiencies that the FDA has identified in the BLA, except that where the FDA determines that the data supporting the application are inadequate to support approval, the FDA may issue the Complete Response letter without first conducting required inspections, testing submitted product lots and/or reviewing proposed labeling. In issuing the Complete Response letter, the FDA may recommend actions that the applicant might take to place the BLA in condition for approval, including requests for additional information or clarification. The FDA may delay or refuse approval of a BLA if applicable regulatory criteria are not satisfied, require additional testing or information and/or require post-marketing testing and surveillance to monitor safety or efficacy of a product.

If regulatory approval of a product is granted, such approval will be granted for particular indications and may entail limitations on the indicated uses for which such product may be marketed. For example, the FDA may approve the BLA with a Risk Evaluation and Mitigation Strategy, or REMS, to ensure the benefits of the product outweigh its risks. A REMS is a safety strategy to manage a known or potential serious risk associated with a product and to enable patients to have continued access to such medicines by managing their safe use, and could include medication guides, physician communication plans, or elements to assure safe use, such as restricted distribution methods, patient registries and other risk minimization tools. The FDA also may condition approval on, among other things, changes to proposed labeling or the development of adequate controls and specifications. Once approved, the FDA may withdraw the product approval if compliance with pre- and post-marketing requirements is not maintained or if problems occur after the product reaches the marketplace. The FDA may require one or more Phase 4 post-market studies and surveillance to further assess and monitor the product's safety and effectiveness after commercialization, and may limit further marketing of the product based on the results of these post-marketing studies.

Expedited Development and Review Programs

The FDA offers a number of expedited development and review programs for qualifying product candidates. The fast track program is intended to expedite or facilitate the process for reviewing new products that meet certain criteria. Specifically, new products are eligible for fast track designation if they are intended to treat a serious or life-threatening disease or condition and demonstrate the potential to address unmet medical needs for the disease or condition. Fast track designation applies to the combination of the product and the specific indication for which it is being studied. The sponsor of a fast track product has opportunities for frequent interactions with the review team during product development and, once a BLA is submitted, the product may be eligible for priority review. A fast track product may also be eligible for rolling review, where the FDA may consider for review sections of the BLA on a rolling basis before the complete application is submitted, if the sponsor provides a schedule for the submission of the sections of the BLA, the FDA agrees to accept sections of the BLA and determines that the schedule is acceptable, and the sponsor pays any required user fees upon submission of the first section of the BLA.

A product intended to treat a serious or life-threatening disease or condition may also be eligible for breakthrough therapy designation to expedite its development and review. A product can receive breakthrough therapy designation if preliminary clinical evidence indicates that the product, alone or in combination with one or more other drugs or biologics, may demonstrate substantial improvement over existing therapies on one or more clinically significant endpoints, such as substantial treatment effects observed early in clinical development. The designation includes all of the fast track program features, as well as more intensive FDA interaction and guidance beginning as early as Phase 1 and an organizational commitment to expedite the development and review of the product, including involvement of senior managers.

Any marketing application for a biologic submitted to the FDA for approval, including a product with a fast track designation and/or breakthrough therapy designation, may be eligible for other types of FDA programs intended to expedite the FDA review and approval process, such as priority review and accelerated approval. A product is eligible for priority review if it has the potential to provide a significant improvement in the treatment, diagnosis or prevention of a serious disease or condition. For original BLAs, priority review designation means the FDA's goal is to take action on the marketing application within six months of the 60-day filing date (as compared to ten months under standard review).

Additionally, products studied for their safety and effectiveness in treating serious or life-threatening diseases or conditions may receive accelerated approval upon a determination that the product has an effect on a surrogate endpoint that is reasonably likely to predict clinical benefit, or on a clinical endpoint that can be measured earlier than irreversible morbidity or mortality, that is reasonably likely to predict an effect on irreversible morbidity or mortality or other clinical benefit, taking into account the severity, rarity, or prevalence of the condition and the availability or lack of alternative treatments. As a condition of accelerated approval, the FDA will generally require the sponsor to perform adequate and well-controlled post-marketing clinical studies to verify and describe the anticipated effect on irreversible morbidity or mortality or other clinical benefit. In addition, the FDA currently requires as a condition for accelerated approval pre-approval of promotional materials, which could adversely impact the timing of the commercial launch of the product.

A regenerative medicine advanced therapy, or RMAT, designation is intended to facilitate an efficient development program for, and expedited review of, any drug that meets the following criteria: (i) the drug qualifies as a RMAT, which is defined as a cell therapy, therapeutic tissue engineering product, human cell and tissue product, or any combination product using such therapies or products, with limited exceptions; (ii) the drug is intended to treat, modify, reverse, or cure a serious or life-threatening disease or condition; and (iii) preliminary clinical evidence indicates that the drug has the potential to address unmet medical needs for such a disease or condition. Like breakthrough therapy designation, RMAT designation provides potential benefits that include more frequent meetings with the FDA to discuss the development plan for the product candidate and eligibility for rolling review and priority review. Products granted RMAT designation may also be eligible for accelerated approval on the basis of a surrogate or intermediate endpoint reasonably likely to predict long-term clinical benefit, or reliance upon data obtained from a meaningful number of sites, including through expansion to additional sites. Once approved, when appropriate, the FDA can permit fulfillment of post-approval requirements under accelerated approval through: the submission of clinical evidence, preclinical studies, clinical trials, patient registries or other sources of real world evidence such as electronic health records; the collection of larger confirmatory datasets; or post-approval monitoring of all patients treated with the therapy prior to approval.

Fast track designation, breakthrough therapy designation, priority review and RMAT designation do not change the standards for approval but may expedite the development or approval process. Even if a product qualifies for one or more of these programs, the FDA may later decide that the product no longer meets the conditions for qualification or decide that the time period for FDA review or approval will not be shortened.

Orphan Drug Designation

Under the Orphan Drug Act, the FDA may grant orphan designation to a drug or biologic intended to treat a rare disease or condition, which is a disease or condition that affects fewer than 200,000 individuals in the United States, or more than 200,000 individuals in the United States for which there is no reasonable expectation that the cost of developing and making available in the United States a drug or biologic for this type of disease or condition will be recovered from sales in the United States for that drug or biologic. Orphan drug designation must be requested before submitting a BLA. After the FDA grants orphan drug designation, the generic identity of the therapeutic agent and its potential orphan use are disclosed publicly by the FDA. The orphan drug designation does not convey any advantage in, or shorten the duration of, the regulatory review or approval process.

If a product that has orphan drug designation subsequently receives the first FDA approval for the disease for which it has such designation, the product is entitled to orphan drug exclusive approval (or exclusivity), which means that the FDA may not approve any other applications, including a full BLA, to market the same biologic for the same indication for seven years, except in limited circumstances, such as a showing of clinical superiority to the product with orphan drug exclusivity or if the FDA finds that the holder of the orphan drug exclusivity has not shown that it can assure the availability of sufficient quantities of the orphan drug to meet the needs of patients with the disease or condition for which the drug was designated. Orphan drug exclusivity does not prevent the FDA from approving a different drug or biologic for the same disease or condition, or the same drug or biologic for a different disease or condition. Among the other benefits of orphan drug designation are tax credits for certain research and a waiver of the BLA application fee.

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

Post-Approval Requirements

Any products manufactured or distributed by us pursuant to FDA approvals are subject to pervasive and continuing regulation by the FDA, including, among other things, requirements relating to record-keeping, reporting of adverse experiences, periodic reporting, product sampling and distribution, and advertising and promotion of the product. After approval, most changes to the approved product, such as adding new indications or other labeling claims, are subject to prior FDA review and approval. There also are continuing user fee requirements, under which the FDA assesses an annual program fee for each product identified in an approved BLA. Biologic manufacturers and their subcontractors are required to register their establishments with the FDA and certain state agencies, and are subject to periodic unannounced inspections by the FDA and certain state agencies for compliance with cGMPs, which impose certain procedural and documentation requirements upon us and our third-party manufacturers. Changes to the manufacturing process are strictly regulated, and, depending on the significance of the change, may require prior FDA approval before being implemented. FDA regulations also require investigation and correction of any deviations from cGMPs and impose reporting requirements upon us and any third-party manufacturers that we may decide to use. Accordingly, manufacturers must continue to expend time, money and effort in the area of production and quality control to maintain compliance with cGMPs and other aspects of regulatory compliance.

The FDA may withdraw approval if compliance with regulatory requirements and standards is not maintained or if problems occur after the product reaches the market. Later discovery of previously unknown problems with a product, including adverse events of unanticipated severity or frequency, or with manufacturing processes, or failure to comply with regulatory requirements, may result in revisions to the approved labeling to add new safety information; imposition of post-market studies or clinical studies to assess new safety risks; or imposition of distribution restrictions or other restrictions under a REMS program. Other potential consequences include, among other things:

- restrictions on the marketing or manufacturing of a product, complete withdrawal of the product from the market or product recalls;
- fines, warning letters or holds on post-approval clinical studies;
- refusal of the FDA to approve pending applications or supplements to approved applications, or suspension or revocation of existing product approvals;
- product seizure or detention, or refusal of the FDA to permit the import or export of products;
- consent decrees, corporate integrity agreements, debarment or exclusion from federal healthcare programs;

- mandated modification of promotional materials and labeling and the issuance of corrective information;
- the issuance of safety alerts, Dear Healthcare Provider letters, press releases and other communications containing warnings or other safety information about the product; or
- injunctions or the imposition of civil or criminal penalties.

The FDA closely regulates the marketing, labeling, advertising and promotion of biologics. A company can make only those claims relating to safety and efficacy, purity and potency that are approved by the FDA and in accordance with the provisions of the approved label. The FDA and other agencies actively enforce the laws and regulations prohibiting the promotion of off-label uses. Failure to comply with these requirements can result in, among other things, adverse publicity, warning letters, corrective advertising and potential civil and criminal penalties. Physicians may prescribe legally available products for uses that are not described in the product's labeling and that differ from those tested by us and approved by the FDA. Such off-label uses are common across medical specialties. Physicians may believe that such off-label uses are the best treatment for many patients in varied circumstances. The FDA does not regulate the behavior of physicians in their choice of treatments. The FDA does, however, restrict manufacturer's communications on the subject of off-label use of their products.

Regulation of Companion Diagnostic Tests

We expect that our product candidates may require use of a diagnostic to identify appropriate patient population. These diagnostics, often referred to as companion diagnostics, are medical devices, often in vitro devices, which provide information that is essential for the safe and effective use of a corresponding drug. In the United States, the FDCA and its implementing regulations, and other federal and state statutes and regulations govern, among other things, medical device design and development, preclinical and clinical testing, premarket clearance or approval, registration and listing, manufacturing, labeling, storage, advertising and promotion, sales and distribution, export and import, and post-market surveillance. Unless an exemption applies, diagnostic tests 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 approval. We expect that any companion diagnostic developed for use with our product candidates will utilize the PMA pathway.

PMA applications must be supported by valid scientific evidence, which typically requires extensive data, including technical, preclinical, clinical and manufacturing data, to demonstrate to the FDA's satisfaction the safety and effectiveness of the device. For diagnostic tests, a PMA application typically includes data regarding analytical and clinical validation studies. As part of its review of the PMA, the FDA will conduct a pre-approval inspection of the manufacturing facility or facilities to ensure compliance with the Quality System Regulation, or QSR, which requires manufacturers to follow design, testing, control, documentation and other quality assurance procedures. FDA review of an initial PMA may require several years to complete. If the FDA evaluations of both the PMA application and the manufacturing facilities are favorable, the FDA will either issue an approval letter or an approvable letter, which usually contains a number of conditions that must be met in order to secure the final approval of the PMA. If the FDA's evaluation of the PMA or manufacturing facilities is not favorable, the FDA will deny approval of the PMA or issue a not approvable letter. A not approvable letter will outline the deficiencies in the application and, where practical, will identify what is necessary to make the PMA approvable. The FDA may also determine that additional clinical trials are necessary, in which case the PMA approval may be delayed for several months or years while the trials are conducted and then the data submitted in an amendment to the PMA. Once granted, PMA approval may be withdrawn by the FDA if compliance with post approval requirements, conditions of approval or other regulatory standards is not maintained or problems are identified following initial marketing.

On August 6, 2014, the FDA issued a final guidance document addressing the development and approval process for "In Vitro Companion Diagnostic Devices." According to the guidance, a companion diagnostic device and its corresponding drug should be approved or cleared contemporaneously by the FDA for the use indicated in the therapeutic product labeling. The guidance also explains that a companion diagnostic device used to make treatment decisions in clinical trials generally will be considered an investigational device, unless it is employed for an intended use for which the device is already approved or cleared. If used to make critical treatment decisions, such as patient selection, the diagnostic device generally will be considered a significant risk device under the FDA's Investigational Device Exemption, or IDE, regulations. Thus, the sponsor of the diagnostic device will be required to comply with the IDE regulations. According to the guidance, if a diagnostic device and therapeutic are to be studied together to support their respective approvals, both products can be studied in the same investigational study, if the study meets both the requirements of the IDE regulations and the IND regulations. The guidance provides that depending on the details of the study plan and subjects, a sponsor may seek to submit an IND alone, or both an IND and an IDE.

Biosimilars and Reference Product Exclusivity

The ACA includes a subtitle called the BPCIA, which created an abbreviated approval pathway for biological products that are biosimilar to or interchangeable with an FDA-approved reference biological product.

Biosimilarity, which requires that there be no clinically meaningful differences between the biological product and the reference product in terms of safety, purity, and potency, can be shown through analytical studies, animal studies, and a clinical study or studies. Interchangeability requires that a product is biosimilar to the reference product and the product must demonstrate that it can be expected to produce the same clinical results as the reference product in any given patient and, for products that are administered multiple times to an individual, the biologic and the reference biologic may be alternated or switched after one has been previously administered without increasing safety risks or risks of diminished efficacy relative to exclusive use of the reference biologic.

Under the BPCIA, an application for a biosimilar product may not be submitted to the FDA until four years following the date that the reference product was first licensed by the FDA. In addition, the approval of a biosimilar product may not be made effective by the FDA until 12 years from the date on which the reference product was first licensed. During this 12-year period of exclusivity, another company may still market a competing version of the reference product if the FDA approves a full BLA for the competing product containing that applicant's own preclinical data and data from adequate and well-controlled clinical trials to demonstrate the safety, purity and potency of its product. The BPCIA also created certain exclusivity periods for biosimilars approved as interchangeable products.

The BPCIA is complex and continues to be interpreted and implemented by the FDA. In addition, government proposals have sought to reduce the 12-year reference product exclusivity period. Other aspects of the BPCIA, some of which may impact the BPCIA exclusivity provisions, have also been the subject of recent litigation. As a result, the ultimate impact, implementation, and impact of the BPCIA is subject to significant uncertainty.

Other Healthcare, Data Privacy and Security Laws and Compliance Requirements

Pharmaceutical companies are subject to additional healthcare and data privacy as well as information security regulation and enforcement by the federal government and by authorities in the states and foreign jurisdictions in which they conduct their business. Such laws include, without limitation: the federal Anti-Kickback Statute, the federal False Claims Act, HIPAA and similar foreign, federal and state fraud and abuse, transparency, privacy and information security laws.

The federal Anti-Kickback Statute prohibits, among other things, persons and entities from knowingly and willfully soliciting, receiving, offering or paying remuneration, to induce, or in return for, either the referral of an individual, or the purchase or recommendation of an item or service for which payment may be made under any federal healthcare program. The term remuneration has been interpreted broadly to include anything of value, including stock options. The federal Anti-Kickback Statute has been interpreted to apply to arrangements between pharmaceutical manufacturers on one hand and prescribers, purchasers on the other. There are a number of statutory exceptions and regulatory safe harbors protecting some common activities from prosecution, but they are drawn narrowly and practices that involve remuneration, such as consulting agreements, that may be alleged to be intended to induce prescribing, purchasing or recommending may be subject to scrutiny if they do not qualify for an exception or safe harbor. Failure to meet all of the requirements of a particular applicable statutory exception or regulatory safe harbor does not make the conduct per se illegal under the federal Anti-Kickback Statute. Instead, the legality of the arrangement will be evaluated on a case-by-case basis based on a cumulative review of all of its facts and circumstances. Our practices may not in all cases meet all of the criteria for protection under a statutory exception or regulatory safe harbor. A person or entity does not need to have actual knowledge of the statute or specific intent to violate it in order to have committed a violation. In addition, 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.

Civil and criminal false claims laws, including the federal False Claims Act, which can be enforced through civil whistleblower or qui tam actions, and civil monetary penalty laws, prohibit, among other things, individuals or entities from knowingly presenting, or causing to be presented, claims for payment to the federal government, including federal healthcare programs, that are false or fraudulent. For example, the federal False Claims Act prohibits any person or entity from knowingly presenting, or causing to be presented, a false claim for payment to the federal government or knowingly making, using or causing to be made or used a false record or statement material to a false or fraudulent claim to the federal government. A claim includes "any request or demand" for money or property presented to the U.S. government. Several pharmaceutical and other healthcare companies have been prosecuted under these laws for allegedly providing free product to customers with the expectation that the customers would bill federal programs for the product.

HIPAA created additional federal criminal statutes that prohibit, among other things, executing a scheme to defraud any healthcare benefit program, including private third-party payors, and making false statements relating to healthcare matters. In addition, HIPAA, as amended by HITECH, and their implementing regulations, impose certain requirements on HIPAA covered entities, which include certain healthcare providers, healthcare clearing houses and health plans, and individuals and entities that provide services on their behalf that involves individually identifiable health information, known as business associates and their subcontractors that use, disclose, access or otherwise process individually identifiable health information, relating to the privacy, security and transmission of individually identifiable health information. HITECH also created new tiers of civil monetary penalties, amended HIPAA to make civil and criminal penalties directly applicable to business associates, and gave state attorneys general new authority to file civil actions for damages or injunctions in U.S. federal courts to enforce the federal HIPAA laws and seek attorneys' fees and costs associated with pursuing federal civil actions.

The U.S. federal Physician Payments Sunshine Act requires certain manufacturers of drugs, devices, biologics and medical supplies for which payment is available under Medicare, Medicaid or the Children's Health Insurance Program, with specific exceptions, to annually report to the Centers for Medicare and Medicaid Services, or 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 physicians and their immediate family members. Beginning in 2022, applicable manufacturers will also be required to report information regarding payments and other transfers of value provided during the previous year to physician assistants, nurse practitioners, clinical nurse specialists, certified nurse anesthetists, anesthesiologist assistants, and certified nurse-midwives.

We are also subject to additional similar U.S. state and foreign law equivalents of each of the above federal laws, including those governing the privacy and security of personal information (including key-coded data and health information), which, in some cases, differ from each other in significant ways, and may not have the same effect, thus complicating compliance efforts. If our operations are found to be in violation of any of such laws or any other governmental regulations that apply, we may be subject to penalties, including, without limitation, significant civil, criminal and administrative penalties, damages, fines, exclusion from government-funded healthcare programs, such as Medicare and Medicaid or similar programs in other countries or jurisdictions, integrity oversight and reporting obligations to resolve allegations of non-compliance, disgorgement, individual imprisonment, contractual damages, reputational harm, diminished profits and the curtailment or restructuring of our operations.

Efforts to ensure that our current and future business arrangements will comply with applicable privacy and data security laws and regulations will involve substantial costs. For example, the European General Data Protection Regulation, or GDPR, imposes several requirements relating to the consent of the individuals to whom the personal data relates, the information provided to the individuals, the security and confidentiality of the personal data, data breach notification and the use of third-party processors in connection with the processing of personal data. European data protection laws, such as the GDPR, also impose strict rules on the transfer of personal data out of the European Economic Area, Switzerland and United Kingdom. Further, the GDPR authorizes the imposition of penalties (such as restrictions or prohibitions on personal data processing) and large fines for noncompliance, including the potential for fines of up to €20 million or 4% of the annual global revenues of the noncompliant company, whichever is greater. The GDPR has increased our responsibility and potential liability in relation to personal data that we process or control compared to prior EU law, including in clinical trials, and we may be required to put in place additional mechanisms to ensure compliance with the GDPR and similar data protection laws, which could divert management's attention and increase our cost of doing business. Likewise, we expect that there will continue to be new proposed laws, regulations and industry standards relating to privacy and data protection in the United States, the EU and other jurisdictions, such as the California Consumer Privacy Act of 2018, or CCPA, which has been characterized as the first "GDPR-like" privacy statute to be enacted in the United States. Although the CCPA exempts certain data processed in the context of clinical trials, the CCPA, to the extent applicable to our business and operations, may increase our compliance costs and potential liability with respect to the personal information we maintain about California residents. In any event, it is possible that governmental authorities will conclude that our business practices do not comply with current or future statutes, regulations, agency guidance or case law involving applicable information security or privacy laws in light of the lack of applicable precedent and regulations. Federal, state and foreign enforcement bodies have increased their scrutiny of biotechnology companies, which has led to a number of investigations, prosecutions, convictions, fines, penalties and settlements in the industry.

Coverage and Reimbursement

Significant uncertainty exists as to the coverage and reimbursement status of any pharmaceutical or biological product for which we obtain regulatory approval. Sales of any product, if approved, depend, in part, on the extent to which such product will be covered by third-party payors, such as federal, state, and foreign government healthcare programs, commercial insurance and managed healthcare organizations, and the level of reimbursement, if any, for such product by third-party payors. Decisions regarding whether to cover any of our product candidates, if approved, the extent of coverage and amount of reimbursement to be provided are made on a plan-by-plan basis. Further, no uniform policy for coverage and reimbursement exists in the United States, and coverage and reimbursement can differ significantly from payor to payor. Third-party payors often rely upon Medicare coverage policy and payment limitations in setting their own reimbursement rates, but also have their own methods and approval process apart from Medicare determinations. As a result, the coverage determination process is often a time-consuming and costly process that will require us to provide scientific and clinical support for the use of our product candidates to each payor separately, with no assurance that coverage and adequate reimbursement will be applied consistently or obtained in the first instance.

For products administered under the supervision of a physician, obtaining coverage and adequate reimbursement may be particularly difficult because of the higher prices often associated with such drugs. Additionally, separate reimbursement for the product itself or the treatment or procedure in which the product is used may not be available, which may impact physician utilization. In addition, companion diagnostic tests require coverage and reimbursement separate and apart from the coverage and reimbursement for their companion pharmaceutical or biological products. Similar challenges to obtaining coverage and reimbursement, applicable to pharmaceutical or biological products, will apply to companion diagnostics.

In addition, the U.S. government, state legislatures and foreign governments have continued implementing cost-containment programs, including price controls, restrictions on coverage and reimbursement and requirements for substitution of generic products. Third-party payors are increasingly challenging the prices charged for medical products and services, examining the medical necessity and reviewing the cost effectiveness of pharmaceutical or biological products, medical devices and medical services, in addition to questioning safety and efficacy. Adoption of price controls and cost-containment measures, and adoption of more restrictive policies in jurisdictions with existing controls and measures, could further limit sales of any product that receives approval. Decreases in third-party reimbursement for any product or a decision by a third-party not to cover a product could reduce physician usage and patient demand for the product. No regulatory authority has granted approval for a personalized cancer immunotherapy based on a vaccine approach, and there is no model for reimbursement of this type of product.

Healthcare Reform

The United States and some foreign jurisdictions are considering or have enacted a number of reform proposals to change the healthcare system. There is significant interest in promoting changes in healthcare systems with the stated goals of containing healthcare costs, improving quality or expanding access. In the United States, the pharmaceutical industry has been a particular focus of these efforts and has been significantly affected by federal and state legislative initiatives, including those designed to limit the pricing, coverage, and reimbursement of pharmaceutical and biopharmaceutical products, especially under government-funded health care programs, and increased governmental control of drug pricing.

The ACA, which was enacted in March 2010, substantially changed the way healthcare is financed by both governmental and private insurers in the United States, and significantly affected the pharmaceutical industry. The ACA contains a number of provisions of particular import to the pharmaceutical and biotechnology industries, including, but not limited to, those governing enrollment in federal healthcare programs, a new methodology by which rebates owed by manufacturers under the Medicaid Drug Rebate Program are calculated for drugs that are inhaled, infused, instilled, implanted or injected, and annual fees based on pharmaceutical companies' share of sales to federal health care programs. There remain judicial and Congressional challenges to certain aspects of the ACA. While Congress has not passed comprehensive repeal legislation, several bills affecting the implementation of certain taxes under the ACA have been signed into law. For example, the Tax Act was enacted, which, among other things, removes penalties for not complying with ACA's requirement to carry health insurance, known as the "individual mandate", effective January 1, 2019. Since the enactment of the Tax Act, there have been additional amendments to certain provisions of the ACA. On December 14, 2018, a Texas U.S. District Court Judge ruled that the ACA 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 ACA are invalid as well. The U.S. Supreme Court is currently reviewing the case, although it is unknown when a decision will be made. Further, although the U.S. Supreme Court has not yet ruled on the constitutionality of the ACA, on January 28, 2021, President Biden issued an executive order to initiate a special enrollment period from February 15, 2021 through May 15, 2021 for purposes of obtaining health insurance coverage through the ACA marketplace. The executive order also instructs certain governmental agencies to review and reconsider their existing policies and rules that limit access to healthcare, including among others, reexamining Medicaid demonstration projects and waiver programs that include work requirements, and policies that create unnecessary barriers to obtaining access to health insurance coverage through Medicaid or the ACA. It is unclear how the Supreme Court ruling, other such litigation, and the healthcare reform measures of the Biden administration will impact the ACA and our business.

Other legislative changes have been proposed and adopted since the ACA was enacted, including aggregate reductions of Medicare payments to providers of 2% per fiscal year and reduced payments to several types of Medicare providers. These reductions went into effect in April 2013 and, due to subsequent legislative amendments to the statute, will remain in effect through 2030 with the exception of a temporary suspension from May 1, 2020 through March 2021 unless additional action is taken by Congress.

Moreover, there has recently been heightened governmental scrutiny over the manner in which manufacturers set prices for their marketed products, which has resulted in several Congressional inquiries and proposed and enacted federal and state legislation designed to, among other things, bring more transparency to product pricing, review the relationship between pricing and manufacturer patient programs, and reform government program reimbursement methodologies for drug products. At the federal level, the Trump administration used several means to propose or implement drug pricing reform, including through federal budget proposals, executive orders and policy initiatives. For example, on July 24, 2020 and September 13, 2020, the Trump administration announced several executive orders related to prescription drug pricing that seek to implement several of the administration's proposals. As a result, the FDA released a final rule on September 24, 2020, effective November 30, 2020, providing guidance for states to build and submit importation plans for drugs from Canada. Further, on November 20, 2020, the U.S. Department of Health and Human Services, or HHS, finalized a regulation removing safe harbor protection for price reductions from pharmaceutical manufacturers to plan sponsors under Medicare Part D, either directly or through pharmacy benefit managers, unless the price

reduction is required by law. The implementation of the rule has been delayed by the Biden administration from January 1, 2022 to January 1, 2023 in response to ongoing litigation. The rule also creates a new safe harbor for price reductions reflected at the point-of-sale, as well as a new safe harbor for certain fixed fee arrangements between pharmacy benefit managers and manufacturers, the implementation of which have also been delayed pending review by the Biden administration until March 22, 2021. On November 20, 2020, CMS issued an interim final rule implementing the Trump administration's Most Favored Nation executive order, which would tie Medicare Part B payments for certain physician-administered drugs to the lowest price paid in other economically advanced countries, effective January 1, 2021. On December 28, 2020, the U.S. District Court in Northern California issued a nationwide preliminary injunction against implementation of the interim final rule. It is unclear whether the Biden administration will work to reverse these measures or pursue similar policy initiatives. At the state level, legislatures have increasingly passed legislation and implemented regulations designed to control pharmaceutical product pricing, including price or patient reimbursement constraints, discounts, restrictions on certain product access and marketing cost disclosure and transparency measures, and, in some cases, designed to encourage importation from other countries and bulk purchasing. It is also possible that additional governmental action is taken in response to the outbreak of the novel strain of coronavirus (COVID-19) and the COVID-19 pandemic.

Employees

As of February 28, 2021, we had 78 full time employees, 64 of whom were engaged in research and development activities and 14 of whom were engaged in general and administrative activities. None of our employees are represented by labor unions or covered by collective bargaining agreements. We consider our relationship with our employees to be good.

Corporate Information

We were incorporated as a Delaware corporation in March 2015. Our principal executive offices are located at 131 Oyster Point Blvd, Suite 300, South San Francisco, California 94080, and our telephone number is (650) 443-7400. Our website address is www.harpoontx.com. The information contained on, or that can be accessed through, our website is not incorporated by reference into this Annual Report on Form 10-K, and you should not consider any information contained on, or that can be accessed through, our website as part of this Annual Report on Form 10-K.

"Harpoon Therapeutics," "Harpoon," the Harpoon logo, TriTAC, ProTriTAC and our other registered or common law trademarks, trade names or service marks appearing in this report are owned by us. This report contains references to our trademarks and to trademarks belonging to other entities. Solely for convenience, trademarks and trade names referred to in this report, including logos, artwork and other visual displays, generally appear without the ® or TM symbols, but such references are not intended to indicate, in any way, that we will not assert, to the fullest extent under applicable law, our rights or the rights of the applicable licensor to these trademarks and trade names. We do not intend our use or display of other companies' trade names or trademarks to imply a relationship with, or endorsement or sponsorship of us by, any other companies.

Item 1A. Risk Factors

In investment in our common stock involves a high degree of risk. You should carefully review the risks and uncertainties described below before making an investment decision. The risks described below are not the only ones facing us. The occurrence of any of the following risks, or of additional risks and uncertainties not presently known to us or that we currently believe to be immaterial, could materially and adversely affect our business, financial condition or results of operations. In such case, the trading price of our common stock could decline, and you may lose all or part of your investment.

Risks Related to the Development and Clinical Testing of Our Product Candidates

All of our product candidates are in preclinical or early-stage clinical development. Clinical drug development is a lengthy and expensive process with uncertain timelines and uncertain outcomes. If clinical trials of our product candidates are prolonged or delayed, we or any collaborators may be unable to obtain required regulatory approvals, and therefore be unable to commercialize our product candidates on a timely basis or at all.

To obtain the requisite regulatory approvals to market and sell any of our product candidates, we or any collaborator for such candidates must demonstrate through extensive preclinical studies and clinical trials that our product candidates are safe and effective in humans. Clinical testing is expensive and can take many years to complete, and its outcome is inherently uncertain. Failure can occur at any time during the clinical trial process. The results of preclinical studies and early-stage clinical trials of our product candidates may not be predictive of the results of later-stage clinical trials. Product candidates in later stages of clinical trials may fail to show the desired safety and efficacy traits despite having progressed through preclinical studies and initial clinical trials. A number of companies in the biopharmaceutical industry have suffered significant setbacks in advanced clinical trials due to lack of efficacy or adverse safety profiles, notwithstanding promising results in earlier trials. Our future clinical trial results may not be successful.

To date, we have not completed any clinical trials required for the approval of any of our product candidates. Although we are conducting early stage clinical trials and are conducting preclinical studies for other product candidates, we may experience delays in our ongoing clinical trials, and we do not know whether planned clinical trials will begin on time, need to be redesigned, enroll patients on time or be completed on schedule, if at all. Clinical trials can be delayed, suspended, or terminated for a variety of reasons, including the following:

- delays in or failure to reach agreement on acceptable terms with prospective CROs and clinical trial sites, the terms of which can be subject to extensive negotiation and may vary significantly among different CROs and trial sites;
- difficulty in recruiting clinical trial investigators of appropriate competencies and experience;
- delays in establishing the appropriate dosage levels in clinical trials;
- delays in or failure to recruit and enroll suitable patients to participate in a trial;
- the difficulty in certain countries in identifying the sub-populations that we are trying to treat in a particular trial, which may delay enrollment and reduce the power of a clinical trial to detect statistically significant results;
- lower than anticipated retention rates of patients in clinical trials;
- failure to have patients complete a trial or return for post-treatment follow-up;
- clinical sites deviating from trial protocol or dropping out of a trial;
- adding new clinical trial sites;
- safety or tolerability concerns could cause us or our collaborators or governmental authorities, as applicable, to suspend or terminate a trial if it is found that the participants are being exposed to unacceptable health risks;
- delays in or failure to obtain regulatory approval to commence a trial;
- delays in or failure to obtain institutional review board, or IRB, approval at each site;
- our third-party research contractors failing to comply with regulatory requirements or meet their contractual obligations to us in a timely manner, or at all;
- changes in regulatory requirements, policies and guidelines;
- manufacturing sufficient quantities of a product candidate for use in clinical trials;
- the quality or stability of a product candidate falling below acceptable standards;
- changes in the treatment landscape for our target indications that may make our product candidates no longer relevant;

- third-party actions claiming infringement by our product candidates in clinical trials outside the United States and obtaining injunctions interfering with our progress;
- the impact of public health epidemics, such as COVID-19 currently impacting multiple jurisdictions worldwide, including the United States; and
- business interruptions resulting from geo-political actions, including war and terrorism, or natural disasters including earthquakes, typhoons, floods and fires.

We could encounter delays if a clinical trial is suspended or terminated by us, by the IRBs or Ethics Committees of the institutions in which such trials are being conducted, by the Data Review Committee or Data Safety Monitoring Board for such trial or by the FDA, or other regulatory authorities. Such authorities may impose such a suspension or termination due to a number of factors, including failure to conduct the clinical trial in accordance with regulatory requirements or our clinical protocols, inspection of the clinical trial operations or trial site by the FDA or other regulatory authorities resulting in the imposition of a clinical hold, unforeseen safety issues or adverse side effects, failure to demonstrate a benefit from using a drug, changes in governmental regulations or administrative actions or lack of adequate funding to continue the clinical trial.

If we experience delays in the completion of, or termination of, any clinical trial of our product candidates, the commercial prospects of our product candidates will be harmed, and our ability to generate product revenues from any of these product candidates will be delayed. In addition, any delays in completing our clinical trials will increase our costs, slow down our product candidate development and approval process and jeopardize our ability to commence product sales and generate revenues. Significant clinical trial delays could also allow our competitors to bring products to market before we do or shorten any periods during which we have the exclusive right to commercialize our product candidates and impair our ability to commercialize our product candidates and may harm our business and results of operations.

Any of these occurrences may harm our business, financial condition and prospects significantly. In addition, many of the factors that cause, or lead to, a delay in the commencement or completion of clinical trials may also ultimately lead to the denial of regulatory approval of our product candidates.

Clinical trials must be conducted in accordance with the FDA and other applicable regulatory authorities' legal requirements, regulations or guidelines, and are subject to oversight by these governmental agencies and Ethics Committees or IRBs at the medical institutions where the clinical trials are conducted. In addition, clinical trials must be conducted with supplies of our product candidates produced under cGMP requirements and other regulations. Furthermore, we rely on CROs and clinical trial sites to ensure the proper and timely conduct of our clinical trials and while we have agreements governing their committed activities, we have limited influence over their actual performance. We depend on our collaborators and on medical institutions and CROs to conduct our clinical trials in compliance with good clinical practice, or GCP, requirements. To the extent our collaborators or the CROs fail to enroll participants for our clinical trials, fail to conduct the study to GCP standards or are delayed for a significant time in the execution of trials, including achieving full enrollment, we may be affected by increased costs, program delays or both, which may harm our business. In addition, clinical trials that are conducted in countries outside the United States may subject us to further delays and expenses as a result of increased shipment costs, additional regulatory requirements and the engagement of non-U.S. CROs, as well as expose us to risks associated with clinical investigators who are unknown to the FDA, and different standards of diagnosis, screening and medical care.

Interim, topline or preliminary data from our clinical trials that we announce or publish from time to time may change as more patient data become available and are subject to audit and verification procedures that could result in material changes in the final data.

From time to time, we may publicly disclose preliminary or topline or data from our preclinical studies and clinical trials, which is based on a preliminary analysis of then-available data, and the results and related findings and conclusions are subject to change following a more comprehensive review of the data related to the particular study or trial. We also make assumptions, estimations, calculations and conclusions as part of our analyses of data, and we may not have received or had the opportunity to fully and carefully evaluate all data. As a result, the topline results that we report may differ from future results of the same studies, or different conclusions or considerations may qualify such results, once additional data have been received and fully evaluated. Topline data also remain subject to audit and verification procedures that may result in the final data being materially different from the preliminary data we previously published. As a result, topline data should be viewed with caution until the final data are available. From time to time, we may also disclose interim data from our clinical trials. Interim data from clinical trials that we may complete are subject to the risk that one or more of the clinical outcomes may materially change as patient enrollment continues and more patient data become available. As a result, any interim/or preliminary data should be viewed with caution until final data is available. Material adverse changes in the final data could result in significant harm to our business prospects. Adverse differences between preliminary or interim data and final data could significantly harm our business prospects. Further, disclosure of interim data by us or by our competitors could result in volatility in the price of our common stock.

Further, others, including regulatory agencies, may not accept or agree with our assumptions, estimates, calculations, conclusions or analyses or may interpret or weigh the importance of data differently, which could impact the value of the particular program, the approvability or commercialization of the particular product candidate or product and our company in general.

If the interim, topline, or preliminary data that we report differ from actual results, or if others, including regulatory authorities, disagree with the conclusions reached, our ability to obtain approval for, and commercialize, our product candidates may be harmed, which could harm our business, operating results, prospects or financial condition.

Our TriTAC and ProTriTAC platforms are unproven, novel classes of T cell engagers and may not result in approvable or marketable products, which exposes us to unforeseen risks and makes it difficult for us to predict the time and cost of product development and potential for regulatory approval.

We have not received regulatory approval for a TriTAC or ProTriTAC product candidates. We cannot be certain that our approach will lead to the development of approvable or marketable products, alone or in combination with other therapies. In addition, our TriTACs and ProTriTACs may have different effectiveness rates in various indications. Our approach involves using biologics to improve efficacy against solid tumors, which is unproven and may not be successful. Further, our TriTAC and ProTriTAC technology could have less efficacy in tumor types with fewer T cells, such as pancreatic cancer. While we believe TriTAC and ProTriTAC T cell engagers will demonstrate potent single-agent activity and therapeutic effect, immunotherapy companies and standard of care continue to evolve toward the use of combination therapies and we may be unsuccessful in developing any of our product candidates as monotherapies. With our TriTAC and ProTriTAC platforms, we have designed T cell engagers that incorporate the strengths of BiTEs and improve upon their critical shortcomings. However, only one BiTE (Amgen's Blincyto) has been approved for the treatment of cancer, and leveraging BiTE technology may not result in approved therapies or be as successful as other forms of therapies. Finally, the FDA or other regulatory agencies may lack experience in evaluating the safety and efficacy of our TriTACs or ProTriTACs, which could result in a longer than expected regulatory review process, increase our expected development costs and delay or prevent commercialization of our product candidates.

Results of earlier preclinical studies of our product candidates may not be predictive of future trial results.

Success in preclinical studies does not ensure that later clinical trials will be successful. A number of companies in the biotechnology and pharmaceutical industries have suffered significant setbacks in clinical trials, even after positive results in earlier preclinical studies. These setbacks have been caused by, among other things, preclinical findings made while clinical trials were underway and safety or efficacy observations made in clinical trials, including previously unreported adverse events. Notwithstanding any potential promising results in earlier studies, we cannot be certain that we will not face similar setbacks. In addition, the results of our preclinical animal studies, including our non-human primate studies, may not be predictive of the results of outcomes in human clinical trials. For example, while we did not observe unacceptable safety events in our preclinical testing of HPN536, given the expression of MSLN on both normal and cancerous cells, we may observe unacceptable levels of toxicity in our clinical trial of HPN536. Product candidates in later stages of clinical trials may fail to show the desired pharmacological properties or safety and efficacy traits despite having progressed through preclinical studies.

We depend on enrollment of patients in our clinical trials for our product candidates. If we experience delays or difficulties enrolling in our clinical trials, our research and development efforts and business, financial condition and results of operations could be materially adversely affected.

Successful and timely completion of clinical trials will require that we enroll a sufficient number of patient candidates. These trials and other trials we conduct may be subject to delays as a result of patient enrollment taking longer than anticipated, patient withdrawal or adverse events. For example, we have multiple ongoing Phase 1/2 clinical trials, which could generate adverse events that may cause us to delay these trials or halt further development. While adverse events to date related to our clinical trials have not had a material impact on patient enrollment, our experience to date may differ from future outcomes.

Our clinical trials will likely compete with other clinical trials that are in the same therapeutic areas as our product candidates, and this competition may reduce the number and types of patients available to us, because some patients who might have opted to enroll in our trials may instead opt to enroll in a trial being conducted by one of our competitors. Because the number of qualified clinical investigators and clinical trial sites is limited, we may conduct some of our clinical trials at the same clinical trial sites that some of our competitors use, which could reduce the number of patients who are available for our clinical trials at such clinical trial sites.

Patient enrollment depends on many factors, including the size and nature of the patient population, the severity of the disease under investigation, eligibility criteria for the trial, the proximity of patients to clinical sites, the design of the clinical protocol, the ability to obtain and maintain patient consents, the ability to recruit clinical trial investigators with the appropriate competencies and experience, the risk that patients enrolled in clinical trials will drop out of the trials before the administration of our product candidates or trial completion, the availability of competing clinical trials, the availability of new drugs approved for the indication the clinical trial is investigating, and clinicians' and patients' perceptions as to the potential advantages of the drug being studied in relation to other available therapies. These factors may make it difficult for us to enroll enough patients to complete our clinical trials in a timely and cost-effective manner. Delays in the completion of any clinical trial of our product candidates will increase our costs, slow down our product candidate development and approval process and delay or potentially jeopardize our ability to commence product sales and generate revenue. In addition, some of the factors that cause, or lead to, a delay in the commencement or completion of clinical trials may also ultimately lead to the denial of regulatory approval of our product candidates.

Our product candidates may have serious adverse, undesirable or unacceptable side effects or other properties which may delay or prevent marketing approval. If such side effects are identified during the development of our product candidates or following approval, if any, we may need to abandon our development of such product candidates, the commercial profile of any approved label may be limited, or we may be subject to other significant negative consequences following marketing approval, if any.

Undesirable side effects that may be caused by our product candidates 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 authorities. Our product candidates target protein expression on tumor cells, which expression may also be present on healthy cells. Accordingly, our product candidates may result in high or unacceptable levels of toxicity when tested in humans. Results of our trials could reveal a high and unacceptable severity and prevalence of these or other side effects. In such an event, our trials could be suspended or terminated and the FDA or comparable foreign regulatory authorities could order us to cease further development of or deny approval of our product candidates for any or all targeted indications. The drug-related side effects could affect patient recruitment or the ability of enrolled patients to complete the trial or result in potential product liability claims. Any of these occurrences may harm our business, financial condition and prospects significantly. Additionally, if any of our product candidates receives marketing approval and we or others later identify undesirable or unacceptable side effects caused by such products, a number of potentially significant negative consequences could result, including:

- regulatory authorities may withdraw or limit approvals of such products and require us to take our approved product off the market;
- regulatory authorities may require the addition of labeling statements, specific warnings, a contraindication or field alerts to physicians and pharmacies, or issue other communications containing warnings or other safety information about the product;
- regulatory authorities may require a medication guide outlining the risks of such side effects for distribution to patients, or that we implement a risk evaluation and mitigation strategy, plan to ensure that the benefits of the product outweigh its risks;
- we may be required to change the dose or the way the product is administered, conduct additional clinical trials or change the labeling of the product;
- we may be subject to limitations on how we may promote or manufacture the product;
- sales of the product may decrease significantly;
- we may be subject to litigation or product liability claims; and
- our reputation may suffer.

Any of these events could prevent us, our collaborators or our potential future partners from achieving or maintaining market acceptance of the affected product or could substantially increase commercialization costs and expenses, which in turn could delay or prevent us from generating significant revenue from the sale of any products.

Monitoring safety of patients receiving our product candidates is challenging, which could adversely affect our ability to obtain regulatory approval and commercialize.

For our ongoing clinical trial and planned clinical trials, we have and expect to contract with academic medical centers and hospitals experienced in the assessment and management of toxicities arising during clinical trials. Nonetheless, these centers and hospitals may have difficulty observing patients and treating toxicities, which may be more challenging due to personnel changes, inexperience, shift changes, house staff coverage or related issues. This could lead to more severe or prolonged toxicities or even patient deaths, which could result in us or the FDA delaying, suspending or terminating one or more of our clinical trials, and which could jeopardize regulatory approval. We also expect the centers using our product candidates, if approved, on a commercial basis could similarly have difficulty in managing adverse events. Medicines used at centers to help manage adverse side effects of our product candidates may not adequately control the side effects and/or may have a detrimental impact on the efficacy of the treatment. Use of these medicines may increase with new physicians and centers administering our product candidates.

We may not be successful in our efforts to use and expand our technology platforms, including TriTAC and ProTriTAC, to build a pipeline of product candidates.

A key element of our strategy is to use and expand our technology platforms, including TriTAC and ProTriTAC, to build a pipeline of product candidates and progress these product candidates through clinical development for the treatment of a variety of different types of diseases. Although our research and development efforts to date have resulted in a pipeline of product candidates directed at various cancers, we may not be able to develop product candidates that are safe and effective. Even if we are successful in continuing to build our pipeline, the potential product candidates that we identify may not be suitable for clinical development, including as a result of being shown to have harmful side effects or other characteristics that indicate that they are unlikely to be products that will receive marketing approval and achieve market acceptance. If we do not continue to successfully develop and begin to commercialize product candidates, we will face difficulty in obtaining product revenues in future periods, which could result in significant harm to our financial position and adversely affect our share price.

Risks Related to Our Financial Condition and Need for Additional Capital

We are an early clinical-stage company and have incurred significant losses since our inception. We expect to incur losses for the foreseeable future and may never achieve or maintain profitability.

In addition, disruptions caused by the COVID-19 pandemic may increase the likelihood that we encounter such difficulties or delays in initiating, enrolling, conducting or completing our planned and ongoing clinical trials. We are an early clinical-stage immunotherapy company with a limited operating history. We have incurred net losses of $49.9 million, 55.6 million, and $27.4 million for the years ended December 31, 2020, 2019, and 2018, respectively. As of December 31, 2020, we had an accumulated loss of $168.1 million. Our losses have resulted principally from expenses incurred in research and development of our product candidates and from management and administrative costs and other expenses that we have incurred while building our business infrastructure. We expect to continue to incur significant operating losses for the foreseeable future as we continue our research and development efforts and seek to obtain regulatory approval and commercialization of our product candidates. We anticipate that our expenses will increase substantially as we:

- conduct our ongoing Phase 1 trial of HPN424 for the treatment of metastatic castration-resistant prostate cancer, or mCRPC;
- conduct our ongoing Phase 1/2a trial of HPN536 for the treatment of ovarian cancer and other MSLN-expressing tumors;
- initiate a Phase 1/2 trial of HPN217 for the treatment of multiple myeloma;
- initiate a clinical trial of HPN328 for the treatment of SCLC;
- continue the research and development of our other product candidates;
- continue the development of our product candidates beyond Phase 1 trials;
- seek to enhance our TriTAC and ProTriTAC platforms and discover and develop additional product candidates;
- apply for regulatory approvals for any product candidates that successfully complete clinical trials;
- potentially establish a manufacturing, sales, marketing and distribution infrastructure to produce and commercialize any products for which we may obtain regulatory approvals;
- maintain, expand and protect our intellectual property portfolio;
- add clinical, scientific, operational, financial and management information systems and personnel, including personnel to support our product development, potential future commercialization efforts and operations as a public company; and
- experience any delays or encounter any issues with any of the above, including but not limited to failed studies, complex results, manufacturing challenges, safety issues or other regulatory challenges.

We have financed our operations to date primarily through payments received under collaboration and licensing agreements, the sale of capital stock, most recently from our follow on offering, that was completed in January 2021. We have devoted a significant portion of our financial resources and efforts to developing our TriTAC and ProTriTAC platforms, identifying potential product candidates, conducting preclinical studies of a variety of product candidates, and preparing for and conducting clinical trials of product candidates. We are in the early stages of development of our product candidates, and we have not completed development and commercialization of any TriTAC or ProTriTAC product candidate.

To become and remain profitable, we must succeed in developing and eventually commercializing products that generate significant revenue. This will require us to be successful in a range of challenging activities, including completing preclinical testing and clinical trials of our product candidates, discovering and developing additional product candidates, obtaining regulatory approval for any product candidates that successfully complete clinical trials, accessing manufacturing capacity, establishing marketing capabilities and ultimately selling any products for which we may obtain regulatory approval. We are only in the preliminary stages of most of these activities. We may never succeed in these activities and, even if we do, may never generate revenue that is significant enough to achieve profitability.

Because of the numerous risks and uncertainties associated with pharmaceutical products and biological development, we are unable to accurately predict the timing or amount of increased expenses or when, or if, we will be able to achieve profitability. If we are required by the FDA or other regulatory authorities to perform studies in addition to those we currently anticipate, or if there are any delays in completing our clinical trials or the development of any of our product candidates, our expenses could increase and commercial revenue could be further delayed and more uncertain.

Even if we do generate product sales or royalties, we may never achieve or sustain profitability on a quarterly or annual basis. Our failure to sustain profitability would depress the market price of our common stock and could impair our ability to raise capital, expand our business, diversify our product offerings and continue our operations.

We will require additional funding in order to complete development of our product candidates and commercialize our products, if approved. If we are unable to raise capital when needed, we could be forced to delay, reduce or eliminate our product development programs or commercialization efforts.

We expect our expenses to increase in connection with our ongoing activities, particularly as we conduct our ongoing clinical trials of HPN424, HPN536, HPN217, and HPN328, and as we continue to research and develop other potential technologies and product candidates.

In addition, if we obtain regulatory approval for any of our product candidates, we expect to incur significant commercialization expenses related to product manufacturing, marketing, sales and distribution. Furthermore, we will incur additional costs associated with operating as a public company. Accordingly, we will need to obtain substantial additional funding in connection with our continuing operations. If we are unable to raise capital when needed or on attractive terms, we could be forced to delay, reduce or eliminate our research and development programs or any future commercialization efforts.

Based on our current business plans, we believe that our existing cash and cash equivalents and marketable securities, will be sufficient to fund our planned operations for at least the next 12 months from the date of this Annual Report. We have based this estimate on assumptions that may prove to be wrong, and we could use our capital resources sooner than we currently expect, requiring us to seek additional funds sooner than planned, through public or private equity or debt financings or other sources, such as strategic collaborations. Such financing, including pursuant to our Controlled Equity Offering^{SM} Sales Agreement, or the Sales Agreement, with Cantor Fitzgerald & Co., or Cantor Fitzgerald, may result in dilution to our stockholders, the imposition of burdensome debt covenants and repayment obligations or other restrictions that may affect our business. If we raise additional funds through licensing or collaboration arrangements with third parties, we may have to relinquish valuable rights to our product candidates, or grant licenses on terms that are not favorable to us. In addition, we may seek additional capital due to favorable market conditions or strategic considerations even if we believe we have sufficient funds for our current or future operating plans. Attempting to secure additional financing may divert our management from our day-to-day activities, which may adversely affect our ability to develop our product candidates. Our future capital requirements will depend on many factors, including:

- the scope, progress, results and costs of developing our product candidates, and conducting preclinical studies and clinical trials, including our Phase 1 trial of HPN424 and Phase 1/2a trial of HPN536 and our planned clinical trials of HPN217 and HPN328;
- the costs, timing and outcome of regulatory review of any of our product candidates;
- the cost of manufacturing clinical supplies of our product candidates;
- the scope, progress, results and costs of preclinical development, laboratory testing and clinical trials for our product candidates;
- the costs and timing of future commercialization activities, including manufacturing, marketing, sales and distribution, for any of our product candidates for which we receive marketing approval;
- the timing and amount of any milestone, royalty or other payments we are required to make pursuant to any current or future collaboration or license agreements;

- the progress of our collaborations with AbbVie to develop product candidates;
- the costs and timing of preparing, filing and prosecuting patent applications, maintaining and enforcing our intellectual property rights and defending any intellectual property-related claims, including any claims by third parties that we are infringing upon their intellectual property rights;
- our ability to maintain existing, and establish new, strategic collaborations, licensing or other arrangements and the financial terms of any such agreements, including the timing and amount of any future milestone, royalty or other payments due under any such agreement;
- the cost of building a sales force in anticipation of product commercialization;
- the revenue, if any, received from commercial sales of our product candidates for which we receive marketing approval;
- the effect of competing technological and market developments; and
- the extent to which we acquire or invest in business, products and technologies, including our collaboration with AbbVie and any other licensing or collaboration arrangements for any of our product candidates.

Additional funds may not be available when we need them, on terms that are acceptable to us or at all. If adequate funds are not available to us on a timely basis, we could be required to:

- delay, limit, reduce or terminate preclinical studies, clinical trials or other research and development activities or eliminate one or more of our development programs altogether; or
- delay, limit, reduce or terminate our efforts to access manufacturing capacity, establish sales and marketing capabilities or other activities that may be necessary to commercialize our product candidates, or reduce our flexibility in developing or maintaining our sales and marketing strategy.

For related information, see "—Raising additional capital may cause dilution to our stockholders, restrict our operations or require us to relinquish rights to our technologies or product candidates" below.

We depend heavily on the success of our current product candidates, and we cannot guarantee that any of these product candidates will receive regulatory approval, which is necessary before they can be commercialized. If we, or any strategic partners we may enter into collaboration agreements with for the development and commercialization of our product candidates, are unable to commercialize our product candidates, or experience significant delays in doing so, our business, financial condition and results of operations will be materially adversely affected.

We have invested a significant portion of our efforts and financial resources in the development of our current product candidates. Our ability to generate product and royalty revenues, which we do not expect will occur for at least the next several years, if ever, will depend heavily on the successful development and eventual commercialization of these product candidates, which may never occur. We currently generate no revenues from sales of any products, and we may never be able to develop or commercialize a marketable product. Each of our product candidates will require significant clinical development, management of clinical, preclinical and manufacturing activities, regulatory approval in multiple jurisdictions, obtaining manufacturing supply, including commercial manufacturing supply, as well as requiring us to build a commercial organization, and make substantial investment and significant marketing efforts before we generate any revenues from product sales. We are not permitted to market or promote any of our product candidates before we receive regulatory approval from the FDA or comparable foreign regulatory authorities, and we may never receive such regulatory approval for any of our product candidates. The success of our product candidates will depend on several factors, including the following:

- for product candidates which we may license to others, the successful efforts of those parties in completing clinical trials of, receipt of regulatory approval for and commercialization of such product candidates;
- for product candidates to which we retain rights, completion of preclinical studies and clinical trials of, receipt of marketing approvals for, establishment of commercial manufacturing supplies of and successful commercialization of such product candidates; and
- for all of our product candidates, if and when approved, acceptance of such product candidates by patients, the medical community and third-party payors, effectively competing with other therapies, a continued acceptable safety profile following approval and qualifying for, maintaining, enforcing and defending our intellectual property rights and claims.

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

We have not previously submitted a Biologics License Application, or BLA, to the FDA or similar regulatory approval filings to comparable foreign authorities, for any product candidate, and we cannot be certain that any of our product candidates will be successful in clinical trials or receive regulatory approval. Further, our product candidates may not receive regulatory approval even if they are successful in clinical trials. If we do not receive regulatory approvals for our product candidates, we may not be able to continue our operations. Even if we successfully obtain regulatory approvals to market one or more of our product candidates, our revenues will be dependent, in part, upon the size of the markets in the territories for which we gain regulatory approval and have commercial rights. If the markets for patient subsets that we are targeting are not as significant as we estimate, we may not generate significant revenues from sales of such products, if approved.

We plan to seek regulatory approval to commercialize our product candidates in the United States and, potentially, in other countries. While the scope of regulatory approval is similar in other countries, to obtain separate regulatory approval in many other countries we must comply with the numerous and varying regulatory requirements of such countries regarding safety and efficacy and governing, among other things, clinical trials and commercial sales, pricing and distribution of our product candidates, and we cannot predict success in these jurisdictions.

Our limited operating history may make it difficult for you to evaluate the success of our business to date and to assess our future viability.

Since commencing operations in 2015, we have devoted a significant portion of our resources to developing our product candidates, our other research and development efforts, building our intellectual property portfolio, raising capital and providing general and administrative support for these operations. While we have ongoing early stage clinical trials, we have not completed any clinical trials for any product candidate. We have not yet demonstrated our ability to successfully complete any clinical trials (including any Phase 3 or other pivotal clinical trials), obtain regulatory approvals, manufacture a commercial scale product or arrange for a third party to do so on our behalf or conduct sales and marketing activities necessary for successful product commercialization. Additionally, we expect our financial condition and operating results to continue to fluctuate significantly from period to period due to a variety of factors, many of which are beyond our control. Consequently, any predictions you make about our future success or viability may not be as accurate as they could be if we had a longer operating history.

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

Until such time, if ever, as we can generate substantial product revenues, we expect to finance our cash needs through equity or debt financings and upfront and milestone payments, if any, received under our collaborations with AbbVie and any other future licenses or collaborations, together with our existing cash and cash equivalents. In order to accomplish our business objectives and further develop our product pipeline, we will, however, need to seek additional funds. If we raise additional capital through the sale of equity or convertible debt securities, your ownership interest will be diluted, and the terms of these securities may include liquidation or other preferences that adversely affect your rights as a holder of our common stock. In addition, the possibility of such issuance may cause the market price of our common stock to decline. Debt financing, if available, may result in increased fixed payment obligations and involve agreements that include covenants limiting or restricting our ability to take specific actions, such as incurring additional debt, making capital expenditures, declaring dividends or acquiring, selling or licensing intellectual property rights, which could adversely impact our ability to conduct our business.

If we raise additional funds through collaborations, strategic alliances or marketing, distribution or licensing arrangements with third parties, we may have to relinquish valuable rights to our intellectual property, technologies, future revenue streams or product candidates or grant licenses on terms that may not be favorable to us. We could also be required to seek funds through arrangements with collaborators or others at an earlier stage than otherwise would be desirable. Any of these occurrences may have a material adverse effect on our business, operating results and prospects.

Any additional fundraising efforts may divert our management from their day-to-day activities, which may adversely affect our ability to develop and commercialize our 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 obtain funding on a timely basis, we may be required to significantly curtail, delay or discontinue one or more of our research or development programs or the commercialization of any of our product candidates, or be unable to expand our operations or otherwise capitalize on our business opportunities, as desired, which could materially affect our business, financial condition and results of operations.

Risks Related to Our Regulatory Environment

Our business operations and current and future relationships with healthcare professionals, principal investigators, consultants, vendors, customers and third-party payors in the United States and elsewhere are subject to applicable anti-kickback, fraud and abuse, false claims, physician payment transparency, information privacy and security and other healthcare laws and regulations, which could expose us to substantial penalties.

Healthcare providers, healthcare facilities and institutions, physicians and third-party payors in the United States and elsewhere 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 professionals, healthcare facilities and institutions, principal investigators, consultants, customers and third-party payors may expose us to broadly applicable fraud and abuse and other healthcare laws, including, without limitation, the federal Anti-Kickback Statute and the federal False Claims Act, that may constrain the business or financial arrangements and relationships through which we sell, market and distribute any product candidates for which we obtain marketing approval. In addition, we may be subject to physician payment transparency laws and patient privacy and security regulation by the federal government and by the states and foreign jurisdictions in which we conduct our business. The applicable federal, state and foreign healthcare laws that affect our ability to operate include, but are not limited to, the following:

- the federal Anti-Kickback Statute, which prohibits, among other things, persons or entities from knowingly and willfully soliciting, offering, receiving or providing any remuneration (including any kickback, bribe, or certain rebate), directly or indirectly, overtly or covertly, in cash or in kind, to induce or reward, or in return for, either the referral of an individual for, or the purchase, lease, order or recommendation of, any good, facility, item or service, for which payment may be made, in whole or in part, under any U.S. federal healthcare program, such as Medicare and Medicaid. The term “remuneration” has been broadly interpreted to include anything of value, including stock options. The federal Anti-Kickback Statute has also been interpreted to apply to arrangements between pharmaceutical manufacturers on the one hand and prescribers, purchasers and formulary managers on the other hand. Any arrangements with prescribers must be for bona fide services and compensated at fair market value. A person or entity does not need to have actual knowledge of the statute or specific intent to violate it in order to have committed a violation;
- the U.S. federal civil and criminal false claims, including the False Claims Act, which prohibit, among other things, including through civil whistleblower or qui tam actions, and civil monetary penalties laws, including the civil False Claims Act, which prohibit, among other things, individuals or entities from knowingly presenting, or causing to be presented, to the U.S. federal government, claims for payment or approval that are false or fraudulent, knowingly making, using or causing to be made or used, a false record or statement material to a false or fraudulent claim, or from knowingly making a false statement to avoid, decrease or conceal an obligation to pay money to the U.S. federal government. Pharmaceutical manufacturers can cause false claims to be presented to the U.S. federal government by, among other things, engaging in impermissible marketing practices, such as the off-label promotion of a product for an indication for which it has not received FDA approval. In addition, the government may assert that a claim including items and services resulting from a violation of the federal Anti-Kickback Statute constitutes a false or fraudulent claim for purposes of the civil False Claims Act;
- the federal Health Insurance Portability and Accountability Act of 1996, or HIPAA, which imposes criminal and civil liability for, among other things, knowingly and willfully executing, or attempting to execute, a scheme to defraud any healthcare benefit program, or knowingly and willfully falsifying, concealing or covering up a material fact or making any materially false statement, in connection with the delivery of, or payment for, healthcare benefits, items or services. Similar to the federal Anti-Kickback Statute, a person or entity does not need to have actual knowledge of the healthcare fraud statute implemented under HIPAA or specific intent to violate it in order to have committed a violation;
- HIPAA, as amended by the Health Information Technology for Economic and Clinical Health Act of 2009, or HITECH, and their respective implementing regulations, which also imposes certain obligations, including mandatory contractual terms, with respect to safeguarding the privacy and security of individually identifiable health information of covered entities subject to the rule, such as health plans, healthcare clearinghouses and certain healthcare providers as well as their business associates, independent contractors of a covered entity that perform certain services involving the use or disclosure of individually identifiable health information on its behalf and their subcontractors that use, disclose, access, or otherwise process individually identifiable health information;
- the U.S. Federal Food, Drug, and Cosmetic Act, which prohibits, among other things, the adulteration or misbranding of drugs, biologics and medical devices;
- the U.S. Public Health Service Act, which prohibits, among other things, the introduction into interstate commerce of a biological product unless a biologics license is in effect for that product;

- the U.S. Physician Payments Sunshine Act and its implementing regulations, which requires, among other things, certain manufacturers of drugs, devices, biologics and medical supplies that are reimbursable under Medicare, Medicaid, or the Children's Health Insurance Program, with specific exceptions, to report annually to the Centers for Medicare and Medicaid Services, or CMS, information related to certain payments and other transfers of value to physicians (defined to include doctors, dentists, optometrists, podiatrists, and chiropractors) and teaching hospitals, as well as ownership and investment interests held by physicians and their immediate family members, and, beginning in 2022, will require applicable manufacturers to report information regarding payments and other transfers of value provided during the previous year to physician assistants, nurse practitioners, clinical nurse specialists, certified nurse anesthetists, anesthesiologist assistants, and certified nurse-midwives;
- analogous U.S. state and foreign laws and regulations, including: state anti-kickback and false claims laws, which may apply to our business practices, including but not limited to, research, distribution, sales and marketing arrangements and claims involving healthcare items or services reimbursed by any third-party payor, including private insurers; state laws that require pharmaceutical companies to comply with the pharmaceutical industry's voluntary compliance guidelines and the relevant compliance guidance promulgated by the U.S. federal government, or otherwise restrict payments that may be made to healthcare providers and other potential referral sources; state laws and regulations that require drug manufacturers to file reports relating to pricing and marketing information, which requires tracking gifts and other remuneration and items of value provided to healthcare professionals and entities; state and local laws requiring the registration of pharmaceutical sales representatives; and state and foreign laws governing the privacy and security of personal information in certain circumstances, many of which differ from each other in significant ways and often are not preempted by HIPAA, thus complicating compliance efforts; and
- similar healthcare laws and regulations in foreign jurisdictions, including reporting requirements detailing interactions with and payments to healthcare providers.

We may also be subject to federal consumer protection and unfair competition laws, which broadly regulate marketplace activities and activities that could potentially harm consumers.

Ensuring that our internal operations and future business arrangements with third parties comply with applicable healthcare laws and regulations will involve substantial costs. It is not always possible to identify and deter employee misconduct or business noncompliance, and the precautions we take to detect and prevent inappropriate conduct may not be effective in controlling unknown or unmanaged risks or losses or in protecting us from governmental investigations or other actions or lawsuits stemming from a failure to be in compliance with such laws or regulations. Efforts to ensure that our business arrangements will comply with applicable healthcare, privacy and information security laws may involve substantial costs. We have entered into consulting and scientific advisory board arrangements with physicians and other healthcare providers, including some who could influence the use of our product candidates, if approved. Compensation under some of these arrangements includes the provision of stock or stock options in addition to cash consideration. Because of the complex and far-reaching nature of these laws, it is possible that governmental authorities could conclude that our payments to physicians may not be fair market value for bona fide services or that our business practices do not comply with current or future statutes, regulations, agency guidance or case law involving applicable fraud and abuse or other healthcare laws and regulations. If our operations are found to be in violation of any of the laws described above or any other governmental laws and regulations that may apply to us, we may be subject to significant penalties, including civil, criminal and administrative penalties, damages, fines, exclusion from government-funded healthcare programs, such as Medicare and Medicaid or similar programs in other countries or jurisdictions, integrity oversight and reporting obligations to resolve allegations of non-compliance, disgorgement, imprisonment, contractual damages, reputational harm, diminished profits and the curtailment or restructuring of our operations. If any of the physicians or other providers or entities with whom we expect to do business are found to not be in compliance with applicable laws, they may be subject to criminal, civil or administrative sanctions, including exclusions from government funded healthcare programs and imprisonment, which could affect our ability to operate our business. Further, defending against any such actions can be costly, time-consuming and may require significant personnel resources. Therefore, even if we are successful in defending against any such actions that may be brought against us, our business may be impaired.

The development and commercialization of biopharmaceutical products is subject to extensive regulation, and the regulatory approval processes of the FDA and comparable foreign authorities are lengthy, time consuming and inherently unpredictable. If we are ultimately unable to obtain regulatory approval for our product candidates on a timely basis if at all, our business will be substantially harmed.

The clinical development, manufacturing, labeling, packaging, storage, recordkeeping, advertising, promotion, export, import, marketing, distribution, adverse event reporting, including the submission of safety and other post-marketing information and reports, and other possible activities relating to our product candidates are subject to extensive regulation. In the United States, marketing approval of biologics requires the submission of a BLA to the FDA, and we are not permitted to market any product candidate in the United States until we obtain approval from the FDA of the BLA for that product. A BLA must be supported by extensive clinical and preclinical data, as well as extensive information regarding pharmacology, chemistry, manufacturing and controls. Outside the United States, many comparable foreign regulatory authorities employ similar approval processes.

FDA approval is not guaranteed, and the time required to obtain approval by the FDA and comparable foreign authorities is unpredictable but typically takes many years following the commencement of clinical trials and depends upon numerous factors, including the substantial discretion of the regulatory authorities. In addition, approval policies, regulations, or the type and amount of clinical data necessary to gain approval may change during the course of a product candidate's clinical development and may vary among jurisdictions. We have not obtained regulatory approval for any product candidate and it is possible that none of our existing product candidates or any product candidates we may seek to develop in the future will ever obtain regulatory approval.

Our product candidates could fail to receive regulatory approval for many reasons, including the following:

- the FDA or comparable foreign regulatory authorities may disagree with the design or implementation of our clinical trials;
- we may be unable to demonstrate to the satisfaction of the FDA or comparable foreign regulatory authorities that a product candidate is safe and effective for its proposed indication;
- the results of clinical trials may not meet the level of statistical significance required by the FDA or comparable foreign regulatory authorities for approval;
- we may be unable to demonstrate that a product candidate's clinical and other benefits outweigh its safety risks;
- the FDA or comparable foreign regulatory authorities may disagree with our interpretation of data from preclinical studies or clinical trials;
- the data collected from clinical trials of our product candidates may not be sufficient to support the submission of a BLA or other submission or to obtain regulatory approval in the United States or elsewhere, or regulatory authorities may not accept a submission due to, among other reasons, the content or formatting of the submission;
- the FDA or comparable foreign regulatory authorities may fail to approve the manufacturing processes or facilities of third-party manufacturers with which we contract for clinical and commercial supplies;
- the FDA or comparable foreign regulatory authorities may fail to approve the companion diagnostics we contemplate developing with collaborators; and
- the approval policies or regulations of the FDA or comparable foreign regulatory authorities may significantly change in a manner rendering our clinical data insufficient for approval.

This lengthy approval process, as well as the unpredictability of future clinical trial results, may result in our failing to obtain regulatory approval to market any of our product candidates, which would significantly harm our business, results of operations and prospects. The FDA and other regulatory authorities have substantial discretion in the approval process, and determining when or whether regulatory approval will be obtained for any of our product candidates. For example, regulatory authorities in various jurisdictions have in the past had, and may in the future have, differing requirements for, interpretations of and opinions on our preclinical and clinical data. As a result, we may be required to conduct additional preclinical studies, alter our proposed clinical trial designs or conduct additional clinical trials to satisfy the regulatory authorities in each of the jurisdictions in which we hope to conduct clinical trials and develop and market our products, if approved. Further, even if we believe the data collected from clinical trials of our product candidates are promising, such data may not be sufficient to support approval by the FDA or any other regulatory authority.

In addition, even if we were to obtain approval, regulatory authorities may approve any of our product candidates for fewer or more limited indications than we request, may not approve the price we intend to charge for our products, may grant approval contingent on the performance of costly post-marketing clinical trials, 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. Any of the foregoing scenarios could materially harm the commercial prospects for our product candidates.

Even if our product candidates obtain regulatory approval, we will be subject to ongoing obligations and continued regulatory review, which may result in significant additional expense. Additionally, our product candidates, if approved, could be subject to labeling and other restrictions and market withdrawal and we may be subject to penalties if we fail to comply with regulatory requirements or experience unanticipated problems with our products.

If the FDA or a comparable foreign **regulatory** authority approves any of our product candidates, the manufacturing processes, labeling, packaging, distribution, import, export, adverse event reporting, storage, advertising, promotion and recordkeeping for the product will be subject to extensive and ongoing regulatory requirements. These requirements include submissions of safety and other post-marketing information and reports, registration, as well as continued compliance with cGMPs and GCPs for any clinical trials that we conduct post-approval, all of which may result in significant expense and limit our ability to commercialize such products. In addition, any regulatory approvals that we receive for our product candidates may also be subject to limitations on the approved indicated uses for which the product may be marketed or to the conditions of approval, or contain requirements for potentially costly post-marketing testing, including Phase 4 clinical trials, and surveillance to monitor the safety and efficacy of the product candidate.

Manufacturers and manufacturers' facilities are required to comply with extensive FDA and comparable foreign regulatory authority requirements, including ensuring that quality control and manufacturing procedures conform to cGMP regulations. As such, we and our contract manufacturers will be subject to continual review and inspections to assess compliance with cGMP and adherence to commitments made in any approved marketing application. Accordingly, we and others with whom we work must continue to expend time, money, and effort in all areas of regulatory compliance, including manufacturing, production, and quality control.

If there are changes in the application of legislation or regulatory policies, or if problems are discovered with a product or our manufacture of a product, or if we or one of our distributors, licensees or co-marketers fails to comply with regulatory requirements, the regulators could take various actions. These include imposing fines on us, imposing restrictions on the product or its manufacture and requiring us to recall or remove the product from the market. The regulators could also suspend or withdraw our marketing authorizations, requiring us to conduct additional clinical trials, change our product labeling or submit additional applications for marketing authorization. If any of these events occurs, our ability to sell such product may be impaired, and we may incur substantial additional expense to comply with regulatory requirements, which could materially adversely affect our business, financial condition and results of operations.

In addition, if we have any product candidate approved, our product labeling, advertising and promotion will be subject to regulatory requirements and continuing regulatory review. The FDA strictly regulates the promotional claims that may be made about pharmaceutical products. In particular, a product may not be promoted for uses that are not approved by the FDA as reflected in the product's approved labeling. If we receive marketing approval for a product candidate, physicians may nevertheless prescribe it to their patients in a manner that is inconsistent with the approved label. If we are found to have promoted such off-label uses, we may become subject to significant liability. The FDA and other agencies actively enforce the laws and regulations prohibiting the promotion of off-label uses, and a company that is found to have improperly promoted off-label uses may be subject to significant sanctions. The federal government has levied large civil and criminal fines against companies for alleged improper promotion and has enjoined several companies from engaging in off-label promotion. The FDA has also requested that companies enter into consent decrees or permanent injunctions under which specified promotional conduct is changed or curtailed.

If a regulatory agency discovers previously unknown problems with a product, such as adverse events of unanticipated severity or frequency, or problems with the facility where the product is manufactured, or disagrees with the promotion, marketing or labeling of a product, such regulatory agency may impose restrictions on that product or us, including requiring withdrawal of the product from the market. If we fail to comply with applicable regulatory requirements, a regulatory agency or enforcement authority may, among other things:

- issue warning letters;
- impose civil or criminal penalties;
- suspend or withdraw regulatory approval;
- suspend any of our preclinical studies and clinical trials;
- refuse to approve pending applications or supplements to approved applications submitted by us;
- impose restrictions on our operations, including closing our contract manufacturers' facilities; or
- seize or detain products, or require a product recall.

Any government investigation of alleged violations of law could require us to expend significant time and resources in response, and could generate negative publicity. Any failure to comply with ongoing regulatory requirements may significantly and adversely affect our ability to commercialize and generate revenue from our products, if approved. If regulatory sanctions are applied or if regulatory approval is withdrawn, the value of our company and our operating results will be adversely affected.

Moreover, the policies of the FDA and of other regulatory authorities may change and additional government regulations may be enacted that could prevent, limit or delay regulatory approval of our product candidates. We cannot predict the likelihood, nature or extent of government regulation that may arise from future legislation or administrative or executive action, either in the United States or abroad. Previously, the prior presidential administration took several executive actions, including the issuance of a number of Executive Orders, that could impose significant burdens on, or otherwise materially delay, the FDA's ability to engage in routine oversight activities such as implementing statutes through rulemaking, issuance of guidance, and review and approval of marketing applications. It is difficult to predict whether or how these orders will be implemented, or rather rescinded or replaced under the Biden Administration. The policies and priorities of a new administration are unknown and could materially impact the regulation of our product candidates. In addition, if we are slow or unable to adapt to changes in existing requirements or the adoption of new requirements or policies, or if we are not able to maintain regulatory compliance, we may lose any marketing approval that we may have obtained and we may not achieve or sustain profitability.

Disruptions at the FDA and other government agencies caused by funding shortages or global health concerns could hinder their ability to hire, retain or deploy key leadership and other personnel, or otherwise prevent new or modified products from being developed, or approved or commercialized in a timely manner or at all, which could negatively impact our business.

The ability of the FDA to review and approve new products can be affected by a variety of factors, including government budget and funding levels, statutory, regulatory, and policy changes, the FDA's ability to hire and retain key personnel and accept the payment of user fees, and other events that may otherwise affect the FDA's ability to perform routine functions. Average review times at the agency have fluctuated in recent years as a result. In addition, government funding of other government agencies that fund research and development activities is subject to the political process, which is inherently fluid and unpredictable. Disruptions at the FDA and other agencies may also slow the time necessary for new biologics to be reviewed and/or approved by necessary government agencies, which would adversely affect our business. For example, over the last several years, including for 35 days beginning on December 22, 2018, the U.S. government has shut down several times and certain regulatory agencies, such as the FDA, have had to furlough critical FDA employees and stop critical activities.

We may pursue the development of our product candidates in combination with other approved therapeutics. If the FDA revokes approval of any such therapeutic, or if safety, efficacy, manufacturing or supply issues arise with any therapeutic that we use in combination with one of our product candidates in the future, we may be unable to further develop and/or market our product candidate or we may experience significant regulatory delays or supply shortages, and our business could be materially harmed.

We may pursue the development of our product candidates in combination with other approved therapeutics, and we may commence clinical trials of our product candidates in combination with other approved therapeutics, in the future. In such a case, we will not have developed or obtained regulatory approval for, nor will we manufacture or sell, any of these approved therapeutics. In addition, the combinations will likely not have been previously tested and may, among other things, fail to demonstrate synergistic activity, may fail to achieve superior outcomes relative to the use of single agents or other combination therapies, may exacerbate adverse events associated with one of our product candidates when used as monotherapy or may fail to demonstrate sufficient safety or efficacy traits in clinical trials to enable us to complete those clinical trials or obtain marketing approval for the combination therapy.

If the FDA revokes its approval of any combination therapeutic, we would not be able to continue clinical development of or market any product candidate in combination with such revoked therapeutic. If safety or efficacy issues were to arise with therapeutics that we seek to combine with, we could experience significant regulatory delays, and the FDA could require us to redesign or terminate the applicable clinical trials. In addition, we may need, for supply, data referencing or other purposes, to collaborate or otherwise engage with the companies who market these approved therapeutics. If we are unable to do so on a timely basis, on acceptable terms or at all, we may have to curtail the development of a product candidate or indication, reduce or delay its development program, delay its potential commercialization or reduce the scope of any sales or marketing activities.

Because we are subject to environmental, health and safety laws and regulations, we may become exposed to liability and substantial expenses in connection with environmental compliance or remediation activities which may adversely affect our business and financial condition.

Our operations, including our research, development, testing and manufacturing activities, are subject to numerous environmental, health and safety laws and regulations. These laws and regulations govern, among other things, the controlled use, handling, release and disposal of, and the maintenance of a registry for, hazardous materials and biological materials, such as chemical solvents, human cells, carcinogenic compounds, mutagenic compounds and compounds that have a toxic effect on reproduction, laboratory procedures and exposure to blood-borne pathogens. If we fail to comply with such laws and regulations, we could be subject to fines or other sanctions. Although we believe our procedures for using, handling, storing and disposing of these materials comply with legally prescribed standards, we cannot completely eliminate the risk of contamination or injury resulting from hazardous and biological materials. As a result of any such contamination or injury, we may incur liability or local, city, state or federal authorities may curtail the use of these materials and interrupt our business operations. In the event of an accident, we could be held liable for damages or penalized with fines, and the liability could exceed our resources.

As with other companies engaged in activities similar to ours, we face a risk of environmental liability inherent in our current and historical activities, including liability relating to releases of or exposure to hazardous or biological materials. Environmental, health and safety laws and regulations are becoming more stringent. We may be required to incur substantial expenses in connection with future environmental compliance or remediation activities, in which case, our production and development efforts may be interrupted or delayed and our financial condition and results of operations may be materially adversely affected.

Our employees, independent contractors, principal investigators, consultants, commercial partners and vendors may engage in misconduct or other improper activities, including non-compliance with regulatory standards and requirements.

We are exposed to the risk of employee fraud or other misconduct. Misconduct by employees could include intentional failures to comply with FDA regulations, provide accurate information to the FDA, comply with manufacturing standards we may establish, comply with federal and state healthcare fraud and abuse laws and regulations, report financial information or data accurately or disclose unauthorized activities to us. In particular, sales, marketing and business arrangements in the healthcare industry are subject to extensive laws and regulations intended to prevent fraud, kickbacks, self-dealing and other abusive practices. These laws and regulations may restrict or prohibit a wide range of pricing, discounting, marketing and promotion, sales commission, customer incentive programs and other business arrangements. Employee misconduct could also involve the improper use of information obtained in the course of clinical trials, which could result in regulatory sanctions and serious harm to our reputation. It is not always possible to identify and deter employee misconduct, and the precautions we take to detect and prevent this activity may not be effective in controlling unknown or unmanaged risks or losses or in protecting us from governmental investigations or other actions or lawsuits stemming from a failure to be in compliance with such laws or regulations. If any such actions are instituted against us, and we are not successful in defending ourselves or asserting our rights, those actions could have a material and adverse effect on our business, financial condition, results of operations and prospects, including the imposition of significant civil, criminal and administrative penalties, damages, monetary fines, individual imprisonment, disgorgement of profits, possible exclusion from participation in Medicare, Medicaid and other federal healthcare programs, contractual damages, reputational harm, diminished profits and future earnings, additional reporting or oversight obligations if we become subject to a corporate integrity agreement or other agreement to resolve allegations of non-compliance with the law and curtailment or restructuring of our operations, any of which could adversely affect our ability to operate our business and pursue our strategy.

Current and future legislation may increase the difficulty and cost for us and any future collaborators to obtain marketing approval of and commercialize our product candidates and affect the prices we, or they, may obtain.

In the United States and other jurisdictions, there have been, and we expect there will continue to be, a number of legislative and regulatory changes and proposed changes to the healthcare system that could affect our future results of operations. In particular, there have been and continue to be a number of initiatives at the U.S. federal and state levels that seek to reduce healthcare costs and improve the quality of healthcare. For example, in March 2010, the Patient Protection and Affordable Care Act, as amended by the Health Care and Education Reconciliation Act, or collectively the ACA, was enacted, which substantially changed the way healthcare is financed by both governmental and private payors. Among the provisions of the ACA of importance to the pharmaceutical and biotechnology industries are the following:

- an annual, nondeductible fee on any entity that manufactures or imports certain specified branded prescription drugs and biologic agents apportioned among these entities according to their market share in some government healthcare programs;
- an increase in the statutory minimum rebates a manufacturer must pay under the Medicaid Drug Rebate Program, to 23.1% and 13% of the average manufacturer price for most branded and generic drugs, respectively and capped the total rebate amount for innovator drugs at 100% of the Average Manufacturer Price,
- a new methodology by which rebates owed by manufacturers under the Medicaid Drug Rebate Program are calculated for certain drugs and biologics, including our product candidates, that are inhaled, infused, instilled, implanted or injected;
- extension of manufacturers' Medicaid rebate liability to covered drugs dispensed to individuals who are enrolled in Medicaid managed care organizations;
- expansion of eligibility criteria for Medicaid programs by, among other things, allowing states to offer Medicaid coverage to additional individuals and by adding new mandatory eligibility categories for individuals with income at or below 133% of the federal poverty level, thereby potentially increasing manufacturers' Medicaid rebate liability;
- expansion of the entities eligible for discounts under the Public Health program;
- a new Patient-Centered Outcomes Research Institute to oversee, identify priorities in, and conduct comparative clinical effectiveness research, along with funding for such research;
- establishment of a Center for Medicare Innovation at CMS to test innovative payment and service delivery models to lower Medicare and Medicaid spending, potentially including prescription drug spending; and
- a licensure framework for follow on biologic products.

There remain judicial and Congressional challenges to certain aspects of the ACA. While Congress has not passed comprehensive repeal legislation, several bills affecting the implementation of certain taxes under the ACA have been signed into law. For example, the Tax Cuts and Jobs Act of 2017, or the Tax Act, was enacted, which includes a provision repealing, effective January 1, 2019, the tax-based shared responsibility payment imposed by the ACA on certain individuals who fail to maintain qualifying health coverage for all or part of a year that is commonly referred to as the "individual mandate." Since the enactment of the Tax Act, there have been additional amendments to certain provisions of the ACA. On December 14, 2018, a Texas U.S. District Court Judge ruled that the ACA 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 ACA are invalid as well. The U.S. Supreme Court is currently reviewing the case, although it is unknown when a decision will be made. Further, although the U.S. Supreme Court has not yet ruled on the constitutionality of the ACA, on January 28, 2021, President Biden issued an executive order to initiate a special enrollment period from February 15, 2021 through May 15, 2021 for purposes of obtaining health insurance coverage through the ACA marketplace. The executive order also instructs certain governmental agencies to review and reconsider their existing policies and rules that limit access to healthcare, including among others, reexamining Medicaid demonstration projects and waiver programs that include work requirements, and policies that create unnecessary barriers to obtaining access to health insurance coverage through Medicaid or the ACA. It is unclear how the Supreme Court ruling, other such litigation, and the healthcare reform measures of the Biden administration will impact the ACA and our business.

In addition, other legislative changes have been proposed and adopted in the United States since the ACA was enacted. In August 2011, the Budget Control Act of 2011, among other things, led to aggregate reductions of Medicare payments to providers of 2% per fiscal year. These reductions went into effect in April 2013 and, due to subsequent legislative amendments to the statute, will remain in effect through 2030, with the exception of a temporary suspension from May 1, 2020 through March 31, 2021, unless additional action is taken by Congress. In January 2013, the American Taxpayer Relief Act of 2012 was signed into law, which, among other things, further reduced Medicare payments to several types of providers, including hospitals, imaging centers and cancer treatment centers, and increased the statute of limitations period for the government to recover overpayments to providers from three to five years. These new laws or any other similar laws introduced in the future may result in additional reductions in Medicare and other healthcare funding, which could negatively affect our customers and accordingly, our financial operations.

Moreover, payment methodologies may be subject to changes in healthcare legislation and regulatory initiatives. For example, CMS may develop new payment and delivery models, such as bundled payment models. In addition, recently there has been heightened governmental scrutiny over the manner in which manufacturers set prices for their marketed products, which has resulted in several U.S. Congressional inquiries and proposed and enacted federal and state legislation designed to, among other things, bring more transparency to drug pricing, reduce the cost of prescription drugs under government payor programs, and review the relationship between pricing and manufacturer patient programs. At the federal level, the Trump administration used several means to propose or implement drug pricing reform, including through federal budget proposals, executive orders and policy initiatives. For example, on July 24, 2020 and September 13, 2020, the Trump administration announced several executive orders related to prescription drug pricing that seek to implement several of the administration's proposals. As a result, the FDA released a final rule on September 24, 2020, effective November 30, 2020, providing guidance for states to build and submit importation plans for drugs from Canada. Further, on November 20, 2020, U.S. Department of Health and Human Services, or HHS, HHS finalized a regulation removing safe harbor protection for price reductions from pharmaceutical manufacturers to plan sponsors under Medicare Part D, either directly or through pharmacy benefit managers, unless the price reduction is required by law. The implementation of the rule has been delayed by the Biden administration from January 1, 2022 to January 1, 2023 in response to ongoing litigation. The rule also creates a new safe harbor for price reductions reflected at the point-of-sale, as well as a new safe harbor for certain fixed fee arrangements between pharmacy benefit managers and manufacturers, the implementation of which have also been delayed pending review by the Biden administration until March 22, 2021. On November 20, 2020, CMS issued an interim final rule implementing the Trump administration's Most Favored Nation executive order, which would tie Medicare Part B payments for certain physician-administered drugs to the lowest price paid in other economically advanced countries, effective January 1, 2021. On December 28, 2020, the United States District Court in Northern California issued a nationwide preliminary injunction against implementation of the interim final rule. It is unclear whether the Biden administration will work to reverse these measures or pursue similar policy initiatives. We expect that additional U.S. federal healthcare reform measures will be adopted in the future, any of which could limit the amounts that the U.S. federal government will pay for healthcare products and services, which could result in reduced demand for our product candidates or additional pricing pressures. It is also possible that additional governmental action is taken in response to the COVID-19 pandemic.

Individual states in the United States have also increasingly passed legislation and implemented regulations designed to control pharmaceutical and biological 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. Legally mandated price controls on payment amounts by third-party payors or other restrictions could harm our business, results of operations, financial condition and prospects. In addition, regional healthcare authorities and individual hospitals are increasingly using bidding procedures to determine what pharmaceutical products and which suppliers will be included in their prescription drug and other healthcare programs. This could reduce the ultimate demand for our product candidates or put pressure on our product pricing.

In the European Union, similar political, economic and regulatory developments may affect our ability to profitably commercialize our product candidates, if approved. In addition to continuing pressure on prices and cost containment measures, legislative developments at the European Union or member state level may result in significant additional requirements or obstacles that may increase our operating costs. The delivery of healthcare in the European Union, including the establishment and operation of health services and the pricing and reimbursement of medicines, is almost exclusively a matter for national, rather than E.U., law and policy. National governments and health service providers have different priorities and approaches to the delivery of healthcare and the pricing and reimbursement of products in that context. In general, however, the healthcare budgetary constraints in most E.U. member states have resulted in restrictions on the pricing and reimbursement of medicines by relevant health service providers. Coupled with ever-increasing European Union and national regulatory burdens on those wishing to develop and market products, this could prevent or delay marketing approval of our product candidates, restrict or regulate post-approval activities and affect our ability to commercialize our product candidates, if approved. In markets outside of the United States and European Union, reimbursement and healthcare payment systems vary significantly by country, and many countries have instituted price ceilings on specific products and therapies.

We cannot predict the likelihood, nature or extent of government regulation that may arise from future legislation or administrative action in the United States or any other jurisdiction. If we or any third parties we may engage are slow or unable to adapt to changes in existing requirements or the adoption of new requirements or policies, or if we or such third parties are not able to maintain regulatory compliance, our product candidates may lose any regulatory approval that may have been obtained and we may not achieve or sustain profitability.

Even if we are able to commercialize any product candidate, coverage and adequate reimbursement may not be available or such product candidate may become subject to unfavorable pricing regulations or third-party coverage and reimbursement policies, which would harm our business.

The regulations that govern regulatory approvals, pricing and reimbursement for drugs products vary widely from country to country. Some countries require approval of the sale price of a drug product before it can be marketed. In many countries, the pricing review period begins after marketing approval is granted. In some foreign markets, prescription drug product pricing remains subject to continuing governmental control even after initial approval is granted. As a result, we might obtain regulatory approval for a product in a particular country, but then be subject to price regulations that delay our commercial launch of the product, possibly for lengthy time periods and negatively impact the revenues we are able to generate from the sale of the product in that country. Adverse pricing limitations may hinder our ability to recoup our investment in one or more product candidates, even if our product candidates obtain regulatory approval.

Our ability to commercialize any products successfully also will depend in part on the extent to which coverage and adequate reimbursement for these products and related treatments will be available from third party payors, such as government authorities, private health insurers and other organizations. Even if we succeed in bringing one or more products to the market, these products may not be considered cost-effective, and the amount reimbursed for any products may be insufficient to allow us to sell our products on a competitive basis. Because our programs are in the early stages of development, we are unable at this time to determine their cost effectiveness or the likely level or method of coverage and reimbursement. Increasingly, the third-party payors who reimburse patients or healthcare providers are requiring that drug companies provide them with predetermined discounts from list prices, and are seeking to reduce the prices charged or the amounts reimbursed for drug products. If the price we are able to charge for any products we develop, or the coverage and reimbursement provided for such products, is inadequate in light of our development and other costs, our return on investment could be affected adversely.

There may be significant delays in obtaining reimbursement for newly-approved drug products, and coverage may be more limited than the purposes for which the drug product is approved by the FDA or similar foreign regulatory authorities. Moreover, eligibility for reimbursement does not imply that any drugs product will be reimbursed in all cases or at a rate that covers our costs, including research, development, manufacture, sale and distribution.

Interim reimbursement levels for new drug products, if applicable, may also be insufficient to cover our costs and may not be made permanent. Reimbursement rates may be based on payments allowed for lower cost drug products that are already reimbursed, may be incorporated into existing payments for other services and may reflect budgetary constraints or imperfections in Medicare data. Net prices for drug products may be reduced by mandatory discounts or rebates required by third party payors and by any future relaxation of laws that presently restrict imports of drug products from countries where they may be sold at lower prices than in the United States. Obtaining coverage and adequate reimbursement for our product candidates may be particularly difficult because of the higher prices often associated with drugs administered under the supervision of a physician. Similarly, because our product candidates are physician-administered injectables, separate reimbursement for the product itself may or may not be available. Instead, the administering physician may or may not be reimbursed for providing the treatment or procedure in which our product is used.

Further, no uniform policy for coverage and reimbursement exists in the United States, and coverage and reimbursement can differ significantly from payor to payor. Third-party payors often rely upon Medicare coverage policy and payment limitations in setting their own reimbursement rates, but also have their own methods and approval process apart from Medicare determinations. As a result, the coverage determination process is often a time-consuming and costly process that will require us to provide scientific and clinical support for the use of our product candidates to each payor separately, with no assurance that coverage and adequate reimbursement will be applied consistently or obtained in the first instance. Decisions regarding the extent of coverage and amount of reimbursement to be provided for any product candidates that we develop will be made on a payor-by-payor basis. One payor's determination to provide coverage for a drug does not assure that other payors will also provide coverage and adequate reimbursement for the drug. Additionally, a third-party payor's decision to provide coverage for a therapy does not imply that an adequate reimbursement rate will be approved.

Additionally, we may develop companion diagnostic tests for use with our product candidates. We, or our collaborators, will be required to obtain coverage and reimbursement for these tests separate and apart from the coverage and reimbursement we seek for our product candidates, once approved. While we have not yet developed any companion diagnostic test for our product candidates, if we do, there is significant uncertainty regarding our ability to obtain coverage and adequate reimbursement for the same reasons applicable to our product candidates.

Our inability to promptly obtain coverage and adequate reimbursement from both third-party payors for the product candidates and companion diagnostic tests that we develop and for which we obtain regulatory approval could have a material and adverse effect on our business, financial condition, results of operations and prospects.

Failure to comply with existing or future laws and regulations related to data privacy or security could lead to government enforcement actions (which could include civil or criminal fines or penalties), investigations, private litigation, other liabilities, and/or adverse publicity. Compliance or the actual or perceived failure to comply with such laws could increase the costs of our products, could limit their use or adoption, and could otherwise negatively affect our operating results and business.

We, our service providers and any collaborators may be subject to or affected by federal, state and foreign data protection laws, regulations, regulatory guidance, policies and contractual obligations relating to data privacy and security, governing the collection, use, disclosure, processing, retention, storage, transfer, destruction, and security of personal information. The global data protection landscape is rapidly evolving, is subject to differing interpretations and could result in conflicting compliance obligations among various jurisdictions. We are likely to expend significant capital and other resources to comply with applicable privacy and data security laws both inside and outside the United States. Compliance with federal, state, and foreign data protection laws and regulations could require us to take on more onerous obligations in our contracts, increase our costs of legal compliance, restrict our ability to collect, use and disclose personal information, or in some cases, impact our or our service providers' or collaborators' ability to operate in certain jurisdictions. Failure to comply with these laws and regulations could result in government enforcement actions (which could include civil, criminal and administrative penalties), investigations private litigation, other liabilities and/or adverse publicity and could negatively affect our operating results and business. Moreover, clinical trial subjects, employees and other individuals about whom we or our potential collaborators obtain personal information, as well as the providers who share this information with us, may limit our ability to collect, use and disclose the information. Claims that we have violated individuals' privacy rights or breached our contractual obligations, even if we are not found liable, could be expensive and time-consuming to defend and could result in adverse publicity that could harm our business. If we, our service providers or any collaborators fail to comply with applicable foreign, federal, state, or local regulatory requirements, we could be subject to a range of regulatory actions that could affect our or any collaborators' ability to seek to commercialize our clinical candidates. Any threatened or actual government enforcement action could also generate adverse publicity and require that we devote substantial resources that could otherwise be used in other aspects of our business.

In the United States, numerous federal and state laws and regulations, including federal and state privacy laws (including those related to health), state data breach notification laws, and federal and state consumer protection laws may apply to our operations or our collaborators' operations. These laws and regulations may include the following: the Federal Trade Commission Act Electronic Communications Privacy Act, the Computer Fraud and Abuse Act, and the California Consumer Privacy Act of 2018, or the CCPA. The CCPA, which became effective on January 1, 2020, in part, , gives California residents rights to their personal information and provides California residents with the ability to opt out of the sale of personal information. The CCPA authorizes private lawsuits to recover statutory damages for data breaches that is expected to increase data breach litigation. Although the CCPA exempts some data processed in the context of clinical trials, the CCPA, to the extent applicable to our business and operations, may increase our compliance costs and potential liability with respect to other personal information we maintain about California residents. In addition, California voters recently approved the California Privacy Rights Act of 2020, or CPRA, that goes into effect on January 1, 2023. It is expected that the CPRA would, among other things, give California residents the ability to limit the use of their sensitive information, provide for penalties for CPRA violations concerning California residents under the age of 16, and establish a new California Privacy Protection Agency to implement and enforce the law. These laws demonstrate our vulnerability to the evolving regulatory environment related to personal information. As we expand our operations, these and similar laws may increase our compliance costs and potential liability. Some observers have noted that the CCPA could mark the beginning of a trend toward more stringent privacy legislation in the United States. Other states are beginning to pass similar laws.

Most healthcare providers, including research institutions from which we or our collaborators obtain clinical trial participant health information, are subject to privacy and security regulations promulgated under HIPAA, as amended by HITECH. Any person may be prosecuted under HIPAA's provisions either directly or under aiding-and-abetting or conspiracy principles. Consequently, depending on the facts and circumstances, we could face substantial civil and criminal penalties if we knowingly receive individually identifiable health information from a HIPAA-covered healthcare provider or research institution that has not satisfied HIPAA's requirements for disclosure of individually identifiable health information. In addition, we may maintain sensitive personally identifiable information, including health information and that we receive throughout the clinical trial process, in the course of our research collaborations. As such, we may be directly subject to HIPAA as well as state laws requiring notification of affected individuals and state regulators in the event of a breach of personal information, which is a broader class of information than the individually identifiable health information protected by HIPAA.

Our operations may also be subject to increased scrutiny or attention from foreign data protection authorities. Our clinical trial programs and research collaborations outside the United States may implicate foreign data protection laws, including in Europe. Many countries have established, or are in the process of establishing, privacy and data security legal frameworks with which we, our collaborators, service providers, including our CROs, and contractors must comply. For example, European data protection laws, including, without limitation, the EU's General Data Protection Regulation, or GDPR, which went into effect in May 2018 and introduces strict requirements for processing the personal information of individuals residing in the EU, Switzerland and United Kingdom (through national legislation), including clinical trial data. It also has significant penalties for non-compliance. The processing of sensitive personal information, such as health information, may impose heightened compliance burdens under the GDPR and is a topic of active interest among foreign regulators. The GDPR and similar laws increase our obligations with respect to clinical trials conducted in the EU by expanding the definition of personal information to include coded data and requiring changes to informed consent practices and more detailed notices for clinical trial participants and investigators. If our privacy or data security measures fail to comply with the GDPR requirements, we may be subject to litigation, regulatory investigations, enforcement notices actions that require us to change the way we use personal information, prohibitions on use of personal information and/or fines of up to 20.0 million Euros or up to 4% of the total worldwide annual turnover of the preceding financial year, whichever is higher. In addition to statutory enforcement, a personal information breach can lead to negative publicity and a potential loss of business.

European data protection laws, including the GDPR, generally restrict the transfer of personal information from Europe, including the European Economic Area, or EEA, United Kingdom and Switzerland, or collectively Europe, to the United States and most other countries unless the parties to the transfer have implemented specific safeguards to protect the transferred personal information. We are subject to evolving European laws on data exports, as we may transfer personal information from Europe to other jurisdictions. One of the primary safeguards allowing U.S. companies to import personal information from Europe has been certification to the EU-U.S. Privacy Shield and Swiss-U.S. Privacy Shield frameworks administered by the U.S. Department of Commerce. However, the Court of Justice of the European Union, or CJEU, invalidated the EU-U.S. Privacy Shield. The same CJEU decision also raised questions about whether one of the primary alternatives to the EU-U.S. Privacy Shield, namely, the European Commission's Standard Contractual Clauses, can lawfully be used for personal information transfers from Europe to the United States or most other countries. At present, there are few, if any, viable alternatives to the Standard Contractual Clauses. In addition, the Swiss Federal Data Protection and Information Commissioner has opined that the Swiss-U.S. Privacy Shield is inadequate for transfers of data from Switzerland to the U.S. Authorities in the United Kingdom may similarly invalidate use of the EU-U.S. Privacy Shield and raise questions on the viability of the Standard Contractual Clauses as mechanisms for lawful personal information transfers from the United Kingdom to the United States. If we are unable to implement a valid compliance mechanism for cross-border personal information transfers, we may face increased exposure to regulatory actions, substantial fines and injunctions against processing or transferring personal information from Europe. Inability to import personal information from Europe to the United States may limit our ability to conduct clinical trials activities in Europe, limit our ability to collaborate with CROs, service providers, contractors and other companies subject to European data protection laws, and require us to increase our data processing capabilities in Europe at significant expense. In November 2020, EU regulators proposed a new set of Standard Contractual Clauses, which impose additional obligations and requirements with respect to the transfer of EU personal information to other jurisdictions, which may increase the legal risks and liabilities under the GDPR and local EU laws associated with cross-border personal information transfers, and result in material increased compliance and operational costs. Moreover, other countries outside of Europe have enacted or are considering enacting similar cross-border data transfer restrictions and laws requiring local data residency, which could increase the cost and complexity of delivering our services and operating our business.

Further, the United Kingdom's vote in favor of exiting the European Union, often referred to as Brexit, and ongoing developments in the United Kingdom have created uncertainty regarding data protection regulation in the United Kingdom. Following the United Kingdom's withdrawal from the European Union on January 31, 2020, pursuant to the transitional arrangements agreed to between the United Kingdom and European Union, the GDPR continued to have effect in United Kingdom law, and continued to do so until December 31, 2020 as if the United Kingdom remained a Member State of the European Union for such purposes. Following December 31, 2020, and the expiry of those transitional arrangements, the data protection obligations of the GDPR continue to apply to United Kingdom-related processing of personal data in substantially unvaried form under the so-called "UK GDPR" (i.e., the GDPR as it continues to form part of law in the United Kingdom by virtue of section 3 of the European Union (Withdrawal) Act 2018, as amended (including by the various Data Protection, Privacy and Electronic Communications (Amendments etc) (EU Exit) Regulations)). However, going forward, there will be increasing scope for divergence in application, interpretation and enforcement of the data protection law as between the United Kingdom and EEA. Furthermore, the relationship between the United Kingdom and the EEA in relation to certain aspects of data protection law remains somewhat uncertain. For example, it is unclear whether transfers of personal data from the EEA to the United Kingdom will be permitted to take place on the basis of a future adequacy decision of the European Commission, or whether a "transfer mechanism," such as the Standard Contractual Clauses, will be required. For the meantime, under the post-Brexit Trade and Cooperation Agreement between the European Union and the United Kingdom, it has

been agreed that transfers of personal data to the United Kingdom from European Union Member States will not be treated as "restricted transfers" to a non-EEA country for a period of up to four months from January 1, 2021, plus a potential further two months extension, or the extended adequacy assessment period. This will also apply to transfers to the United Kingdom from EEA Member States, assuming those Member States accede to the relevant provision of the Trade and Cooperation Agreement. Although the current maximum duration of the extended adequacy assessment period is six months it may end sooner, for example, in the event that the European Commission adopts an adequacy decision in respect of the United Kingdom, or the United Kingdom amends the UK GDPR and/or makes certain changes regarding data transfers under the UK GDPR/ Data Protection Act 2018 without the consent of the European Union (unless those amendments or decisions are made simply to keep relevant United Kingdom laws aligned with the European Union's data protection regime). If the European Commission does not adopt an 'adequacy decision' in respect of the United Kingdom prior to the expiry of the extended adequacy assessment period, from that point onwards the United Kingdom will be an "inadequate third country" under the GDPR and transfers of data from the EEA to the United Kingdom will require a "transfer mechanism," such as the Standard Contractual Clauses.

We publish privacy policies and other documentation regarding our collection, processing, use and disclosure of personal information and/or other confidential information. Although we endeavor to comply with our published policies and other documentation, we may at times fail to do so or may be perceived to have failed to do so. Despite our efforts, we may not be successful in achieving compliance if our employees, collaborators, contractors, service providers or vendors fail to comply with our published policies and documentation. Such failures can subject us to potential foreign, local, state and federal action if they are found to be deceptive, unfair, or misrepresentative of our actual practices. Moreover, trial participants or research subjects about whom we or our partners obtain information, as well as the providers who share this information with us, may contractually limit our ability to use and disclose the information. Claims that we have violated individuals' privacy rights or failed to comply with data protection laws or applicable privacy notices even if we are not found liable, could be expensive and time-consuming to defend and could result in adverse publicity that could harm our business.

Risks Related to Our Business Operations

Manufacturing our TriTAC and ProTriTAC product candidates is complex. We and our third-party manufacturers may encounter difficulties in production. If we encounter any such difficulties, our ability to supply our product candidates for clinical trials or, if approved, for commercial sale could be delayed or halted entirely.

The manufacture of biopharmaceutical products is complex and requires significant expertise and capital investment, including the development of advanced manufacturing techniques and process controls. The process of manufacturing our product candidates is extremely susceptible to product loss due to contamination, equipment failure or improper installation or operation of equipment, vendor or operator error, inconsistency in yields, variability in product characteristics and difficulties in scaling the production process. Even minor deviations from normal manufacturing processes could result in reduced production yields, product defects and other supply disruptions. If microbial, viral or other contaminations are discovered in our product candidates or in the manufacturing facilities in which our product candidates are made, such manufacturing facilities may need to be closed for an extended period of time to investigate and remedy the contamination. All of our TriTACs and ProTriTACs are manufactured from a vial of a master cell bank of that antibody's production cell line. We have or intend to have one master cell bank for each TriTAC and ProTriTAC that was or will be produced and tested in accordance with current good manufacturing practice, or cGMP, and applicable regulations. Each master cell bank is or will be stored in two independent locations, and we intend to produce working cell banks for each product candidate later in product development. It is possible that we could lose multiple cell banks from multiple locations and have our manufacturing severely impacted by the need to replace the cell banks. However, we believe we have adequate backup should any particular cell bank be lost in a catastrophic event. Any adverse developments affecting manufacturing operations for our product candidates, if any are approved, may result in shipment delays, inventory shortages, lot failures, product withdrawals or recalls, or other interruptions in the supply of our products. We may also have to take inventory write-offs and incur other charges and expenses for products that fail to meet specifications as a result of defects or storage over an extended period of time, undertake costly remediation efforts or seek more costly manufacturing alternatives.

Our business could be adversely affected by the effects of health epidemics, including the recent novel coronavirus. A COVID-19 pandemic is ongoing in many parts of the world and may result in significant disruptions which could materially affect our operations, including at our headquarters in the San Francisco Bay Area and at our clinical trial sites.

In December 2019, COVID-19 was reported to have surfaced in Wuhan, China, resulting in significant disruptions to Chinese manufacturing and travel. COVID-19 has now spread to numerous other countries, including the United States, resulting in the World Health Organization characterizing COVID-19 as a pandemic. As a result of measures imposed by the governments in affected regions, many commercial activities, businesses and schools have been suspended as part of quarantines and other measures intended to contain this pandemic. As the COVID-19 pandemic continues to spread around the globe, we may experience disruptions that could adversely impact our business and clinical trials, including:

- a new methodology by which rebates owed by manufacturers under the Medicaid
- delays or difficulties in enrolling patients in our clinical trials;
- delays or difficulties in clinical site initiation, including difficulties in recruiting clinical site investigators and clinical site staff;

- diversion of healthcare resources away from the conduct of clinical trials, including the diversion of hospitals serving as our clinical trial sites and hospital staff supporting the conduct of clinical trials;
- interruption of key clinical trial activities, such as clinical trial site monitoring, due to limitations on travel imposed or recommended by federal or state governments, employers and others;
- limitations in resources that would otherwise be focused on the conduct of our business or our clinical trials, including because of sickness or the desire to avoid contact with large groups of people or as a result of government-imposed "shelter in place" or similar working restrictions;
- delays in receiving approval from regulatory authorities to initiate our planned clinical trials;
- delays in clinical sites receiving the supplies and materials needed to conduct our clinical trials;
- interruption in shipping that may affect the transport of clinical trial materials, such as investigational drug product used in our clinical trials;
- changes in regulations as part of a response to the COVID-19 pandemic which may require us to change the ways in which our clinical trials are conducted, or to discontinue the clinical trials altogether, or which may result in unexpected costs;
- delays in necessary interactions with regulators, ethics committees and other important agencies and contractors due to limitations in employee resources or forced furlough of government or contractor personnel; and
- refusal of the FDA to accept data from clinical trials in affected geographies outside the United States.

We are still assessing the impact that COVID-19 may have on our ability to effectively conduct our business operations as planned and there can be no assurance that we will be able to avoid a material adverse impact on our business from the spread of COVID-19 or its consequences, including disruption to our business and downturns in business sentiment generally or in our industry. For example, on March 16, 2020, San Mateo County issued a "shelter-in-place" order, effective March 17, 2020, and on March 19, 2020, the Executive Department of the State of California issued Executive Order N-33-20, ordering all individuals in the State of California to stay home or at their place of residence except as needed to maintain continuity of operations of the federal critical infrastructure sectors. Our primary operations are located in South San Francisco, located in San Mateo County. As a result of such county and California state orders, we have closed our executive offices, substantially all of our employees are currently telecommuting, and we have limited the number of staff in our laboratory, which may impact certain of our operations over the near term and long term. As of December 31, 2020, we have not experienced any material delays or significant financial impacts directly related to the pandemic but have experienced some minor disruptions to clinical operations, including patient enrollment in some of our clinical trials.

Additionally, certain third parties with whom we engage, including our collaborators, contract organizations, third party manufacturers, suppliers, clinical trial sites, regulators and other third parties with whom we conduct business are similarly adjusting their operations and assessing their capacity in light of the COVID-19 pandemic. If these third parties experience shutdowns or continued business disruptions, our ability to conduct our business in the manner and on the timelines presently planned could be materially and negatively impacted. For example, as a result of the COVID-19 pandemic, there could be delays in the manufacturing supply chain or procurement of materials for our product candidates, which could delay or otherwise impact our preclinical and clinical programs and anticipated development timelines. Additionally, certain preclinical studies for our discovery research programs and clinical trials are conducted by CROs, which could be discontinued or delayed as a result of the pandemic. It is also likely that the disproportionate impact of COVID-19 on hospitals and clinical sites will have an impact on recruitment and retention for our clinical trials. In addition, certain of our clinical trial sites have experienced, and others may experience in the future, delays in collecting, receiving and analyzing data from patients enrolled in our clinical trials due to limited staff at such sites, limitation or suspension of on-site visits by patients, or patients' reluctance to visit the clinical trial sites during the pandemic. We and our CROs may also need to make certain adjustments to the operation of such trials in an effort to ensure the safety and monitoring of patients and minimize risks to trial integrity during the pandemic in accordance with the guidance issued by the FDA on March 18, 2020 and EMA on April 28, 2020. Any such adjustments would be new and untested, may not be effective, and may have unforeseen effects on the enrollment, progress and completion of these trials and the findings from these trials. While we are currently continuing our clinical trials and seeking to add new clinical trial sites, we may not be successful in adding trial sites, may experience delays in patient enrollment or in the progression of our clinical trials, may need to suspend our clinical trials, and may encounter other negative impacts to our trials, due to the effects of the COVID-19 pandemic.

The global outbreak of COVID-19 continues to rapidly evolve. While the extent of the impact of the current COVID-19 pandemic on our business and financial results is uncertain, a continued and prolonged public health crisis such as the COVID-19 pandemic could have a material negative impact on our business, financial condition and operating results.

Our business may become subject to economic, political, regulatory and other risks associated with international operations.

Our business is subject to risks associated with conducting business internationally. Accordingly, our future results could be harmed by a variety of factors, including:

- economic weakness, including inflation, or political instability, particularly in foreign economies and markets;
- differing regulatory requirements for drug approvals in foreign countries;
- differing jurisdictions could present different issues for securing, maintaining and/or obtaining freedom to operate in such jurisdictions;
- potentially reduced protection for intellectual property rights;
- difficulties in compliance with foreign laws and regulations;
- changes in foreign regulations and customs, tariffs and trade barriers;
- changes in foreign currency exchange rates and currency controls;
- changes in a specific country's or region's political or economic environment;
- trade protection measures, import or export licensing requirements or other actions by the U.S. or foreign governments;
- differing reimbursement regimes and price controls in certain foreign markets;
- negative consequences from changes in tax laws;
- compliance with tax, employment, immigration and labor laws for employees living or traveling abroad;
- workforce uncertainty in countries where labor unrest is more common than in the United States;
- difficulties associated with staffing and managing international operations, including differing labor relations;
- production shortages resulting from any events affecting raw material supply or manufacturing capabilities abroad;
- the impact of public health epidemics, such as the coronavirus disease (COVID-19) currently impacting multiple jurisdictions worldwide, including the United States; and

business interruptions resulting from geo-political actions, including war and terrorism, or natural disasters, including earthquakes, typhoons, floods and fires. ***We may become exposed to costly and damaging liability claims, either when testing our product candidates in the clinic or at the commercial stage, and our product liability insurance may not cover all damages from such claims.***

We are exposed to potential product liability and professional indemnity risks that are inherent in the research, development, manufacturing, marketing and use of pharmaceutical products. While we currently have no products that have been approved for commercial sale, the current and future use of product candidates by us and our partners in clinical trials, and the sale of any approved products in the future, may expose us to liability claims. These claims might be made by patients that use the product, healthcare providers, pharmaceutical companies, our partners or others selling such products. Any claims against us, regardless of their merit, could be difficult and costly to defend and could materially adversely affect the market for our product candidates or any prospects for commercialization of our product candidates.

Although the clinical trial process is designed to identify and assess potential side effects, it is always possible that a drug, even after regulatory approval, may exhibit unforeseen side effects. If any of our product candidates were to cause adverse side effects during clinical trials or after approval of the product candidate, we may be exposed to substantial liabilities. Physicians and patients may not comply with any warnings that identify known potential adverse effects and patients who should not use our product candidates.

Even successful defense against product liability claims would require significant financial and management resources. Regardless of the merits or eventual outcome, liability claims may result in: decreased demand for our product candidates; injury to our reputation; withdrawal of clinical trial participants; initiation of investigations by regulators; costs to defend the related litigation; a diversion of management's time and our resources; substantial monetary awards to trial participants or patients; product recalls, withdrawals or labeling, marketing or promotional restrictions; loss of revenue; exhaustion of any available insurance and our capital resources; the inability to commercialize any product candidate; and a decline in our share price.

Although we maintain adequate product liability insurance for our product candidates, it is possible that our liabilities could exceed our insurance coverage. We intend to expand our insurance coverage to include the sale of commercial products if we obtain marketing approval for any of our product candidates. However, we may not be able to maintain insurance coverage at a reasonable cost or obtain insurance coverage that will be adequate to satisfy any liability that may arise. If a successful product liability claim or series of claims is brought against us for uninsured liabilities or in excess of insured liabilities, our assets may not be sufficient to cover such claims and our business operations could be impaired.

Our future growth and ability to compete depends on retaining our key personnel and recruiting additional qualified personnel.

Our success depends upon the continued contributions of our key management, scientific and technical personnel, many of whom have been instrumental for us and have substantial experience with our therapies and related technologies. The loss of key managers and senior scientists could delay our research and development activities. In addition, the competition for qualified personnel in the biopharmaceutical and pharmaceutical field is intense, and our future success depends upon our ability to attract, retain and motivate highly-skilled scientific, technical and managerial employees. We face competition for personnel from other companies, universities, public and private research institutions and other organizations. If our recruitment and retention efforts are unsuccessful in the future, it may be difficult for us to implement business strategy, which could have a material adverse effect on our business.

We conduct substantially all of our operations at our facilities in South San Francisco, California. This region is headquarters to many other biopharmaceutical companies and many academic and research institutions. Competition for skilled personnel in this region is intense and may limit our ability to hire and retain highly qualified personnel on acceptable terms or at all.

We expect to expand our development, regulatory and sales and marketing capabilities, and as a result, we may encounter difficulties in managing our growth, which could disrupt our operations.

As of February 28, 2021, we had 78 full-time employees. We expect to experience significant growth in the number of our employees and the scope of our operations, particularly in the areas of drug development, regulatory affairs and sales and marketing. To manage our anticipated future growth, we must continue to implement and improve our managerial, operational and financial systems, expand our facilities and continue to recruit and train additional qualified personnel. Due to our limited financial resources and the limited experience of our management team in managing a company with such anticipated growth, we may not be able to effectively manage the expansion of our operations or recruit and train additional qualified personnel. The expansion of our operations may lead to significant costs and may divert our management and business development resources. Any inability to manage growth could delay the execution of our business plans or disrupt our operations.

In addition, future growth imposes significant added responsibilities on members of management, including: identifying, recruiting, integrating, maintaining and motivating additional employees; managing our internal development efforts effectively, including the clinical and FDA review process for our product candidates, while complying with our contractual obligations to contractors and other third parties; and improving our operational, financial and management controls, reporting systems and procedures. Our future financial performance and our ability to commercialize our product candidates will depend, in part, on our ability to effectively manage our growth, and our management may also have to divert a disproportionate amount of its attention away from day-to-day activities in order to devote a substantial amount of time to managing these growth activities.

We rely or expect to rely in substantial part on certain independent organizations, advisors and consultants to provide certain services, including strategic, financial, business development services, as well as substantial aspects of regulatory approval, clinical management, manufacturing and preparation for potential commercial launch. There can be no assurance that the services of independent organizations, advisors and consultants will continue to be available to us on a timely basis when needed, or that we can find qualified replacements. In addition, if we are unable to effectively manage our outsourced activities or if the quality or accuracy of the services provided by consultants or contract manufacturing organizations is compromised for any reason, our clinical trials may be extended, delayed or terminated, and we may not be able to obtain regulatory approval of our product candidates or otherwise advance our business. There can be no assurance that we will be able to manage our existing consultants or find other competent outside contractors and consultants on economically reasonable terms, or at all.

If we are not able to effectively expand our organization by hiring new employees and expanding our groups of consultants and contractors, we may not be able to successfully implement the tasks necessary to further develop and commercialize our product candidates and, accordingly, may not achieve our research, development and commercialization goals.

Acquisitions or joint ventures could disrupt our business, cause dilution to our stockholders and otherwise harm our business.

We actively evaluate various strategic transactions on an ongoing basis. We may acquire other businesses, products or technologies as well as pursue strategic alliances, joint ventures or investments in complementary businesses. Any of these transactions could be material to our financial condition and operating results and expose us to many risks, including:

- disruption in our relationships with existing strategic partners or suppliers as a result of such a transaction;
- unanticipated liabilities related to acquired companies or joint ventures;
- difficulties integrating acquired personnel, technologies and operations into our existing business;
- retention of key employees;

- diversion of management time and focus from operating our business to management of strategic alliances or joint ventures or acquisition integration challenges;
- increases in our expenses and reductions in our cash available for operations and other uses; and
- possible write-offs or impairment charges relating to acquired businesses.

In addition, we face significant competition in seeking appropriate strategic partners and the negotiation process is time-consuming and complex. Moreover, we may not be successful in our efforts to establish a strategic alliance or other alternative arrangements for our product candidates because they may be deemed to be at too early of a stage of development for collaborative effort and third parties may not view our product candidates as having the requisite potential to demonstrate safety and efficacy. Any delays in entering into new strategic transactions related to our product candidates could delay the development and commercialization of our product candidates in certain geographies for certain indications, which would harm our business prospects, financial condition and results of operations.

Foreign acquisitions involve unique risks in addition to those mentioned above, including those related to integration of operations across different cultures and languages, currency risks, potentially adverse tax consequences of overseas operations and the particular economic, political and regulatory risks associated with specific countries.

The anticipated benefit of any strategic alliance, joint venture or acquisition may not materialize or such strategic alliance, joint venture or acquisition may be prohibited. Additionally, future acquisitions or dispositions could result in potentially dilutive issuances of our equity securities, the incurrence of debt, contingent liabilities or amortization expenses or write-offs of goodwill, any of which could harm our financial condition. We cannot predict the number, timing or size of future joint ventures or acquisitions, or the effect that any such transactions might have on our operating results.

Our research and development activities could be affected or delayed as a result of possible restrictions on animal testing.

Certain laws and regulations require us to test our product candidates on animals before initiating clinical trials involving humans. Animal testing activities have been the subject of controversy and adverse publicity. Animal rights groups and other organizations and individuals have attempted to stop animal testing activities by pressing for legislation and regulation in these areas and by disrupting these activities through protests and other means. To the extent the activities of these groups are successful, our research and development activities may be interrupted, delayed or become more expensive.

Risks Related to Commercialization of Our Product Candidates

We operate in highly competitive and rapidly changing industries, which may result in others discovering, developing or commercializing competing products before or more successfully than we do.

The biopharmaceutical and pharmaceutical industries are highly competitive and subject to significant and rapid technological change. Our success is highly dependent on our ability to discover, develop and obtain marketing approval for new and innovative products on a cost-effective basis and to market them successfully. In doing so, we face and will continue to face intense competition from a variety of businesses, including large pharmaceutical and biotechnology companies, academic institutions, government agencies and other public and private research organizations. These organizations may have significantly greater resources than we do and conduct similar research, seek patent protection and establish collaborative arrangements for research, development, manufacturing and marketing of products that compete with our product candidates. Mergers and acquisitions in the biotechnology and pharmaceutical industries may result in even more resources being concentrated in our competitors. Competition may increase further as a result of advances in the commercial applicability of technologies and greater availability of capital for investment in these industries.

With the proliferation of new oncology drugs and therapies, we expect to face increasingly intense competition as new technologies become available. If we fail to stay at the forefront of technological change, we may be unable to compete effectively. Any product candidates that we successfully develop and commercialize will compete with existing therapies and new therapies that may become available in the future. The highly competitive nature of and rapid technological changes in the biotechnology and pharmaceutical industries could render our product candidates or our technology obsolete, less competitive or uneconomical. Our competitors may, among other things:

- have significantly greater financial, manufacturing, marketing, drug development, technical and human resources than we do;
- develop and commercialize products that are safer, more effective, less expensive, more convenient or easier to administer, or have fewer or less severe side effects;

- obtain quicker regulatory approval;
- establish superior proprietary positions covering our products and technologies;
- implement more effective approaches to sales and marketing; or
- form more advantageous strategic alliances.

Should any of these factors occur, our business, financial condition and results of operations could be materially adversely affected.

In addition, any collaborators may decide to market and sell products that compete with the product candidates that we have agreed to license to them, and any competition by our collaborators could also have a material adverse effect on our future business, financial condition and results of operations.

Smaller and other early stage companies may also prove to be significant competitors, particularly through collaborative arrangements with large and established companies. These third parties compete with us in recruiting and retaining qualified scientific and management personnel, establishing clinical trial sites and patient registration for clinical trials, as well as in acquiring technologies complementary to, or necessary for, our programs.

If the market opportunity for any product candidate that we or our strategic partners develop is smaller than we believe, our revenue may be adversely affected and our business may suffer.

We intend to initially focus our product candidate development on treatments for various oncology indications. Our projections of addressable patient populations that may benefit from treatment with our product candidates are based on our estimates. These estimates, which have been derived from a variety of sources, including scientific literature, surveys of clinics, patient foundations and market research, may prove to be incorrect. Further, new studies may change the estimated incidence or prevalence of these cancers. Additionally, the potentially addressable patient population for our product candidates may not ultimately be amenable to treatment with our product candidates. Our market opportunity may also be limited by future competitor treatments that enter the market. If any of our estimates prove to be inaccurate, the market opportunity for any product candidate that we or our strategic partners develop could be significantly diminished and have an adverse material impact on our business.

The market opportunities for our product candidates may be limited to those patients who are ineligible for or have failed prior treatments and may be small.

Cancer therapies are sometimes characterized by line of therapy (first, second, third, fourth, etc.), and the FDA often initially approves new therapies only for use in a particular line or lines of therapy. When cancer is detected early enough, first line therapy is sometimes adequate to provide a cure or prolong life without a cure. Whenever first line therapy (typically chemotherapy, hormone therapy, surgery or a combination of these) proves unsuccessful, second line therapy (typically more chemotherapy, radiation, antibody drugs, tumor targeted small molecules or a combination of these) may be administered. Third or fourth line therapies can include antibody and small molecule targeted therapies, more invasive forms of surgery and new technologies. We may initially seek approval of our product candidates as a third line therapy for patients who have failed other approved treatments. Subsequently, for product candidates that prove to be sufficiently beneficial, if any, we would expect to seek approval as a second and first line therapy. However, there is no guarantee that our product candidates, even if initially approved, would be subsequently approved as a second or first line therapy. In addition, we may have to conduct additional clinical trials prior to gaining approval as a second or first line therapy. Because the potentially addressable patient target population for our product candidates may be limited to patients who are ineligible for or have failed prior treatments, even if we obtain significant market share for our product candidates, we may never achieve profitability.

We may expend our limited resources to pursue a particular product candidate or indication and fail to capitalize on product candidates or indications that may be more profitable or for which there is a greater likelihood of success.

Because we have limited financial and managerial resources, we focus on research programs, therapeutic platforms and product candidates that we identify for specific indications. As a result, we may forego or delay pursuit of opportunities with other therapeutic platforms or product candidates or for other indications that later prove to have greater commercial potential. Our resource allocation decisions may cause us to fail to capitalize on viable commercial products or profitable market opportunities. Our spending on current and future research and development programs, therapeutic platforms and product candidates for specific indications may not yield any commercially viable products. If we do not accurately evaluate the commercial potential or target market for a particular product candidate, we may relinquish valuable rights to that product candidate through collaboration, licensing or other royalty arrangements in cases in which it would have been more advantageous for us to retain sole development and commercialization rights.

Even if approved, our products may not gain market acceptance, in which case we may not be able to generate product revenues, which will materially adversely affect our business, financial condition and results of operations.

Even if the FDA or any other regulatory authority approves the marketing of any product candidates that we develop on our own or with a collaborator, physicians, healthcare providers, patients or the medical community may not accept or use them. If these products do not achieve an adequate level of acceptance, we may not generate significant product revenues or any profits from operations. The degree of market acceptance of any of our product candidates will depend on a variety of factors, including:

- the timing of market introduction;
- the number and clinical profile of competing products;
- our ability to provide acceptable evidence of safety and efficacy;
- the prevalence and severity of any side effects;
- relative convenience and ease of administration;
- cost-effectiveness;
- patient diagnostics and screening infrastructure in each market;
- marketing and distribution support;
- availability of coverage, adequate reimbursement and sufficient payment from health maintenance organizations and other insurers, both public and private, for our product candidates, or the procedures utilizing our product candidates, if approved; and
- other potential advantages over alternative treatment methods.

If our product candidates fail to gain market acceptance, this will have a material adverse impact on our ability to generate revenues to provide a satisfactory, or any, return on our investments. Even if some products achieve market acceptance, the market may prove not to be large enough to allow us to generate significant revenues.

We currently have no marketing, sales or distribution infrastructure. If we are unable to develop sales, marketing and distribution capabilities on our own or through collaborations, or if we fail to achieve adequate pricing and/or reimbursement we will not be successful in commercializing our product candidates.

We currently have no marketing, sales and distribution capabilities because all of our product candidates are still in clinical or preclinical development. If any of our product candidates are approved, we intend either to establish a sales and marketing organization with technical expertise and supporting distribution capabilities to commercialize our product candidates, or to outsource this function to a third party. Either of these options would be expensive and time consuming. These costs may be incurred in advance of any approval of our product candidates. In addition, we may not be able to hire a sales force that is sufficient in size or has adequate expertise in the medical markets that we intend to target. Any failure or delay in the development of our internal sales, marketing and distribution capabilities would adversely impact the commercialization of our products, if approved.

To the extent that we enter into collaboration agreements with respect to marketing, sales or distribution, our product revenue may be lower than if we directly marketed or sold any approved products. In addition, any revenue we receive will depend in whole or in part upon the efforts of these third-party collaborators, which may not be successful and are generally not within our control. If we are unable to enter into these arrangements on acceptable terms or at all, we may not be able to successfully commercialize any approved products. If we are not successful in commercializing any approved products, either on our own or through collaborations with one or more third parties, our future product revenue will suffer and we may incur significant additional losses.

We have never commercialized a product candidate before and may lack the necessary expertise, personnel and resources to successfully commercialize any products on our own or together with suitable collaborators.

We have never commercialized a product candidate, and we currently have no sales force, marketing or distribution capabilities. To achieve commercial success for the product candidates, which we may license to others, we will rely on the assistance and guidance of those collaborators. For product candidates for which we retain commercialization rights, we will have to develop our own sales, marketing and supply organization or outsource these activities to a third party.

Factors that may affect our ability to commercialize our product candidates on our own include recruiting and retaining adequate numbers of effective sales and marketing personnel, obtaining access to or persuading adequate numbers of physicians to prescribe our product candidates and other unforeseen costs associated with creating an independent sales and marketing organization. Developing a sales and marketing organization will be expensive and time-consuming and could delay the launch of our product candidates. We may not be able to build an effective sales and marketing organization. If we are unable to build our own distribution and marketing capabilities or to find suitable partners for the commercialization of our product candidates, we may not generate revenues from them or be able to reach or sustain profitability.

Our product candidates for which we intend to seek approval as biologic products may face competition sooner than anticipated.

The ACA includes a subtitle called the Biologics Price Competition and Innovation Act of 2009, or BPCIA, which created an abbreviated approval pathway for biological products that are biosimilar to or interchangeable with an FDA-licensed reference biological product. Under the BPCIA, an application for a biosimilar product may not be submitted to the FDA until four years following the date that the reference product was first approved by the FDA. In addition, the approval of a biosimilar product may not be made effective by the FDA until 12 years from the date on which the reference product was first approved. During this 12-year period of exclusivity, another company may still market a competing version of the reference product if the FDA approves a full BLA for the competing product containing the sponsor's own preclinical data and data from adequate and well-controlled clinical trials to demonstrate the safety, purity and potency of their product. The law is complex and is still being interpreted and implemented by the FDA. As a result, its ultimate impact, implementation, and meaning are subject to uncertainty.

We believe that any of our product candidates approved as a biological product under a BLA should qualify for the 12-year period of exclusivity. However, there is a risk that this exclusivity could be shortened due to congressional action or otherwise, or that the FDA will not consider our product candidates to be reference products for competing products, potentially creating the opportunity for competition sooner than anticipated. Other aspects of the BPCIA, some of which may impact the BPCIA exclusivity provisions, have also been the subject of recent litigation. Moreover, the extent to which a biosimilar, once approved, will be substituted for any one of our reference products in a way that is similar to traditional generic substitution for non-biological products is not yet clear, and will depend on a number of marketplace and regulatory factors that are still developing.

Jurisdictions in addition to the United States have established abbreviated pathways for regulatory approval of biological products that are biosimilar to earlier approved reference products. For example, the European Union has had an established regulatory pathway for biosimilars since 2005.

The increased likelihood of biosimilar competition has increased the risk of loss of innovators' market exclusivity. Due to this risk, and uncertainties regarding patent protection, if our clinical candidates are approved for marketing, it is not possible to predict the length of market exclusivity for any particular product with certainty based solely on the expiration of the relevant patent(s) or the current forms of regulatory exclusivity. It is also not possible to predict changes in United States regulatory law that might reduce biological product regulatory exclusivity. The loss of market exclusivity for a product would likely materially and negatively affect revenues and we may not generate adequate or sufficient revenues from them or be able to reach or sustain profitability.

Risks Related to Our Dependence on Third Parties

We rely, and expect to continue to rely, on third parties, including independent clinical investigators and CROs, to conduct our preclinical studies and clinical trials. If these third parties do not successfully carry out their contractual duties, comply with applicable regulatory requirements or meet expected deadlines, we may not be able to obtain regulatory approval for or commercialize our product candidates and our business could be substantially harmed.

We have relied upon and plan to continue to rely upon third parties, including independent clinical investigators and third-party CROs, to conduct our preclinical studies and clinical trials and to monitor and manage data for our ongoing preclinical and clinical programs. We rely on these parties for execution of our preclinical studies and clinical trials, and control only certain aspects of their activities. Nevertheless, we are responsible for ensuring that each of our studies and trials is conducted in accordance with the applicable protocol, legal, regulatory and scientific standards, and our reliance on these third parties does not relieve us of our regulatory responsibilities. We and our third-party contractors and CROs are required to comply with GCP requirements, which are regulations and guidelines enforced by the FDA and comparable foreign regulatory authorities for all of our products candidates in clinical development. Regulatory authorities enforce these GCPs through periodic inspections of trial sponsors, principal investigators and trial sites. If we or any of our CROs fail to comply with applicable GCPs, 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 assure you that upon inspection by a given regulatory authority, such regulatory authority will determine that any of our clinical trials comply with GCP regulations. In addition, our clinical trials must be conducted with product produced under cGMP regulations. Our failure to comply with these regulations may require us to repeat clinical trials, which would delay the regulatory approval process.

Further, these investigators and CROs are not our employees and we will not be able to control, other than by contract, the amount of resources, including time, which they devote to our product candidates and clinical trials. If independent investigators or CROs fail to devote sufficient resources to the development of our product candidates, or if their performance is substandard, it may delay or compromise the prospects for approval and commercialization of any product candidates that we develop. In addition, the use of third-party service providers may require us to disclose our proprietary information to these parties, which could increase the risk that this information will be misappropriated.

Our CROs have the right to terminate their agreements with us in the event of an uncured material breach. In addition, some of our CROs have an ability to terminate their respective agreements with us if it can be reasonably demonstrated that the safety of the subjects participating in our clinical trials warrants such termination, if we make a general assignment for the benefit of our creditors or if we are liquidated.

If any of our relationships with these third-party CROs terminate, we may not be able to enter into arrangements with alternative CROs or to do so on commercially reasonable terms. If CROs do not successfully carry out their contractual duties or obligations or meet expected deadlines, if they need to be replaced or if the quality or accuracy of the clinical data they obtain is compromised due to the failure to adhere to our clinical protocols, 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. As a result, 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.

Switching or adding additional CROs involves additional cost and requires management time and focus. In addition, there is a natural transition period when a new CRO commences work. As a result, delays occur, which can materially impact our ability to meet our desired clinical development timelines. Additionally, CROs may lack the capacity to absorb higher workloads or take on additional capacity to support our needs. Though we carefully manage our relationships with our CROs, there can be no assurance that we will not encounter similar challenges or delays in the future or that these delays or challenges will not have a material adverse impact on our business, financial condition and prospects.

We may not realize the benefits of any collaborative or licensing arrangement we enter into, and if we fail to enter into new strategic relationships our business, financial condition, commercialization prospects and results of operations may be materially adversely affected.

Our product development programs and the potential commercialization of our product candidates will require substantial additional cash to fund expenses. Therefore, for some of our product candidates, we may decide to enter into new collaborations with pharmaceutical or biopharmaceutical companies for the development and potential commercialization of those product candidates. For instance, we have a discovery collaboration and license agreement with AbbVie, pursuant to which we have licensed the development and commercialization of certain of our product candidates, as well as Development and Option Agreement with AbbVie, pursuant to which we granted to AbbVie an option to a worldwide, exclusive license with respect to HPN217.

We face significant competition in seeking appropriate collaborators. Collaborations are complex and time-consuming to negotiate and document. We may also be restricted under existing and future collaboration agreements from entering into agreements on certain terms with other potential collaborators. We may not be able to negotiate collaborations on acceptable terms, or at all. If our strategic collaborations do not result in the successful development and commercialization of product candidates, or if one of our collaborators terminates its agreement with us, we may not receive any future research funding or milestone or royalty payments under the collaboration. Moreover, our estimates of the potential revenue we are eligible to receive under our strategic collaborations may include potential payments related to therapeutic programs for which our collaborators have discontinued development or may discontinue development in the future. If that were to occur, we may have to curtail the development of a particular product candidate, reduce or delay its development program or one or more of our other development programs, delay its potential commercialization or reduce the scope of our sales or marketing activities, or increase our expenditures and undertake development or commercialization activities at our own expense. If we elect to increase our expenditures to fund development or commercialization activities on our own, we may need to obtain additional capital, which may not be available to us on acceptable terms or at all. If we do not have sufficient funds, we will not be able to bring our product candidates to market and generate product revenue. If we do enter into a new collaboration agreement, we could be subject to the following risks, each of which may materially harm our business, commercialization prospects and financial condition:

- we may not be able to control the amount and timing of resources that the collaboration partner devotes to the product development program;
- the collaboration partner may experience financial difficulties;
- we may be required to relinquish important rights such as marketing, distribution and intellectual property rights;
- a collaborator could move forward with a competing product developed either independently or in collaboration with third parties, including our competitors; or

- business combinations or significant changes in a collaborator's business strategy may adversely affect our willingness to complete our obligations under any arrangement.

If we license products or businesses, we may not be able to realize the benefit of such transactions if we are unable to successfully integrate them with our existing operations and company culture. We cannot be certain that, following a strategic transaction or license, we will achieve the results, revenue or specific net income that justifies such transaction.

We rely on third-party manufacturers to produce our product candidates. Any failure by a third-party manufacturer to produce acceptable product candidates for us may delay or impair our ability to initiate or complete our clinical trials or commercialize approved products.

We do not currently own or operate any manufacturing facilities nor do we have any in-house manufacturing experience or personnel. We work with third-party contract manufacturers to produce sufficient quantities of our product candidates for preclinical testing and clinical trials, in compliance with applicable regulatory and quality standards, and intend to do so for the commercial manufacture of our products, if approved. If we are unable to arrange for such third-party manufacturing sources, or fail to do so on commercially reasonable terms, we may not be able to successfully produce sufficient supply of product candidate or we may be delayed in doing so. For example, public health epidemics, such as the COVID-19 pandemic currently impacting multiple jurisdictions worldwide, including the United States, may impact the ability of our existing or future manufacturers to perform their obligations under our manufacturing agreements with such parties. Such failure or substantial delay could materially harm our business.

Our TriTAC and ProTriTAC platforms rely on third parties for the biological materials used in testing and qualifying our products. Some biological materials have not always met our expectations or requirements, and any disruption in the supply of these biological materials could materially adversely affect our business. Although we have control processes and screening procedures, biological materials are susceptible to damage and contamination and may contain active pathogens. Improper storage of these materials, by us or any third-party suppliers, may require us to destroy some of our biological raw materials or product candidates.

Reliance on third-party manufacturers entails risks to which we would not be subject if we manufactured product candidates ourselves, including reliance on the third party for regulatory compliance and quality control and quality assurance, volume and timing of production, the possibility of breach of the manufacturing agreement by the third party because of factors beyond our control (including a failure to synthesize and manufacture our product candidates in accordance with our product specifications) and the possibility of termination or nonrenewal of the agreement by the third party at a time that is costly or damaging to us. In addition, the FDA and other regulatory authorities require that our product candidates be manufactured according to cGMPs. Pharmaceutical manufacturers and their subcontractors are required to register their facilities or products manufactured at the time of submission of the marketing application and then annually thereafter with the FDA and certain state and foreign agencies. They are also subject to periodic unannounced inspections by the FDA, state and other foreign authorities. Any subsequent discovery of problems with a product, or a manufacturing or laboratory facility used by us or our third-party suppliers, may result in restrictions on the product or on the manufacturing or laboratory facility, including marketed product recall, suspension of manufacturing, product seizure, or a voluntary withdrawal of the drug from the market. We may have little to no control regarding the occurrence of third-party manufacturer incidents. Any failure by our third-party manufacturers to comply with cGMP or failure to scale up manufacturing processes, including any failure to deliver sufficient quantities of product candidates in a timely manner, could lead to an irreparable delay in our development or commercialization timeline.

To date, we have relied on one single-source supplier for bulk drug substance. The loss of this supplier or its failure to supply us with BDS on a timely basis could cause a delay in our ability to develop our product candidates and adversely affect our business.

We depend on one single-source supplier for bulk drug substance, or BDS. Although we believe that we have a substantial reserve of BDS to support our current clinical trial programs, there can be no assurance that our supply of BDS will not be limited, interrupted, or of satisfactory quality or continue to be available at acceptable prices. Additionally, we do not have any control over the process or timing of the acquisition or manufacture of materials by our supplier, and cannot ensure that it will deliver to us the BDS we order on time, or at all. The loss of BDS provided by this supplier could require us to change the design of our product candidate development process based on the functions, limitations, features and specifications of the replacement.

In addition, the lead time needed to establish a relationship with a new supplier can be lengthy, and we may experience delays in meeting demand in the event we must switch to a new supplier. The time and effort to qualify a new supplier could result in additional costs, diversion of resources or reduced manufacturing yields, any of which would negatively impact our operating results. Our reliance on this single-source supplier exposes us to certain risks, including the following:

- our supplier may cease or reduce production or deliveries, raise prices or renegotiate terms;
- we may be unable to locate a suitable replacement on acceptable terms or on a timely basis, if at all;
- if there is a disruption to our single-source supplier's operations, and if we are unable to enter into arrangements with alternative suppliers, we may need to halt our clinical trial programs;

- delays caused by supply issues may harm our reputation, frustrate our clinical trial sites and cause them to turn to our competitors for future projects; and
- our ability to develop our product candidates could be materially and adversely impacted if the single-source supplier upon which we rely were to experience a significant business challenge, disruption or failure due to issues such as financial difficulties or bankruptcy, issues relating to other customers such as regulatory or quality compliance issues, or other financial, legal, regulatory or reputational issues.

Moreover, to meet anticipated demand, our single-source supplier may need to increase manufacturing capacity, which could involve significant challenges. This may require us and our supplier to invest substantial additional funds and hire and retain the technical personnel who have the necessary experience. Neither we nor our supplier may successfully complete any required increase to existing manufacturing capacity in a timely manner, or at all.

We currently rely on third-party suppliers and other third parties for production of our product candidates and our dependence on these third parties may impair the advancement of our research and development programs and the development of our product candidates. Moreover, we intend to rely on third parties to produce commercial supplies of any approved product candidate and our commercialization of any of our product candidates could be stopped, delayed or made less profitable if those third parties fail to obtain approval of the FDA or comparable regulatory authorities, fail to provide us with sufficient quantities of product or fail to do so at acceptable quality levels or prices or fail to otherwise complete their duties in compliance with their obligations to us or other parties.

We do not currently own or operate any manufacturing facilities, nor do we have any in-house manufacturing experience or personnel. We rely on and expect to continue to rely on third-party contract manufacturing organizations, or CMOs, for the supply of current good manufacturing practice-grade, or cGMP-grade, clinical trial materials and commercial quantities of our product candidates and products, if approved. Reliance on third-party providers may expose us to more risk than if we were to manufacture product candidates ourselves. The facilities used by our contract manufacturers to manufacture our commercial products must be approved by the FDA or other global regulatory authorities pursuant to inspections that will be conducted after we submit our marketing authorization application or BLA to the relevant agency. We have limited control over the manufacturing process of, and beyond contractual terms, we are completely dependent on our contract manufacturing partners for compliance with cGMP for the manufacture of our product candidates. If our contract manufacturers cannot successfully manufacture material that conforms to our specifications and the strict regulatory requirements of global regulatory authorities they will not be able to secure and/or maintain regulatory approval for their manufacturing facilities. In addition, we have limited control over the ability of our contract manufacturers to maintain adequate quality control, quality assurance and qualified personnel. If the FDA or a comparable foreign regulatory authority does not approve these facilities for the manufacture of our product candidates or if it withdraws any such approval in the future, we may need to find alternative manufacturing facilities, which would significantly impact our ability to develop, obtain regulatory approval for or market our product candidates, if approved. In addition, any failure to achieve and maintain compliance with these laws, regulations and standards could subject us to the risk that we may have to delay the manufacturing of our product candidates or approved products, which would adversely affect our business and reputation. Furthermore, third-party providers may breach existing agreements they have with us because of factors beyond our control. They may also terminate or refuse to renew their agreement because of their own financial difficulties or business priorities, at a time that is costly or otherwise inconvenient for us. If we were unable to find an adequate replacement or another acceptable service provider in time, our clinical trials could be delayed or our commercial activities could be harmed. In addition, the fact that we are dependent on our collaborators, our suppliers and other third parties for the manufacture, filling, storage and distribution of our product candidates means that we are subject to the risk that the products may have manufacturing defects that would prevent the sale of these products to global markets. The inability to sell our products containing such defects could adversely affect our business, financial condition and results of operations.

Growth in the costs and expenses of components or raw materials may also adversely influence our business, financial condition and results of operations. Supply sources could be interrupted from time to time and, if interrupted, there is no guarantee that supplies could be resumed (whether in part or in whole) within a reasonable timeframe and at an acceptable cost or at all.

We rely on our manufacturers and other subcontractors to comply with and respect the proprietary rights of others in conducting their contractual obligations for us. If our manufacturers or other subcontractors fail to acquire the proper licenses or otherwise infringe third-party proprietary rights in the course of completing their contractual obligations to us, we may have to find alternative manufacturers or defend against claims of infringement, either of which would significantly impact our ability to develop, obtain regulatory approval for or market our product candidates, if approved. In addition, although we require manufacturers and service providers to assign or license to us their interest in and to intellectual property rights to improvements made by them in the development and manufacturing process for our products, in future contracts that we may enter into with these third parties, we may not own, or may have to share, these intellectual property rights to improvements.

We depend on third-party suppliers for key raw materials used in our manufacturing processes, and the loss of these third-party suppliers or their inability to supply us with adequate raw materials could harm our business.

We rely on our manufacturers to purchase the raw materials necessary to produce our product candidates for our clinical trials. There are a limited number of suppliers for raw materials that we use to manufacture our drugs and our manufacturers may qualify second-source suppliers of critical raw materials to prevent a possible disruption of the supply of the materials necessary to produce our product candidates for our clinical trials, and if approved, ultimately for commercial sale. We do not have any control over the process or timing of the acquisition of these raw materials by our manufacturers. We cannot be sure that the third-party raw material suppliers will remain in business, or that they will not be purchased by a company that is not interested in continuing to produce these materials. In addition, the lead time needed to qualify a new raw material supplier can be lengthy, and we may experience delays in meeting demand for our product in the event a new supplier must be used. The time and effort to qualify a new raw material supplier could result in additional costs, diversion of resources or inability to produce a comparable product candidate, any of which would negatively impact our operating results. Any significant delay in the supply of a product candidate for an ongoing clinical trial due to the need to replace a third-party raw material manufacturer could considerably delay completion of our clinical trials, product testing and potential regulatory approval of our product candidates. If our manufacturers or we are unable to purchase these raw materials after regulatory approval has been obtained for our product candidates, the commercial launch of our product candidates would be delayed or there would be a shortage in supply, which would impair our ability to generate revenues from the sale of our product candidates.

Risks Related to Intellectual Property and Information Technology

We rely on patents and other intellectual property rights to protect our technology, including product candidates and our TriTAC and ProTriTAC platforms, the enforcement, defense and maintenance of which may be challenging and costly. Failure to enforce or protect these rights adequately could harm our ability to compete and impair our business.

Our commercial success depends in part on obtaining and maintaining patents and other forms of intellectual property rights for technology related to our TriTAC and ProTriTAC platforms, including, but not limited to, our product candidates, methods used to manufacture those product candidates, formulations thereof and the methods for treating patients using those product candidates. Given that the development of our technology and product candidates is at an early stage, our intellectual property portfolio with respect to certain aspects of our technology and product candidates is also at an early stage. Failure to protect or to obtain, maintain or extend adequate patent and other intellectual property rights could materially adversely affect our ability to develop and market our product candidates.

We seek to protect our proprietary position by filing patent applications in the United States and abroad related to our novel platform technologies and product candidates that are important to our business. The patent prosecution process is expensive and time-consuming, and we 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 will fail to identify patentable aspects of inventions made in the course of development and commercialization activities before it is too late to obtain patent protection on them. Further, the issuance, scope, validity, enforceability and commercial value of our current or future patent rights are highly uncertain. Our pending and future patent applications may not result in patents being issued which protect our technology or product candidates, in whole or in part, or which effectively prevent others from commercializing competitive technologies and product candidates. The patent examination process may require us to narrow the scope of the claims of our pending and future patent applications, which may limit the scope of patent protection that may be obtained. We cannot assure you that all of the potentially relevant prior art relating to our patents and patent applications has been found. If such prior art exists, it can invalidate a patent or prevent a patent from issuing from a pending patent application. Even if patents do successfully issue and even if such patents cover our product candidates, third parties may initiate opposition, interference, re-examination, post-grant review, inter partes review, nullification or derivation action in court or before patent offices, or similar proceedings challenging the validity, enforceability or scope of such patents, which may result in the patent claims being narrowed or invalidated. Our patent applications cannot be enforced against third parties practicing the technology claimed in such applications unless and until a patent issues from such applications, and then only to the extent the issued claims cover the technology.

Because patent applications in the United States and other jurisdictions are confidential for a period of time after filing, and some remain so until issued, we cannot be certain that we were the first to file any patent application related to our technology, including a particular product candidate. As a result, the issuance, scope, validity, enforceability and commercial value of our patent rights are highly uncertain.

Furthermore, if third parties have filed such patent applications on or before March 15, 2013, an interference proceeding can be initiated by such third parties to determine who was the first to invent any of the subject matter covered by the patent claims of our applications. If third parties have filed such applications after March 15, 2013, a derivation proceeding can be initiated by such third parties to determine whether our invention was derived from theirs. Even where we have a valid and enforceable patent, we may not be able to exclude others from practicing our invention where the other party can show that they used the invention in commerce before our filing date or the other party benefits from a compulsory license.

We may become involved in lawsuits to protect or enforce our issued patents relating to one or more of our product candidates or our TriTAC and ProTriTAC platforms, which could ultimately render our patents invalid or unenforceable and adversely affect our competitive position.

Competitors may infringe our patents or other intellectual property that relate to our TriTAC and ProTriTAC platforms and product candidates, their respective methods of use, manufacture and formulations thereof. To protect our competitive position and counter infringement or unauthorized use, we may from time to time need to resort to litigation to enforce or defend any patents or other intellectual property rights owned by us by filing infringement claims. As enforcement of intellectual property rights is difficult, unpredictable and expensive, we may fail in enforcing our rights—in which case our competitors may be permitted to use our technology without being required to pay us any license fees. In addition, litigation involving our patents carries the risk that one or more of our patents will be held invalid (in whole or in part, on a claim-by-claim basis) or held unenforceable. Such an adverse court ruling could allow third parties to commercialize our product candidates or methods, or our TriTAC and ProTriTAC platforms, and then compete directly with us, without payment to us.

If we were to initiate legal proceedings against a third party to enforce a patent covering one of our product candidates or methods, the defendant could counterclaim that our patent is invalid and/or unenforceable. In patent litigation in the United States or in certain jurisdictions in Europe, defendant counterclaims alleging invalidity and/or unenforceability are commonplace. Grounds for a validity challenge could be an alleged failure to meet any of several statutory requirements, for example, lack of novelty, obviousness or non-enablement. Grounds for an unenforceability assertion could be an allegation that someone connected with prosecution of the patent withheld relevant information from the U.S. Patent and Trademark Office, or made a misleading statement, during prosecution. Third parties may also raise similar invalidity and/or unenforceability claims before administrative bodies in the United States or abroad, even outside the context of litigation. Such mechanisms include inter partes review, ex parte re-examination and post grant review in the United States, and equivalent proceedings in foreign jurisdictions (*e.g.*, opposition proceedings). The outcome following legal assertions of invalidity and unenforceability during patent litigation is unpredictable. With respect to the validity question, for example, we cannot be certain that there is no invalidating prior art, of which we and the patent examiner were unaware during prosecution. If a defendant were to prevail on a legal assertion of invalidity and/or unenforceability, we would lose at least part, and perhaps all, of the patent protection on one or more of our technologies, product candidates, methods or certain aspects of our TriTAC and ProTriTAC platforms. Such a loss of patent protection could have a material adverse impact on our business.

There is also a risk that, even if the validity of our patents is upheld, the court will construe our patent's claims narrowly or decide that we do not have the right to stop the other party from using the invention at issue on the grounds that our patent claims do not cover the invention. Even if we establish infringement, the court may decide not to grant an injunction against further infringing activity and instead award only monetary damages, which may or may not be an adequate remedy. Furthermore, because of the substantial amount of discovery required in connection with intellectual property litigation, there is a risk that some of our confidential information could be compromised by disclosure during litigation. Patents and other intellectual property rights also will not protect our technology if competitors design around our protected technology without infringing our patents or other intellectual property rights.

Because of the expense and uncertainty of litigation, we may not be in a position to enforce our intellectual property rights against third parties. Instead, we may conclude that even if a third party is infringing our issued patents relating to our TriTAC and ProTriTAC platforms and/or product candidates, any patents that may be issued as a result of our pending or future patent applications or other intellectual property rights, the risk-adjusted cost of bringing and enforcing such a claim or action may be too high or not in the best interest of us or our stockholders. In such cases, we may decide that the more prudent course of action is to simply monitor the situation or initiate or seek some other non-litigious action or solution.

We may fail to identify relevant third-party patents or may incorrectly interpret the relevance, scope or expiration of a third-party patent which might adversely affect our ability to develop our TriTAC and ProTriTAC platforms and product candidates.

We cannot guarantee that our operations and activities do not, or will not in the future, infringe existing or future patents. We also cannot guarantee that any of our patent searches or analyses, including the identification of relevant patents, the scope of patent claims or the expiration of relevant patents, are complete or thorough, nor can we be certain that we have identified each and every third-party patent and pending application in the United States and abroad that is relevant to our TriTAC and ProTriTAC platforms or necessary for the commercialization of our product candidates in any jurisdiction.

Numerous U.S. and foreign patents and pending patent applications exist in our market that are owned by third parties. Our competitors in both the United States and abroad, many of which have substantially greater resources and have made substantial investments in patent portfolios and competing technologies, may have applied for or obtained or may in the future apply for and obtain, patents that will prevent, limit or otherwise interfere with our ability to make, use and sell our product candidates. We do not always conduct independent reviews of pending patent applications of and patents issued to third parties. Patent applications in the United States and elsewhere are typically published approximately 18 months after the earliest filing for which priority is claimed,

with such earliest filing date being commonly referred to as the priority date. Certain U.S. applications that will not be filed outside the United States can remain confidential until patents are issued. In addition, patent applications in the United States and elsewhere can be pending for many years before issuance, and unintentionally abandoned patents or applications can be revived. Furthermore, pending patent applications that have been published can, subject to certain limitations, be later amended in a manner that could cover our technologies, our product candidates or the use thereof. As such, there may be applications of third parties now pending or recently revived patents of which we are unaware. These applications may later result in issued patents, or the revival of previously abandoned patents, that will prevent, limit or otherwise interfere with our ability to make, use or sell our product candidates.

The scope of a patent claim is determined by an interpretation of law, the written disclosure in a patent and the patent's prosecution history. Our interpretation of the relevance or the scope of a patent or a pending application may be incorrect, which may negatively impact our ability to market our product candidates. We may incorrectly determine that our product candidates are not covered by a third-party patent or may incorrectly predict whether a third party's pending application will issue with claims of relevant scope. Our determination of the expiration date of any patent in the United States or abroad that we consider relevant may be incorrect, which may negatively impact our ability to develop and market our product candidates. Our failure to identify and correctly interpret relevant patents may negatively impact our ability to develop and market our product candidates.

We cannot provide any assurances that third-party patents do not exist which might be enforced against our current technology, including our platform technologies, product candidates and their respective methods of use, manufacture and formulations thereof, and could result in either an injunction prohibiting our manufacture or future sales, or, with respect to our future sales, an obligation on our part to pay royalties and/or other forms of compensation to third parties, which could be significant.

Intellectual property rights of third parties could adversely affect our ability to develop or commercialize our product candidates, such that we could be required to litigate or obtain licenses from third parties in order to develop or market our product candidates. Such litigation or licenses could be costly or not available on commercially reasonable terms.

Our commercial success depends, in part, on our ability to develop, manufacture, market and sell our product candidates without infringing the intellectual property and other proprietary rights of third parties. Our competitive position may suffer if patents issued to third parties or other third-party intellectual property rights cover our methods or product candidates or elements thereof, our manufacture or uses relevant to our development plans, our product candidates, or other attributes of our product candidates or our TriTAC and ProTriTAC platforms. In such cases, we may not be in a position to develop or commercialize product candidates unless we successfully pursue litigation to nullify or invalidate the third-party intellectual property right concerned, which can be expensive and time consuming, or enter into a license agreement with the intellectual property right holder, if available on commercially reasonable terms.

There is a substantial amount of intellectual property litigation in the biotechnology and pharmaceutical industries, and we may become party to, or threatened with, litigation or other adversarial proceedings regarding intellectual property rights with respect to our product candidates. For example, on November 25, 2018, we received a letter from counsel for Maverick alleging that our ProTriTAC program is subject to the non-compete provision of our Asset Transfer Agreement with Maverick. On January 3, 2019, Maverick filed a complaint against us in the Delaware Court of Chancery and a motion for a temporary restraining order seeking to prohibit us from further developing our ProTriTAC platform. The complaint alleges claims for breach of contract and misappropriation of trade secrets, and seeks as relief, among other things, a declaration that our ProTriTAC technology impermissibly competes in the Maverick Field (as defined in the Asset Transfer Agreement), a preliminary and permanent injunction and unspecified damages. We believe that the mechanism of action employed by our ProTriTAC platform falls outside the Maverick Field. On May 8, 2019, Millennium, a wholly owned subsidiary of Takeda Pharmaceutical Company Limited, was granted permission by the court to intervene in the litigation. Millennium and Maverick are parties to a collaboration and warrant agreement, and Millennium's complaint in intervention alleged, in part, that we fraudulently induced Millennium to enter into the agreements with Maverick. Millennium asserted various tort claims against us. A trial on Maverick and Millennium's claims was held on September 9-13 and 17, 2019.

On April 3, 2020, the Delaware Chancery Court issued a memorandum opinion which related only to our ProTriTAC platform. The Court ruled in our favor on Maverick's claims for breach of contract and misappropriation of trade secrets and dismissed those claims. As part of that ruling, the Court determined that our ProTriTAC technology is not in a field that is subject to a four year non-compete. The Court found in favor of Millennium on its claim against us for fraud in inducing Millennium's investment in Maverick.

The Court found that Millennium had not proved its claims for tortious interference with contract and business relations or unfair competition, and those claims were dismissed. The litigation is currently in the damages phase, at the conclusion of which damages related to the fraud ruling, if any, will be determined. The Court held a one-day trial on Millennium's damages claim on September 22, 2020, closing arguments were held December 8, 2020, and the matter has now been taken under submission by the Court. Through evidence and argument presented at trial and in related briefing, Millennium advanced a theory of alleged damages as high as approximately $147 million plus certain fees and interest. We cannot predict the amount of damages for which the Court may find us liable, or the outcome of any appeal that might result from a final judgment in the case. We could be required to pay significant monetary damages in connection with the Court's determination of damages related to the fraud ruling, which could have a material adverse effect on our financial condition and results of operations.

The various markets in which we plan to operate are subject to frequent and extensive litigation regarding patents and other intellectual property rights. In addition, many companies in intellectual property-dependent industries, including those producing therapeutics to treat and potentially cure cancer, have employed intellectual property litigation as a means to gain an advantage over competitors. As a result, we may be required to defend against claims of intellectual property infringement that may be asserted by our competitors against us and, if the outcome of any such litigation is adverse to us, it may affect our ability to compete effectively.

Third-party intellectual property right holders, including our competitors, may assert and actively bring infringement claims against us based on existing or future intellectual property rights. The pharmaceutical and biotechnology industries have produced a significant number of patents, and it may not always be clear to industry participants, including us, which patents cover various types of product candidates or methods of use. The coverage of patents is subject to interpretation by the courts, and the interpretation is not always uniform.

If we are sued for patent infringement, we would need to demonstrate that our product candidates or platform technologies either do not infringe the patent claims of a relevant patent or that the patent claims are invalid or unenforceable, and we may not be able to do this. Proving invalidity may be difficult. For example, in the United States, proving invalidity in court requires a showing of clear and convincing evidence to overcome the presumption of validity enjoyed by issued patents. Even if we are successful in these proceedings, we may incur substantial costs and the time and attention of our management and scientific personnel could be diverted in pursuing these proceedings, which could have a material adverse effect on our business and operations. In addition, we may not have sufficient resources to bring these actions to a successful conclusion. In addition, we may not be able to successfully settle or otherwise resolve such infringement claims. If we are unable to successfully settle future claims on terms acceptable to us, we may be required to engage or continue costly, unpredictable and time-consuming litigation and may be prevented from or experience substantial delays in marketing our product candidates.

Our involvement in litigation, and in any interferences, opposition proceedings or other intellectual property proceedings inside and outside of the United States may divert management from focusing on business operations, could cause us to spend significant amounts of money and may have no guarantee of success. Any current and potential intellectual property litigation also could force us to do one or more of the following:

- stop selling, incorporating, manufacturing or using our product candidates or any products, if approved, in the United States and/or other jurisdictions that use the subject intellectual property;
- obtain from a third party asserting its intellectual property rights, a license to sell or use the relevant technology, including the obligation to pay royalties, which license may not be available on reasonable terms, or at all, or may be non-exclusive thereby giving our competitors access to the same technologies licensed to us;
- redesign those products or processes that use any allegedly infringing or misappropriated technology, which may result in significant cost or delay to us, or which redesign could be technically infeasible; or
- pay damages, including the possibility of treble damages and attorneys' fees in a patent case if a court finds us to have willfully infringed certain intellectual property rights.

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

Litigation or other legal proceedings relating to intellectual property claims, with or without merit, is unpredictable and generally expensive and time consuming. Even if resolved in our favor, such litigation and other legal proceedings may cause us to incur significant expenses and is likely to divert significant resources from our core business, including distracting our technical and management personnel from their normal responsibilities, and may impact our reputation. In addition, there could be public announcements of the results of hearings, motions or other interim proceedings or developments and if securities analysts or investors perceive these results to be negative, we could have a substantial adverse effect on the price of our common shares. Such litigation or proceedings could substantially increase our operating losses and reduce our resources available for development activities. We may not have sufficient financial or other resources to adequately conduct such litigation or proceedings. Some of our competitors may be able to sustain the costs of such litigation or proceedings more effectively than we can because of their substantially greater financial resources. Uncertainties resulting from the initiation and continuation of patent litigation or other proceedings could have a material adverse effect on our ability to compete in the marketplace.

We may need to obtain additional licenses of third-party technology that may not be available to us or are available only on commercially unreasonable terms, and which may cause us to operate our business in a more costly or otherwise adverse manner that was not anticipated.

We currently have rights to the intellectual property, including patent applications relating to our TriTAC and ProTriTAC platforms and our product candidates. From time to time, we may be required to license technologies relating to our therapeutic research programs from additional third parties to further develop or commercialize our platform technologies and product candidates. Similarly, the targets of our product candidates have also been the subject of research by many companies that have filed patent applications or have patents related to such targets and therapeutic methods relating to those targets. There can be no assurance any such patents will not be asserted against us or that we will not need to seek licenses from such third parties. We may not be able to secure such licenses on acceptable terms, if at all, and any such litigation would be costly and time-consuming.

Should we be required to obtain licenses to any third-party technology, including any such patents required to manufacture, use or sell our product candidates, the growth of our business will likely depend in part on our ability to acquire, in-license, maintain or use these proprietary rights. The inability to obtain any third-party license required to develop or commercialize any of our product candidates could cause us to abandon any related efforts, which could seriously harm our business and operations.

In addition, our product candidates may require specific formulations to work effectively and efficiently and the rights to these formulations may be held by others. We may be unable to acquire or in-license any compositions, methods of use, processes, or other third-party intellectual property rights from third parties that we identify as necessary for our product candidates. The licensing and acquisition of third-party intellectual property rights is a competitive area, and a number of more established companies are also pursuing strategies to license or acquire third-party intellectual property rights that we may consider attractive. These established companies may have a competitive advantage over us due to their size, cash resources, and greater clinical development and commercialization capabilities.

Our involvement in litigation, and in any interferences, opposition proceedings or other intellectual property proceedings inside and outside of the United States may divert management from focusing on business operations, could cause us to spend significant amounts of money and may have no guarantee of success. Any current and potential intellectual property litigation also could force us to do one or more of the following:

- stop selling, incorporating, manufacturing or using our product candidates or any products, if approved, in the United States and/or other jurisdictions that use the subject intellectual property;
- obtain from a third party asserting its intellectual property rights, a license to sell or use the relevant technology, including the obligation to pay royalties, which license may not be available on reasonable

In addition, companies that perceive us to be a competitor may be unwilling to assign or license rights to us. We also may be unable to license or acquire third-party intellectual property rights on terms that would allow us to make an appropriate return on our investment. Even if we are able to obtain a license, it may be non-exclusive, thereby giving our competitors access to the same technologies licensed to us. If we are unable to successfully obtain a license to third-party intellectual property rights necessary for the development of a product candidate or program, we may have to abandon development of that product candidate or program and our business and financial condition could suffer.

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

Our registered or unregistered trademarks or trade names may be challenged, infringed, circumvented or declared generic or determined to be infringing on other marks. We may not be able to protect our rights to these trademarks and trade names, which we need to build name recognition by potential collaborators, partners or customers in our markets of interest. Over the long term, if we are unable to establish name recognition based on our trademarks and trade names, then we may not be able to compete effectively and our business may be adversely affected. If other entities use trademarks similar to ours in different jurisdictions, or have senior rights to ours, it could interfere with our use of our current trademarks throughout the world.

During trademark registration proceedings, we may receive rejections. Although we would be given an opportunity to respond to those rejections, we may be unable to overcome such rejections. In addition, in both the USPTO and comparable agencies in many foreign jurisdictions, third parties are given an opportunity to oppose pending trademark applications and to seek to cancel registered trademarks. Opposition or cancellation proceedings may be filed against our trademarks, which may not survive such proceedings. If we are unable to establish name recognition based on our trademarks and trade names, we may not be able to compete effectively and our business may be adversely affected.

We may license our trademarks and trade names to third parties, such as distributors. Though these license agreements may provide guidelines for how our trademarks and trade names may be used, a breach of these agreements or misuse of our trademarks and tradenames by our licensees may jeopardize our rights in or diminish the goodwill associated with our trademarks and trade names.

Patent terms may be inadequate to protect our competitive position on our product candidates for an adequate amount of time.

Patents have a limited lifespan. In the United States, if all maintenance fees are timely paid, the natural expiration of a patent is generally 20 years from its earliest U.S. non-provisional filing date. Various extensions may be available, but the life of a patent, and the protection it affords, is limited. Even if patents covering our product candidates are obtained, once the patent life has expired for a product, we may be open to competition from competitive medications, including biosimilar or generic medications. In addition, although upon issuance in the United States a patent's life can be increased based on certain delays caused by the United States Patent and Trademark Office, or the USPTO, this increase can be reduced or eliminated based on certain delays caused by the patent applicant during patent prosecution. If we do not have sufficient patent life to protect our product candidates and any products, if approved, our business and results of operations will be adversely affected. Given the amount of time required for the development, testing and regulatory review of new product candidates, patents protecting such candidates might expire before or shortly after such candidates are commercialized. As a result, our patent portfolio may not provide us with sufficient rights to exclude others from commercializing products similar or identical to ours.

If we do not obtain protection under the Hatch-Waxman Amendments and similar non-U.S. legislation for extending the term of patents covering each of our product candidates, our business may be materially harmed

Depending upon the timing, duration and conditions of FDA marketing approval of our product candidates, one or more of our U.S. patents may be eligible for limited patent term extension under the Drug Price Competition and Patent Term Restoration Act of 1984, referred to as the Hatch-Waxman Amendments, and similar legislation in the European Union. The Hatch-Waxman Amendments permit a patent term extension of up to five years for a patent covering an approved product as compensation for effective patent term lost during product development and the FDA regulatory review process. However, we may not receive an extension if we fail to apply within applicable deadlines, fail to apply prior to expiration of relevant patents or otherwise fail to satisfy applicable requirements. Moreover, the length of the extension could be less than we request. If we are unable to obtain patent term extension or the term of any such extension is less than we request, the period during which we can enforce our patent rights for that product will be shortened and our competitors may obtain approval to market competing products sooner. As a result, our revenue from applicable products could be reduced, possibly materially.

We enjoy only limited geographical protection with respect to certain patents and may not be able to protect our intellectual property rights throughout the world.

Patents are of national or regional effect. While we will endeavor to try to protect our technologies, products and product candidates with intellectual property rights such as patents, as appropriate, the process of obtaining patents is time-consuming, expensive and sometimes unpredictable in other countries. As such, we may not be able to prevent third parties from practicing our inventions in all countries outside the United States, or from selling or importing products made using our inventions in and into the United States or other jurisdictions.

International applications under the Patent Cooperation Treaty, or PCT, are usually filed within 12 months after the priority filing. Based on the PCT filing, national and regional patent applications may be filed in additional jurisdictions where we believe our product candidates may be marketed. We have so far not filed for patent protection in all national and regional jurisdictions where such protection may be available. Filing, prosecuting and defending patents on all of our research programs and product candidates in all countries throughout the world would be prohibitively expensive, and our intellectual property rights in some countries outside the United States can be less extensive than those in the United States. In addition, we may decide to abandon national and regional patent applications before grant. Finally, the grant proceeding of each national/regional patent is an independent proceeding which may lead to situations in which applications might in some jurisdictions be refused by the relevant patent offices, while granted by others. Further, the standards applied by the USPTO and foreign patent offices in granting patents are not always applied uniformly or predictably. It is common that depending on the country, the scope of patent protection may vary for the same product candidate and/or technology. As such, we do not know the degree of future protection that we will have on our technologies and product candidates.

Competitors may use our or our collaboration partners' technologies in jurisdictions where we have not obtained patent protection to develop their own products and, further, may export otherwise infringing products to territories where we or our collaboration partners have patent protection, but enforcement is not as strong as that in the United States. These products may compete with our product candidates, and our or our collaboration partners' patents or other intellectual property rights may not be effective or sufficient to prevent them from competing.

The laws of some jurisdictions, particularly certain developing countries, do not protect intellectual property rights, particularly those relating to pharmaceuticals or biologics, to the same extent as laws in the United States, and many companies have encountered significant difficulties in protecting and defending such rights in such jurisdictions. Consequently, we may not be able to prevent third parties from practicing our inventions in all countries outside the United States, or from selling or importing products made using our inventions in and into the United States or other jurisdictions. If we encounter difficulties in protecting, or are otherwise precluded from effectively protecting, the intellectual property rights important for our business in such jurisdictions, the value of these rights may be diminished and we may face additional competition from others in those jurisdictions.

Proceedings to enforce our patent rights in foreign jurisdictions could result in substantial costs and divert our efforts and attention from other aspects of our business, could put our patents at risk of being invalidated or interpreted narrowly and our patent applications at risk of not issuing, and could provoke third parties to assert claims against us. We may not prevail in any lawsuits that we initiate and the damages or other remedies awarded, if any, may not be commercially meaningful. Accordingly, our efforts to enforce our intellectual property rights around the world may be inadequate to obtain significant commercial advantage from the intellectual property that we develop or license.

Some countries, including China and India, have compulsory licensing laws under which a patent owner may be compelled to grant licenses to third parties. In addition, some countries limit the enforceability of patents against government agencies or government contractors. In these countries, the patent owner may have limited remedies, which could materially diminish the value of such patent. If we are forced to grant a license to third parties with respect to any patents relevant to our business, our competitive position may be impaired and our business and results of operations may be adversely affected.

We may become subject to claims challenging the inventorship or ownership of our patents and other intellectual property.

We may be subject to claims that former employees, consultants, independent contractors, collaborators or other third parties have an interest in our patents or other intellectual property as an owner, co-owner, inventor or co-inventor. The failure to name the proper inventors on a patent application can result in the patents issuing thereon being unenforceable. Inventorship disputes may arise from conflicting views regarding the contributions of different individuals named as inventors, the effects of foreign laws where foreign nationals are involved in the development of the subject matter of the patent, conflicting obligations of third parties involved in developing our product candidates or as a result of questions regarding co-ownership of potential joint inventions. Litigation may be necessary to resolve these and other claims challenging inventorship and/or ownership. Alternatively, or additionally, we may enter into agreements to clarify the scope of our rights in such intellectual property. If we fail in defending any such claims, in addition to paying monetary damages, we may lose valuable intellectual property rights, such as exclusive ownership of, or right to use, valuable intellectual property. Such an outcome could have a material adverse effect on our business. Even if we are successful in defending against such claims, litigation could result in substantial costs and be a distraction to management and other employees.

Intellectual property rights do not necessarily address all potential threats to our competitive advantage.

The degree of future protection afforded by our intellectual property rights is uncertain because intellectual property rights have limitations, and may not adequately protect our business, or permit us to maintain our competitive advantage. The following examples are illustrative:

- others may be able to make product candidates similar to our product candidates but that are not covered by the claims of the patents that we own or have exclusively licensed;
- the patents of third parties may have an adverse effect on our business;
- we or any future strategic partners might not have been the first to conceive or reduce to practice the inventions covered by the issued patent or pending patent application that we own or have exclusively licensed;
- we or any future strategic partners might not have been the first to file patent applications covering certain of our inventions;
- others may independently develop similar or alternative technologies or duplicate any of our technologies without infringing our intellectual property rights;
- it is possible that our pending patent applications will not lead to issued patents;
- issued patents that we own or have exclusively licensed may not provide us with any competitive advantage, or may be held invalid or unenforceable, as a result of legal challenges by our competitors;
- we cannot predict the degree and range of protection any issued patents will afford us against competitors, whether or not others will obtain patents claiming aspects similar to those covered by our patents and patent applications, or whether we will need to initiate litigation or administrative proceedings which may be costly whether we win or lose;
- our competitors might conduct research and development activities in countries where we do not have patent rights and then use the information learned from such activities to develop competitive products for sale in our major commercial markets;
- third parties performing manufacturing or testing for us using our product candidates or technologies could use the intellectual property of others without obtaining a proper license; and
- we may not develop additional technologies that are patentable.

Should any of these events occur, they could significantly harm our business, results of operations and prospects.

Composition of matter patents for biological and pharmaceutical products such as our product candidates are generally considered to be the strongest form of intellectual property protection for those types of products, as such patents provide protection without regard to any method of use. We cannot be certain that the claims in our pending patent applications covering composition of matter of our product candidates will be considered patentable by the USPTO or by patent offices in foreign countries, or that the claims in any of our issued patents will be considered valid and enforceable by courts in the United States or foreign countries. Method of use patents protect the use of a product for the specified method. This type of patent does not prevent a competitor from making and marketing a product that is identical to our product for an indication that is outside the scope of the patented method. Moreover, even if competitors do not actively promote their product for our targeted indications, physicians may prescribe these products "off-label." Although off-label prescriptions may infringe or contribute to the infringement of method of use patents, the practice is common and such infringement is difficult to prevent or prosecute.

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

As is the case with other biopharmaceutical companies, our success is heavily dependent on intellectual property, particularly patents. Obtaining and enforcing patents in the biopharmaceutical industry involve both technological complexity and legal complexity. Recent U.S. Supreme Court rulings have narrowed the scope of patent protection available in certain circumstances and weakened the rights of patent owners in certain situations. Therefore, obtaining and enforcing biopharmaceutical patents is costly, time-consuming and inherently uncertain.

In September 2011, the America Invents Act, or the AIA, was enacted in the United States, resulting in significant changes to the U.S. patent system. An important change introduced by the AIA was a transition to a "first-to-file" system for deciding which party should be granted a patent when two or more patent applications are filed by different parties claiming the same invention, which went into effect on March 16, 2013. Therefore, a third party that now files a patent application in the USPTO before we do could be awarded a patent covering an invention of ours even if we created the invention before it was created by the third party. While we are cognizant of the time from invention to filing of a patent application, circumstances could prevent us from promptly filing patent applications for our inventions.

Among some of the other changes introduced by the AIA were changes that limit where a patentee may file a patent infringement suit and providing opportunities for third parties to challenge any issued patent in the USPTO. This applies to all of our U.S. patents, even those issued before March 16, 2013. Because of a lower evidentiary standard in USPTO proceedings compared to the evidentiary standard in U.S. federal courts necessary to invalidate a patent claim, a third party could potentially provide evidence in a USPTO proceeding sufficient for the USPTO to hold a claim invalid even though the same evidence would be insufficient to invalidate the claim if first presented in a district court action. Accordingly, a third party may attempt to use the USPTO procedures to invalidate our patent claims that would not have been invalidated if first challenged by the third party as a defendant in a district court action. The AIA and its continued implementation could increase the uncertainties and costs surrounding the prosecution of our patent applications, and the patent applications of our collaborators, and the enforcement or defense of our issued patents.

Depending on decisions by the U.S. Congress, the federal courts, and the USPTO, the laws and regulations governing patents could change in unpredictable ways that could weaken our ability to obtain new patents or to enforce our existing patents and patents that we might obtain in the future. For example, in the recent case, *Assoc. for Molecular Pathology v. Myriad Genetics, Inc.*, the U.S. Supreme Court held that certain claims to DNA molecules are not patentable. While we do not believe that any of the patents owned or licensed by us will be found invalid based on this decision, we cannot predict how future decisions by the courts, the U.S. Congress or the USPTO may impact the value of our patents. Similarly, there is complexity and uncertainty related to European patent laws. For example, the European Patent Convention was amended in April 2010 to limit the time permitted for filing divisional applications. In addition, the European Patent Convention patent system is relatively stringent in the type of amendments that are allowed during prosecution. These limitations and requirements could adversely affect our ability to obtain new patents in the future that may be important for our business.

We may rely on trade secret and proprietary know-how, which can be difficult to trace and enforce and, if we are unable to protect the confidentiality of our trade secrets, our business and competitive position would be harmed.

In addition to seeking patents for some of our technology and product candidates, we may rely on trade secrets and/or confidential know-how to protect our technology, especially where patent protection is believed to be of limited value, to maintain our competitive position with respect to our research programs and product candidates. Elements of our product candidates, including processes for their preparation and manufacture, may involve proprietary know-how, information, or technology that is not covered by patents, and thus for these aspects we may consider trade secrets and know-how to be our primary intellectual property. Any disclosure, either intentional or unintentional, by our employees or by other third parties of our trade secrets or proprietary information could enable competitors to duplicate or surpass our technological achievements, thus adversely eroding our competitive position in our market.

Trade secrets and/or confidential know-how can be difficult to protect or maintain as confidential. To protect this type of information against disclosure or appropriation by competitors, our policy is to require our employees, consultants, contractors, collaborators, advisors and other third parties to enter into confidentiality agreements with us. Despite these efforts, any of these parties may unintentionally or willfully breach the agreements and disclose our confidential information, and confidentiality agreements may not provide an adequate remedy in the event of unauthorized disclosure of confidential information. Monitoring unauthorized uses and disclosures is difficult, and we do not know whether the steps we have taken to protect our proprietary technologies will be effective. Enforcing a claim that a third party obtained illegally and is using trade secrets and/or confidential know-how is also expensive, time consuming and unpredictable. The enforceability of confidentiality agreements may vary from jurisdiction to jurisdiction. The laws of some foreign countries do not protect proprietary rights to the same extent or in the same manner as the laws of the United States. As a result, we may encounter significant problems in protecting and defending our intellectual property both in the United States and abroad. Furthermore, if a competitor lawfully obtained or independently developed any of our trade secrets, we would have no right to prevent such competitor from using that technology or information to compete with us, which could harm our competitive position. Additionally, if the steps taken to maintain our trade secrets are deemed inadequate, we may have insufficient recourse against third parties for misappropriating the trade secret. In addition, some courts inside and outside the United States are less willing or unwilling to protect trade secrets or other proprietary information.

Trade secrets can over time be disseminated within the industry through independent development, the publication of journal articles and the movement of personnel skilled in the art from company to company or academic to industry scientific positions. Though our agreements with third parties typically restrict the ability of our employees, consultants, contractors, collaborators, advisors and other third parties to publish data potentially relating to our trade secrets, our agreements may contain certain limited publication rights. Because from time to time we expect to rely on third parties in the development, manufacture and distribution of our product candidates and provision of our services, we must, at times, share trade secrets with them. Despite employing the contractual and other security precautions described above, the need to share trade secrets increases the risk that such trade secrets become known by our competitors, are inadvertently incorporated into the technology of others, or are disclosed or used in violation of these agreements. If any of our trade secrets were to be lawfully obtained or independently developed by a competitor or other third party, we would have no right to prevent them from using that technology or information to compete with us. If any of our trade secrets were to be disclosed to or independently developed by a competitor or other third party, our competitive position would be harmed.

In addition, our competitors may independently develop substantially equivalent trade secrets, proprietary information or know-how and may even apply for patent protection in respect of the same. If successful in obtaining such patent protection, our competitors could limit our use of our trade secrets and/or confidential know-how. Under certain circumstances and to guarantee our freedom to operate, we may also decide to publish some know-how to prevent others from obtaining patent rights covering such know-how.

We may be subject to third-party claims asserting that our employees, consultants, contractors, collaborators or advisors have misappropriated or wrongfully used or disseminated their intellectual property, or claiming ownership of what we regard as our own intellectual property.

Many of our employees, including our senior management, were previously employed at universities or at other biopharmaceutical companies, including our competitors or potential competitors. Some of these employees executed proprietary rights, non-disclosure and non-competition agreements in connection with such previous employment. Similarly, we work with consultants, contractors, collaborators, advisors or other third parties who have worked with, and do currently work with, other companies, including our competitors or potential competitors, and have executed proprietary rights, non-disclosure and non-competition agreements in connection with such other companies. Although we try to ensure that our employees, consultants, contractors, collaborators, advisors or other third parties do not use or disclose the proprietary information or know-how of others in their work for us, we may be subject to claims that we or these employees or individuals that we work with have used or disclosed confidential information or intellectual property of others, including trade secrets or other proprietary information, or that we caused an individual to breach the terms of his or her non-competition or non-solicitation agreement with a current or former employer or competitor.

Litigation may be necessary to defend against these claims and, even if we are successful, could result in substantial costs and could be a distraction to management, our employees and our routine business. If we fail in prosecuting or defending any such claims, in addition to paying monetary damages, we may lose valuable intellectual property rights or personnel or sustain damages. Such intellectual property rights could be awarded to a third party, and we could be required to obtain a license from such third party to develop or commercialize our technology or product candidates. Such a license may not be available on commercially reasonable terms or at all. Moreover, any such litigation or the threat thereof may adversely affect our reputation and our ability to form strategic alliances or sublicense our rights to collaborators, engage with scientific advisors or hire employees or consultants, each of which would have an adverse effect on our business, results of operations and financial condition.

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

Periodic maintenance and annuity fees on any issued patent are due to be paid to the USPTO and foreign patent agencies in several stages over the lifetime of the patent. The USPTO and various foreign governmental patent agencies require compliance with a number of procedural, documentary, fee payment and other similar provisions during the patent application process. While an inadvertent lapse can in many cases be cured by payment of a late fee or by other means in accordance with the applicable rules, there are situations in which noncompliance can result in abandonment or lapse of the patent or patent application, resulting in partial or complete loss of patent rights in the relevant jurisdiction. Non-compliance events that could result in abandonment or lapse of a patent or patent application include failure to respond to official actions within prescribed time limits, non-payment of fees and failure to properly legalize and submit formal documents. If we fail to maintain the patents and patent applications covering our product candidates, our competitors might be able to enter the market, which would have an adverse effect on our business.

We may be subject to claims challenging the inventorship of our patents and other intellectual property.

We may in the future be subject to claims that former employees, collaborators, or other third parties have an interest in our patents or other intellectual property as an inventor or co-inventor. For example, we may have inventorship disputes arise from conflicting obligations of consultants or others who are involved in developing our product candidates. Litigation may be necessary to defend against these and other claims challenging inventorship. If we fail in defending any such claims, in addition to paying monetary damages, we may lose valuable intellectual property rights, such as exclusive ownership of, or right to use, valuable intellectual property. Such an outcome could have a material adverse effect on our business. Even if we are successful in defending against such claims, litigation could result in substantial costs and be a distraction to management and other employees.

Risks Related to Ownership of Our Common Stock

Our stock price may be volatile or may decline regardless of our operating performance, resulting in substantial losses for investors.

The market price of our common stock may be highly volatile and may fluctuate substantially as a result of a variety of factors, some of which are related in complex ways. Since shares of our common stock were sold in our initial public offering in February 2019 at a price of $14.00 per share, the reported high and low sales prices of our common stock through February 28, 2021 has ranged from $9.07 to $25.24.

The market price of our common stock may fluctuate significantly in response to numerous factors, many of which are beyond our control, including the factors listed below and other factors describe in this “Risk Factors” section:

- the anticipated results of our Phase 1 trial of HPN424, Phase 1/2a trial of HPN536, Phase 1/2 clinical trial of HPN217, and Phase 1/2a clinical trial of HPN328, any other future preclinical studies and clinical trials and trials we may conduct, or changes in the development status of our product candidates;
- any delay in our regulatory filings for our product candidates and any adverse development or perceived adverse development with respect to the applicable regulatory authority’s review of such filings, including without limitation the issuance by the FDA of a “refusal to file” letter or a request for additional information;
- adverse results or delays in clinical trials;
- our decision to initiate a preclinical study or clinical trial, not to initiate a preclinical study or clinical trial or to terminate an existing clinical study or trial;
- adverse actions taken by regulatory agencies with respect to our preclinical studies or clinical trials, manufacturing supply chain or sales and marketing activities, including failure to receive regulatory approval of our product candidates;
- changes in laws or regulations, including but not limited to preclinical study or clinical trial requirements for approvals;
- any adverse changes to our relationship with manufacturers or suppliers;
- manufacturing, supply or distribution shortages;
- litigation involving us, our industry or both, or investigations by regulators into our operations or those of our competitors;

- our failure to commercialize our product candidates;
- additions or departures of key scientific or management personnel;
- unanticipated serious safety concerns related to the use of our product candidates;
- disputes or other developments relating to proprietary rights, including patents, litigation matters and our ability to obtain patent protection for our technologies;
- variations in our results of operations;
- our cash position;
- our failure to meet the estimates and projections of the investment community or that we may otherwise provide to the public;
- publication of research reports about us or our industry, or immuno-oncology in particular, or positive or negative recommendations or withdrawal of research coverage by securities analysts;
- announcements made by us or our competitors of new product and service offerings, acquisitions, strategic relationships, joint ventures or capital commitments;
- our inability to establish collaborations, if needed;
- our ability to effectively manage our growth;
- the size of our initial cancer target markets;
- our ability to successfully treat additional types of cancers or at different stages;
- changes in the market valuations of similar companies;
- press reports, whether or not true, about our business;
- sales or perceived potential sales of our common stock by us or our stockholders in the future;
- overall fluctuations in the equity markets;
- ineffectiveness of our internal controls;
- changes in accounting practices or principles;
- changes or developments in the global regulatory environment;
- general political and economic conditions; and
- other events or factors, many of which are beyond our control.

In addition, the stock markets have experienced extreme price and volume fluctuations that have affected and continue to affect the market prices of equity securities of many biopharmaceutical companies. Stock prices of many biopharmaceutical companies have fluctuated in a manner unrelated or disproportionate to the operating performance of those companies. If we were to become involved in securities litigation, it could subject us to substantial costs, divert resources and the attention of management from our business and adversely affect, our business, operating results, financial condition and cash flows.

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

As of February 28, 2021, our executive officers, directors, holders of 5% or more of our capital stock and their respective affiliates owned approximately 45.4% of our outstanding voting stock. Therefore, these stockholders will have the ability to influence us through this ownership position. These stockholders may be able to determine all matters requiring stockholder approval. For example, these stockholders may be able to control elections of directors, amendments of our organizational documents, or approval of any merger, sale of assets, or other major corporate transaction. This may prevent or discourage unsolicited acquisition proposals or offers for our common stock that you may feel are in your best interest as one of our stockholders.

Sales of substantial amounts of our outstanding common stock in the public market could cause our common stock price to fall.

Our common stock price could decline as a result of sales of a large number of shares of common stock or the perception that these sales could occur. These sales, or the possibility that these sales may occur, might also make it more difficult for us to sell equity securities in the future at a time and price that we deem appropriate.

Certain of our stockholders have rights, subject to some conditions, that to require us to file registration statements covering the sale of their shares or to include their shares in registration statements that we may file for ourselves or our other stockholders. We have also registered the offer and sale of all shares of common stock that we issued under our equity compensation plans. These shares may accordingly be sold in the public market upon issuance, subject to vesting conditions and, in the case of our directors, officers and other affiliates, restrictions that may apply under Rule 144 promulgated under the Securities Act of 1933, as amended, or the Securities Act.

In addition, in the future, we may issue shares of common stock, or other equity or debt securities convertible into common stock, in connection with a financing, acquisition, employee arrangement or otherwise. Any such issuance, including pursuant to the Sales Agreement with Cantor Fitzgerald, could result in substantial dilution to our existing stockholders and could cause the price of our common stock to decline.

An active trading market for our common stock may not be sustained.

Our common stock is currently listed on the Nasdaq Global Select Market, or Nasdaq, under the symbol "HARP". The price for our common stock may vary and an active or liquid market in our common stock may not be sustainable. The lack of an active market may impair the value of your shares, your ability to sell your shares at the time you wish to sell them and the prices that you may obtain for your shares. An inactive market may also impair our ability to raise capital by selling our common stock and our ability to acquire other companies, products or technologies by using our common stock as consideration.

If securities or industry analysts either do not publish research about us or publish inaccurate or unfavorable research about us, our business or our market, or if they change their recommendations regarding our common stock adversely, the trading price or trading volume of our common stock could decline.

The trading market for our common stock is influenced in part by the research and reports that securities or industry analysts may publish about us, our business, our market or our competitors. If one or more of these analysts initiate research with an unfavorable rating or downgrade our common stock, provide a more favorable recommendation about our competitors or publish inaccurate or unfavorable research about our business, our common stock price would likely decline. If any analyst who may cover us were to cease coverage of us or fail to regularly publish reports on us, we could lose visibility in the financial markets, which in turn could cause the trading price or trading volume of our common stock to decline.

If we are unable to maintain effective internal control over financial reporting, it could result in material misstatements in our financial statements and cause investors to lose confidence in the accuracy and completeness of our financial reports, either of which could adversely affect the market price of our common stock.

Ensuring that we have adequate internal financial and accounting controls and procedures in place so that we can produce accurate financial statements on a timely basis is a costly and time-consuming effort that needs to be re-evaluated frequently. 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 in accordance with GAAP. We are required to document, review and improve our internal controls and procedures for compliance with Section 404 of the Sarbanes-Oxley Act of 2002, or the Sarbanes-Oxley Act, which requires annual management assessment of the effectiveness of our internal control over financial reporting. If we are unable to maintain effective internal control over financial reporting, the accuracy and timing of our financial reporting, and our stock price, may be adversely affected and we may be unable to maintain compliance with the applicable stock exchange listing requirements.

Implementing any appropriate changes to our internal controls may distract our officers and employees, entail substantial costs to modify our existing processes and take significant time to complete. These changes may not, however, be effective in maintaining the adequacy of our internal controls, and any failure to maintain that adequacy, or consequent inability to produce accurate financial statements on a timely basis, could increase our operating costs and harm our business. In addition, investors' perceptions that our internal controls are inadequate or that we are unable to produce accurate financial statements on a timely basis may harm our stock price.

We are an emerging growth company and a smaller reporting company, and any decision on our part to comply only with applicable reduced reporting and disclosure requirements could make our common stock less attractive to investors.

We are an "emerging growth company" as defined in the JOBS Act and, for as long as we continue to be an emerging growth company, we may choose to take advantage of exemptions from various reporting requirements applicable to other public companies but not to emerging growth companies, including:

- not being required to have our independent registered public accounting firm audit our internal control over financial reporting under Section 404 of the Sarbanes-Oxley Act;
- reduced disclosure obligations regarding executive compensation in our periodic reports and annual report on Form 10-K; and

- exemptions from the requirements of holding non-binding advisory votes on executive compensation and stockholder approval of any golden parachute payments not previously approved.

We could be an emerging growth company for up to five years following the completion of our IPO. Our status as an emerging growth company will end as soon as any of the following takes place:

- the last day of the fiscal year in which we have more than $1.07 billion in gross annual revenue;
- the date we qualify as a "large accelerated filer," with at least $700 million of equity securities held by non-affiliates;
- the date on which we have issued, in any three-year period, more than $1.0 billion in non-convertible debt securities; or
- the last day of the fiscal year ending after the fifth anniversary of the completion of our initial public offering.

We cannot predict if investors will find our common stock less attractive if we choose to rely on any of the exemptions afforded to emerging growth companies. If some investors find our common stock less attractive because we rely on any of these exemptions, there may be a less active trading market for our common stock and the market price of our common stock may be more volatile.

Under the JOBS Act, emerging growth companies can also delay adopting new or revised accounting standards until such time as those standards apply to private companies. We elected to use this extended transition period for complying with new or revised accounting standards that have different effective dates for public and private companies until the earlier of the date that we (i) are no longer an emerging growth company or (ii) affirmatively and irrevocably opt out of the extended transition period provided in the JOBS Act. As a result, these financial statements may not be comparable to companies that comply with the new or revised accounting pronouncements as of public company effective dates.

We are also a "smaller reporting company" as defined in the Securities Exchange Act of 1934, as amended, or the Exchange Act. We may continue to be a smaller reporting company even after we are no longer an emerging growth company. We may take advantage of certain of the scaled disclosures available to smaller reporting companies and will be able to take advantage of these scaled disclosures for so long as our voting and non-voting common stock held by non-affiliates is less than $250.0 million measured on the last business day of our second fiscal quarter, or our annual revenue is less than $100.0 million during the most recently completed fiscal year and our voting and non-voting common stock held by non-affiliates is less than $700.0 million measured on the last business day of our second fiscal quarter.

The requirements of being a public company may strain our resources, result in litigation and divert management's attention.

As a public company, we are subject to the reporting requirements of the Exchange Act, the Sarbanes-Oxley Act, the Dodd-Frank Wall Street Reform and Consumer Protection Act, or the Dodd-Frank Act, the listing requirements of The Nasdaq Global Select Market, or NASDAQ, and other applicable securities rules and regulations. Complying with these rules and regulations has increased and will increase our legal and financial compliance costs, make some activities more difficult, time consuming or costly and increase demand on our systems and resources. The Exchange Act requires, among other things, that we file annual, quarterly and current reports with respect to our business and operating results. The Sarbanes-Oxley Act requires, among other things, that we maintain effective disclosure controls and procedures and internal control over financial reporting. We are required to disclose changes made in our internal control and procedures on a quarterly basis. In order to maintain and, if required, improve our disclosure controls and procedures and internal control over financial reporting to meet this standard, significant resources and management oversight may be required. As a result, management's attention may be diverted from other business concerns, which could adversely affect our business and operating results. We may also need to hire additional employees or engage outside consultants to comply with these requirements, which will increase our costs and expenses.

In addition, changing laws, regulations and standards relating to corporate governance and public disclosure are creating uncertainty for public companies, increasing legal and financial compliance costs and making some activities more time consuming. These laws, regulations and standards are subject to varying interpretations, in many cases due to their lack of specificity and, as a result, their application in practice may evolve over time as new guidance is provided by regulatory and governing bodies. This could result in continuing uncertainty regarding compliance matters and higher costs necessitated by ongoing revisions to disclosure and governance practices. We intend to invest resources to comply with evolving laws, regulations and standards, and this investment may result in increased general and administrative expenses and a diversion of management's time and attention from revenue-generating activities to compliance activities. If our efforts to comply with new laws, regulations and standards differ from the activities intended by regulatory or governing bodies due to ambiguities related to their application and practice, regulatory authorities may initiate legal proceedings against us and our business may be adversely affected.

These new rules and regulations may make it more expensive for us to obtain director and officer liability insurance and, in the future, we may be required to accept reduced coverage or incur substantially higher costs to obtain coverage. These factors could also make it more difficult for us to attract and retain qualified members of our board of directors, particularly to serve on our audit committee and compensation committee, and qualified executive officers.

By disclosing information in filings required of a public company, our business and financial condition are more visible, which we believe may result in threatened or actual litigation, including by competitors and other third parties. If those claims are successful, our business could be seriously harmed. Even if the claims do not result in litigation or are resolved in our favor, the time and resources needed to resolve them could divert our management's resources and seriously harm our business.

We do not currently intend to pay dividends on our common stock and, consequently, our stockholders' ability to achieve a return on their investment will depend on appreciation of the value of our common stock.

We have never declared or paid cash dividends on our common stock. We currently intend to retain all available funds and any future earnings to support operations and to finance the growth and development of our business. We do not intend to declare or pay any cash dividends on our capital stock in the foreseeable future. As a result, any investment return on our common stock will depend upon increases in the value for our common stock, which is not certain.

Delaware law and provisions in our amended and restated certificate of incorporation and amended and restated bylaws, could make a merger, tender offer or proxy contest difficult, thereby depressing the trading price of our common stock.

Our amended and restated certificate of incorporation and amended and restated bylaws contain provisions that could depress the trading price of our common stock by acting to discourage, delay or prevent a change of control of our company or changes in our management that our stockholders may deem advantageous. These provisions include the following:

- establish a classified board of directors so that not all members of our board of directors are elected at one time;
- permit our board of directors to establish the number of directors and fill any vacancies and newly created directorships;
- provide that members of our board of directors may only be removed for cause;
- require super-majority voting to amend certain provisions of our amended and restated certificate of incorporation and amended and restated bylaws;
- authorize the issuance of "blank check" preferred stock that our board of directors could use to implement a stockholder rights plan;
- eliminate the ability of our stockholders to call special stockholder meetings;
- prohibit stockholder action by written consent, which requires all stockholder actions to be taken at stockholder meetings;
- provide that our board of directors is expressly authorized to make, alter or repeal our amended and restated bylaws;
- restrict the forum for certain litigation against us to Delaware; and
- establish advance notice requirements for nominations for election to our board of directors or for proposing matters that can be acted upon by stockholders at annual stockholder meetings.

Any provision of our amended and restated certificate of incorporation, our amended and restated bylaws or Delaware law that has the effect of delaying or deterring a change in our 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.

Our amended and restated certificate of incorporation provides that the Court of Chancery of the State of Delaware will be the exclusive forum for certain disputes between us and our stockholders, which could limit our stockholders' ability to obtain a favorable judicial forum for disputes with us or our directors, officers or employees.

Our amended and restated certificate of incorporation provides that the Court of Chancery of the State of Delaware (or, if and only if the Court of Chancery of the State of Delaware lacks subject matter jurisdiction, any state court located within the State of Delaware or, if and only if all such state courts lack subject matter jurisdiction, the federal district court for the District of Delaware), to the fullest extent permitted by applicable law, is the exclusive forum for:

- any derivative action or proceeding brought on our behalf;
- any action asserting a breach of fiduciary duty;

- any action asserting a claim against us arising under the Delaware General Corporation Law, or the DGCL, our amended and restated certificate of incorporation or our amended and restated bylaws; and
- any action asserting a claim against us that is governed by the internal-affairs doctrine.

However, this exclusive forum provision would not apply to suits brought to enforce a duty or liability created by the Exchange Act. Furthermore, this provision applies to Securities Act claims and Section 22 of the Securities Act creates concurrent jurisdiction for federal and state courts over all suits brought to enforce any duty or liability created by the Securities Act or the rules and regulations thereunder. Accordingly, there is uncertainty as to whether a court would enforce such provision, and our stockholders will not be deemed to have waived our compliance with the federal securities laws and the rules and regulations thereunder. While the Delaware courts have determined that such choice of forum provisions are facially valid, a stockholder may nevertheless seek to bring a claim in a venue other than those designated in the exclusive forum provision. In such instance, we would expect to vigorously assert the validity and enforceability of the exclusive forum provisions of our amended and restated certificate of incorporation. This may require significant additional costs associated with resolving such action in other jurisdictions and there can be no assurance that the provision will be enforced by a court in those other jurisdictions.

This exclusive-forum provision may limit a stockholder's ability to bring a claim in a judicial forum that it finds favorable for disputes with us or our directors, officers or other employees, which may discourage lawsuits against us and our directors, officers and other employees. If a court were to find the exclusive forum provision in our amended and restated certificate of incorporation to be inapplicable or unenforceable in an action, we may incur further significant additional costs associated with resolving the dispute in other jurisdictions, all of which could seriously harm our business.

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

Our U.S. net operating loss, or NOL, carryforwards and tax credit carryforwards are potentially subject to annual utilization limits under Sections 382 and 383 of the Internal Revenue Code of 1986, as amended, or the Code. Our U.S. NOL carryforwards arising in taxable years beginning prior to 2018 and tax credit carryforwards could expire unused and be unavailable to offset future taxable income or income tax liabilities because of their limited duration or because of restrictions under U.S. tax law. Our U.S. NOL carryforwards arising in taxable years beginning after 2017 carry forward indefinitely but are subject to limitations in taxable years beginning after 2020. Under Sections 382 and 383 of the Code, if a corporation undergoes an "ownership change," generally defined as a greater than 50 percentage point change (by value) in its equity ownership by certain stockholders during a rolling three-year period, the corporation's ability to use its pre-change tax attributes, such as NOLs and R&D tax credits, to offset its post-change income or taxes may be limited. We have not performed an analysis under Section 382 of the Code and cannot predict or otherwise determine whether our federal tax attribute carryforwards may be limited in the future. As a result, if we earn taxable income in the future, our ability to use existing U.S. NOL and R&D tax credit carryforwards to reduce U.S. taxable income or tax liability may be subject to limitations. This could adversely impact our future operating results by increasing our future tax liabilities. Similar rules may also limit our ability to use accumulated state tax attributes to reduce our state tax liabilities. Also, there may be periods when the use of NOLs is suspended or otherwise limited at the state level, such as a recent California tax law change temporarily suspending the ability to use California NOLs to offset California income and limiting the use of California tax credits to offset California state tax, which could accelerate or permanently increase state taxes owed.

We may have ownership changes in the future, due to further changes in our stock ownership. Some of these ownership changes could be outside of our control. If an ownership change occurs and our ability to use our historical NOL and tax credit carryforwards is limited, it could adversely impact our future operating results by increasing our tax obligations.

General Risk Factors

Risks from improper conduct by our employees, agents, contractors or collaborators could adversely affect our reputation, business, prospects, operating results and financial condition.

We cannot ensure that our compliance controls, policies and procedures will in every instance protect us from acts committed by our employees, agents, contractors or collaborators that would violate the laws or regulations of the jurisdictions in which we operate, including, without limitation, employment, foreign corrupt practices, trade restrictions and sanctions, environmental, competition and patient privacy and other privacy laws and regulations. Such improper actions could subject us to civil or criminal investigations and monetary and injunctive penalties, and could adversely impact our ability to conduct business, operating results and reputation.

We are subject to a number of anti-corruption laws, including the U.S. Foreign Corrupt Practices Act, or FCPA, and the U.K. Bribery Act. Our failure to comply with anti-corruption laws applicable to us could result in penalties, which could harm our reputation and harm our business, financial condition, results of operations, cash flows or prospects. The FCPA generally prohibits companies and their intermediaries from making improper payments to foreign officials for the purpose of obtaining or keeping business and/or other benefits. The FCPA also requires public companies to maintain accurate books and records and devise a system of sufficient internal accounting controls. We regularly review and update our policies and procedures and internal controls designed to provide reasonable assurance that we, our employees, distributors and other intermediaries comply with the anti-corruption laws to which we are subject. However, there are inherent limitations to the effectiveness of any policies, procedures and internal controls, including the possibility of human error and the circumvention or overriding of the policies, procedures and internal controls. There can be no assurance that such policies or procedures or internal controls will work effectively at all times or protect us against liability under these or other laws for actions taken by our employees, distributors and other intermediaries with respect to our business.

The SEC, and the Department of Justice continue to view FCPA enforcement activities as a high priority. There is no certainty that all of our employees, agents, contractors or collaborators, or those of our affiliates, will comply with all applicable laws and regulations, particularly given the high level of complexity of these laws. Violations of these laws and regulations could result in fines, criminal sanctions against us, our officers or our employees, requirements to obtain export licenses, cessation of business activities in sanctioned countries, implementation of compliance programs and prohibitions on the conduct of our business. Any such violations could materially damage our reputation, our brand, our international operations, our ability to attract and retain employees, and our business, prospects, operating results, and financial condition.

Use of social media could give rise to liability, breaches of data security, or reputational harm.

We and our employees use social media to communicate externally. There is risk that the use of social media by us or our employees to communicate about our product candidates or business may give rise to liability, lead to the loss of trade secrets or other intellectual property, or result in public exposure of personal information of our employees, clinical trial patients, customers, and others. Furthermore, negative posts or comments about us or our product candidates in social media could seriously damage our reputation, brand image, and goodwill. Any of these events could have a material adverse effect on our business, prospects, operating results, and financial condition and could adversely affect the price of our common stock.

Our information technology systems, or those used by our CROs or other contractors or consultants, may fail or suffer other breakdowns, cyber-attacks, or information security breaches, which could adversely affect our business.

We are increasingly dependent upon information technology systems, infrastructure, and data to operate our business, particularly during the COVID-19 pandemic. We also rely on third party vendors and their information technology systems. Despite the implementation of security measures, our recovery systems, security protocols, network protection mechanisms and other security measures and those of our current or future CROs or other contractors and consultants are vulnerable to system failure, interruption, compromise or damage from data corruption, breakdown, computer hacking, malicious code (such as computer viruses or worms), fraudulent activity, employee misconduct, theft, or error, denial-of-service attacks, telecommunication and electrical failures, natural disasters, public health epidemics, such as the COVID-19 pandemic, currently impacting multiple jurisdictions worldwide, including the United States, cyber-attacks by sophisticated nation-state and nation-state supported actors, or other system attacks, disruption, or accidents. We receive, generate and store significant and increasing volumes of personal (including health), confidential and proprietary information. There can be no assurance that we, or our collaborators, CROs, third-party vendors, contractors and consultants, will be successful in efforts to detect, prevent, protect against or fully recover systems or data from all break-downs, service interruptions, attacks or breaches. Future acquisitions could expose us to additional cybersecurity risks and vulnerabilities from any newly acquired information technology infrastructure.

As the cyber-threat landscape evolves, these threats are constantly increasing in frequency, sophistication and intensity and will become increasingly difficult to detect. These attacks are made by groups and bad actors with a wide range of motives (including industrial espionage) and expertise, including by organized criminal groups, “hacktivists,” nation states and others. As a company with an increasingly global presence, our information security systems are subject to frequent attacks. Cyber threats may be generic, or they may be targeted against our information systems. Due to the nature of some of these attacks, we may be unable to anticipate or there is a risk that an attack may remain undetected for a period of time.

The costs to respond to a security breach and/or to mitigate any security vulnerabilities that may be identified could be significant, our efforts to address these problems may not be successful, and these problems could result in unexpected interruptions, delays, cessation of service, negative publicity, and other harm to our business and our competitive position. Remediation of any potential security breach may involve significant time, resources, and expenses. We could be required to fundamentally change our business activities and practices in response to a security breach and our systems or networks may be perceived as less desirable, which could negatively affect our business and damage our reputation. In addition, the costs of maintaining or upgrading our cyber-security systems at the level necessary to keep up with our expanding operations and prevent against potential attacks are increasing, and despite our best efforts, our network security and data recovery measures and those of our vendors may still not be adequate to protect against such security breaches and disruptions, which could cause harm to our business, financial condition and results of operations.

A security breach may cause us to breach our contracts. Our agreements with relevant stakeholders such as collaborators may require us to use legally required, industry-standard or reasonable measures to safeguard personal information. A security breach could lead to claims by relevant stakeholders that we have failed to comply with such contractual obligations. In addition, any non-compliance with our data privacy obligations in our contracts or our inability to flow down such obligations from relevant stakeholders to our vendors may cause us to breach our contracts. As a result, we could be subject to legal action or the relevant stakeholders could end their relationships with us. There can be no assurance that the limitations of liability in our contracts would be enforceable or adequate or would otherwise protect us from liabilities or damages.

We may have contractual and other legal obligations to notify relevant stakeholders of security breaches. Most jurisdictions have enacted laws requiring companies to notify individuals, regulatory authorities, and others of security breaches involving certain types of data. In addition, our agreements with collaborators may require us to notify them in the event of a security breach. Such mandatory disclosures are costly, could lead to negative publicity, may cause our collaborators to lose confidence in the effectiveness of our security measures and require us to expend significant capital and other resources to respond to and/or alleviate problems caused by the actual or perceived security breach.

Any cybersecurity incident could adversely affect our business, by leading to, for example, the loss of trade secrets or other intellectual property, demands for ransom or other forms of blackmail or the unauthorized disclosure of personal, confidential or proprietary information of our employees, clinical trial participants, customers and others. We could be subject to regulatory actions taken by governmental authorities, litigation under laws that protect the privacy and security of personal information, or other forms of legal proceedings, which could result in significant investigations, liabilities or penalties. Further, a cybersecurity incident may disrupt our business or damage our reputation, which could have a material adverse effect on our business, prospects, operating results, share price and stockholder value, and financial condition. In addition, failure to maintain effective internal accounting controls related to data security breaches and cybersecurity in general could impact our ability to produce timely and accurate financial statements and could subject us to regulatory scrutiny.

We may not have adequate insurance coverage for security incidents or breaches. The successful assertion of one or more large claims against us that exceeds our available insurance coverage, or results in changes to our insurance policies (including premium increases or the imposition of large deductible or co-insurance requirements), could have an adverse effect on our business. In addition, we cannot be sure that our existing insurance coverage and coverage for errors and omissions will continue to be available on acceptable terms or that our insurers will not deny coverage as to any future claim.

If securities or industry analysts either do not publish research about us or publish inaccurate or unfavorable research about us, our business or our market, or if they change their recommendations regarding our common stock adversely, the trading price or trading volume of our common stock could decline.

The trading market for our common stock is influenced in part by the research and reports that securities or industry analysts may publish about us, our business, our market or our competitors. If one or more of these analysts initiate research with an unfavorable rating or downgrade our common stock, provide a more favorable recommendation about our competitors or publish inaccurate or unfavorable research about our business, our common stock price would likely decline. If any analyst who may cover us were to cease coverage of us or fail to regularly publish reports on us, we could lose visibility in the financial markets, which in turn could cause the trading price or trading volume of our common stock to decline.

New or future changes to tax laws could materially adversely affect our company.

The Tax Act, which was enacted on December 22, 2017, significantly amended the Code. Future guidance from the U.S. 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. For example, the CARES Act, enacted in March 2020, modified a number of provisions of the Tax Act. Changes in corporate tax rates, the realization of net deferred tax assets relating to our U.S. operations, the taxation of foreign earnings, and the deductibility of expenses under the Tax Act, as amended by the CARES Act, or future tax reform legislation could have a material impact on the value of our deferred tax assets, could result in significant one-time charges in the current or future taxable years, and could increase our future U.S. tax expense. The foregoing items, as well as any other future changes in tax laws, could have a material adverse effect on our business, cash flow, financial condition, or results of operations. In addition, it is uncertain if and to what extent various states will conform to the Tax Act, or the CARES Act, or any newly enacted federal tax legislation.

Item 1B. Unresolved Staff Comments

Not applicable.

Item 2. Properties

We currently lease approximately 34,988 square feet of office and laboratory space in South San Francisco, California under an eight-year lease agreement that expires in June 2027. Under the lease agreement we are given an option to extend the lease term for an additional period of 8 years, when certain conditions are met. We believe this space is sufficient to meet our needs for the foreseeable future and that any additional space we may require will be available on commercially reasonable terms.

Item 3. Legal Proceedings

From time to time, we may become involved in legal proceedings arising in the ordinary course of our business. On January 3, 2019, Maverick, filed a complaint against us in the Delaware Court of Chancery. The complaint alleged various claims for breach of contract and misappropriation of trade secrets, and sought as relief, among other things, a declaration that our ProTriTAC technology impermissibly competes in the Maverick Field (as defined in our Asset Transfer Agreement with Maverick), a preliminary and permanent injunction seeking to prohibit us from further developing our ProTriTAC platform, and unspecified damages. On May 8, 2019, Millennium Pharmaceuticals, Inc., or Millennium, a wholly owned subsidiary of Takeda Pharmaceutical Company Limited, was granted permission by the court to intervene in the litigation. Millennium and Maverick are parties to a collaboration agreement and a warrant agreement, and Millennium's complaint in intervention alleged, in part, that we fraudulently induced Millennium to enter into the agreements with Maverick. Millennium asserted various tort claims against us. A trial on Maverick and Millennium's claims was held on September 9 through 13 and September 17, 2019.

On April 3, 2020, the Delaware Chancery Court issued a memorandum opinion, which related only to our ProTriTAC platform. The Court ruled in our favor on Maverick's claims for breach of contract and misappropriation of trade secrets and dismissed those claims. As part of that ruling, the Court determined that our ProTriTAC technology is not in a field that is subject to a four year non-compete. The Court found in favor of Millennium on its claim against us for fraud in inducing Millennium's investment in Maverick. The Court found that Millennium had not proved its claims for tortious interference with contract and business relations or unfair competition, and those claims were dismissed. The litigation is currently in the damages phase, at the conclusion of which damages related to the fraud ruling, if any, will be determined. The Court held a one-day trial on Millennium's damages claim on September 22, 2020, closing arguments were held December 8, 2020, and the matter has now been taken under submission by the Court. Through evidence and argument presented at trial and in related briefing, Millennium advanced a theory of alleged damages as high as approximately $147 million plus certain fees and interest. We advanced a theory of alleged damages amounting to zero dollars. We cannot predict the amount of damages for which the Court may find us liable, or the outcome of any appeal that might result from a final judgement in the case. We could be required to pay significant monetary damages in connection with the Court's determination of damages related to the fraud ruling, which could have a material adverse effect on our financial condition and results of operations.

We are not currently a party to any other material legal proceedings. Regardless of outcome, litigation can have an adverse impact on us due to defense and settlement costs, diversion of management resources, negative publicity, reputational harm and other factors.

Item 4. Mine Safety Disclosures

Not applicable.

Part II

Item 5. Market for the Registrant's Common Equity, related stockholder matters and issuer purchases of equity securities

Market Information for Common Stock

Our common stock has been listed on The Nasdaq Global Select Market under the symbol "HARP" since February 8, 2019. Prior to that, there was no public trading market for our common stock.

Holders of Record

As of February 28, 2021, there were approximately 21 stockholders of record of our common stock. 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 cash dividends on our capital stock. We currently intend to retain all available funds and any future earnings to support operations and to finance the growth and development of our business. We do not intend to declare or pay any cash dividends on our capital stock in the foreseeable future. Any future determination to pay dividends will be made at the discretion of our board of directors, subject to applicable laws, and will depend upon, among other factors, our results of operations, financial condition, contractual restrictions and capital requirements. Our future ability to pay cash dividends on our capital stock may be limited by the terms of any future debt or preferred securities.

Recent Sales of Unregistered Securities

There were no sales of unregistered securities during the period covered by this Annual Report on Form 10-K.

Registrant Purchases of Equity Securities

None.

Item 6. Selected Financial Data.

We are a smaller reporting company as defined by Rule 12b-2 of the Exchange Act, and are not required to provide the information specified under this item.

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

You should read the following discussion and analysis of our financial condition and results of operations together with our financial statements and related notes and other financial information included elsewhere in this Annual Report on Form 10-K. Some of the information contained in this discussion and analysis or set forth elsewhere in this Annual Report, including information with respect to our plans and strategy for our business, includes forward-looking statements that involve risks and uncertainties. See "Special Note Regarding Forward-Looking Statements" and "Risk Factors" for a discussion of forward-looking statements and important factors that could cause actual results to differ materially from the results described in or implied by the forward-looking statements. In addition, the section of this Management's Discussion and Analysis of Financial Condition and Results of Operations generally discusses 2020 and 2019 items and year-to-year comparisons between 2020 and 2019. Discussions of 2018 items and year-to-year comparisons between 2019 and 2018 that are not included in this Annual Report on Form 10-K can be found in "Management's Discussion and Analysis of Financial Condition and Results of Operations" in Part II Item 7 of the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2019, filed with the SEC on March 12, 2020.

Overview

We are a clinical-stage immunotherapy company developing a novel class of T cell engagers that harness the power of the body's immune system to treat patients suffering from cancer and other diseases. T cell engagers are engineered proteins that direct a patient's own T cells to kill target cells that express specific proteins, or antigens, carried by the target cells. Using our proprietary TriTAC platform, we are developing a pipeline of novel T cell engagers, or TriTACs, initially focused on the treatment of solid tumors and hematologic malignancies. We have also nominated our first clinical candidate using our proprietary ProTriTAC platform, a prodrug version of our TriTAC platform, designed to expand the target space for T cell engagers and bring the TriTAC benefits to a broader number of patients.

We currently have four TriTAC product candidates in clinical development. HPN424 is currently in a Phase 1/2a clinical trial for the treatment of metastatic castration-resistant prostate cancer, or mCRPC. HPN536 is currently in a Phase 1/2a clinical trial for the treatment of ovarian cancer and other mesothelin-, or MSLN-, expressing solid tumors. HPN217 is currently in a Phase 1/2 clinical trial targeting B-cell maturation antigen, or BCMA, for the treatment of multiple myeloma. HPN328, a TriTAC product candidate targeting Delta-like canonical Notch ligand 3, or DLL3, for the treatment of SCLC and other DLL3-expressing tumors.

TriTAC Pipeline Update

HPN424: In December 2020, we provided a clinical update on our ongoing Phase 1/2a clinical trial, at the time of the data cutoff, 69 patients had been dosed across 14 cohorts at fixed doses of 1.3 to 160ng/kg and in step dosing cohorts up to 300ng/kg administered as a weekly intravenous infusion. Enrolled patients had a median of 6 prior systemic therapies, and 76% of patients had prior chemotherapy in the metastatic castration-resistant setting. Ten of 44 patients (23%) with treatment start dates at least 6 months ago remained on study treatment for more than 24 weeks.

At the highest fixed dose tested to date, 160ng/kg, one patient out of 7 has experienced a confirmed partial response with tumor lesion reduction of 43%. 3 of 7 patients have had serum PSA declines from baseline, one of which was a PSA reduction of 50%.

HPN424 was generally well tolerated and cytokine-related adverse events have been manageable. Reported Grade 3 or higher adverse events have included cytokine release syndrome (CRS) (10%), ALT increase (11%) and AST increase (11%). CRS events and transaminitis have been transient and have not resulted in treatment discontinuation. Dose-limiting toxicities (DLTs) have been observed and have not limited escalation. A maximum tolerated dose (MTD) has not been identified. Presentation of Phase 1 data and initiation of an expansion cohort is planned for the first half of 2021. Interim data from this expansion cohort is anticipated by the end of 2021.

HPN536: HPN536 is a MSLN-targeting T cell engager, and we are currently enrolling patients in a Phase 1/2a clinical trial for ovarian, pancreatic and other MSLN-expressing solid tumors. The study is collecting data to evaluate the safety, tolerability, pharmacokinetics and activity of HPN536. In December 2020, we provided a clinical update on our ongoing Phase 1/2a clinical trial, at the time of the data cutoff, dosing had occurred across 9 fixed-dose cohorts of 6 to 280ng/kg and 1 step dose cohort up to 600ng/kg. Tumor types treated included late-stage ovarian and pancreatic cancers and peritoneal mesothelioma. Enrolled patients had a median of four prior systemic therapies, and 66% of patients had progressive disease as best response to their most recent prior therapy. Pharmacokinetic analysis shows median half-life of more than 70 hours. Among the relapsed/refractory ovarian cancer patients with at least one post-baseline scan, 8 of 12 (67%) patients showed stability of target lesions.

HPN536 appears to be well tolerated. One CRS grade 3 occurred in the absence of dexamethasone premedication treatment. The CRS resolved, and the patient continued on study with dexamethasone premedication. As of December 1, 2020, no DLTs had been observed. Initiation of an expansion cohort is anticipated in the second half of 2021, with a presentation of Phase 1 data by year end 2021.

HPN217: In April 2020, we announced that the first patient was dosed with HPN217 in a Phase 1/2 clinical trial focused on relapsed/refractory multiple myeloma, or RRMM. In December 2020, we provided a clinical update on our ongoing Phase 1/2 clinical trial, at the time of the data cutoff, relapsed/refractory multiple myeloma patients had been treated across 6 single-patient fixed dose cohorts of 5 to 810µg, reflecting a more than 100-fold increase in dose in 8 months. HPN217 had been well-tolerated, and no DLTs had been observed as of the December 1, 2020 cutoff date. In January 2021, HPN217 received orphan drug designation for the treatment of multiple myeloma. A presentation of interim data is anticipated in 2021, with initiation of a dose expansion cohort in the second half of 2021.

HPN217 is covered by a global development and option agreement with AbbVie Inc., or AbbVie, and treatment of the first patient in the clinical trial triggered a $50 million milestone payment, which we received in June 2020. HPN217 targets B-cell maturation antigen, or BCMA, a well-validated target expressed on multiple myeloma cells. Harpoon is responsible for conducting the Phase 1/2 clinical trial, and we are actively enrolling patients in the dose escalation portion of the multi-country trial. Under the agreement with AbbVie, we are eligible to receive future payments totaling up to $430 million upon AbbVie's exercise of an exclusive license option and achievement of certain development, regulatory, and commercial milestones, in addition to royalties on commercial sales.

HPN328: In December 2020, we announced that the first patient was dosed with HPN328 in a Phase 1/2 trial as an investigational treatment of SCLC and other tumors associated with DLL3 expression. We have presented preclinical data on HPN328 showing that the drug was well tolerated in cynomolgus monkeys at 1 and 10 mg/kg, and pharmacokinetic data supported the potential for once weekly dosing. When administered to mice bearing human SCLC xenografts and human T cells, HPN328 eradicated the tumors. Presentation of initial data is planned for the second half of 2021.We plan to initiate a Phase 1/2 clinical trial in the fourth quarter of 2020.

ProTriTAC

In May 2020, as a part of our pipeline update, we also presented advancements in our second platform, ProTriTAC, which was designed to expand the universe of addressable targets and indications for T cell engagers. We have nominated the first ProTriTAC clinical candidate, HPN601, with Investigational New Drug Application, or IND enabling studies underway, and we expect to provide additional development updates later this year. Our ProTriTAC platform applies a prodrug concept to create a therapeutic T cell engager that remains inactive until it reaches the tumor. ProTriTACs therefore have the potential for additional tumor specificity and enhanced safety profiles because they are designed to have limited interaction with their molecular targets in healthy tissue, allowing us to target tumor-associated antigens that may be more broadly expressed. When a ProTriTAC penetrates a tumor, tumor-associated proteases cleave off the blocking domain of the ProTriTAC, thereby enabling the engagement of T cells to subsequently kill tumor cells. This activation process also diminishes the half-life of the resulting T cell engager. If active molecules leave the tumor tissue, they are rapidly eliminated from the body, therefore further limiting the potential side effects in normal tissues.

HPN601: We are developing HPN601, our first ProTriTAC candidate which targets epithelial cell adhesion molecule, or EpCAM, and is applicable to a wide array of solid tumors.

Business Operations

Since commencing operations in 2015, we have devoted substantially all of our resources to performing research and development and manufacturing activities in support of our product development efforts, hiring personnel, raising capital to support and expand such activities and providing general and administrative support for these operations. We do not have any products approved for sale and have not generated any revenue from product sales. We have funded our operations to date primarily from proceeds from the issuance of convertible notes, the sale of redeemable convertible preferred stock and warrants, the sale of common stock, and payments received under our discovery collaboration agreement with AbbVie.

Since our inception, we have incurred significant net operating losses. Our ability to generate product revenue sufficient to achieve profitability will depend heavily on the successful development and eventual commercialization of one or more of our current or future product candidates and programs. Our net losses were $49.9 million, 55.6 million, and $27.4 million for the years ended December 31, 2020, 2019, and 2018, respectively. As of December 31, 2020, we had an accumulated deficit of $168.1 million. Our primary use of cash is to fund net losses, operating expenses, which consist primarily of research and development expenditures, and to a lesser extent, general and administrative expenditures. We expect to continue to incur net losses for the foreseeable future, and we expect our research and development expenses, general and administrative expenses, and capital expenditures will continue to increase.

We expect to continue to incur significant expenses and increasing operating losses for at least the next several years. Our net losses may fluctuate significantly from period to period, depending on the timing of our planned clinical trials and expenditures on other research and development activities. We expect our expenses will increase substantially over time as we:

- continue the research and development of HPN424, HPN536, HPN217, HPN328 and HPN601 as well as our other product candidates;
- initiate preclinical studies and clinical trials for any additional product candidates that we may pursue in the future;
- seek marketing approvals for product candidates that successfully complete clinical trials;
- establish a sales, marketing, manufacturing and distribution infrastructure to commercialize any product candidate for which we may obtain marketing approval;
- continue to invest in our technology platforms, including TriTAC and ProTriTAC;
- maintain, protect and expand our portfolio of intellectual property rights, including patents, trade secrets and know-how;
- implement operational, financial and management systems; and
- attract, hire and retain additional administrative, clinical, regulatory and scientific personnel.

Furthermore, we expect to incur additional costs associated with operating as a public company, including significant legal, accounting, investor relations and other expenses that we did not incur as a private company.

In February 2019, we closed the IPO of our common stock, in which we issued and sold an aggregate of 5,769,201 shares of our common stock at a price of $14.00 per share for net proceeds of approximately $70.7 million (inclusive of a partial exercise of the underwriters' option), after deducting underwriting discounts, commissions and offering costs payable by us.

In January 2021, we closed a follow on public offering of 6,764,704 shares of our common stock, including 882,352 shares sold pursuant to the exercise in full by the underwriters of their overallotment option at $17.00 per share. The net proceeds to us were approximately $108.1 million, after deducting underwriting discounts and commissions and offering costs payable by us.

In October and November 2020, pursuant to our Sales Agreement with Cantor Fitzgerald, we received approximately $3.0 million in net proceeds from the sale of shares of our common stock.

COVID-19 Update

In December 2019, there was an outbreak of a novel strain of coronavirus ("COVID-19"). In March 2020, the World Health Organization declared COVID-19 a pandemic. The current COVID-19 pandemic has presented a substantial public health and economic challenge around the world and is affecting our employees, patients, communities and business operations, as well as the U.S. economy and financial markets. The full extent to which the COVID-19 pandemic will directly or indirectly impact our business, results of operations and financial condition will depend on future developments that are highly uncertain and cannot be accurately predicted, including new information that may emerge concerning COVID-19, the actions taken to contain it or mitigate its impact and the economic impact on local, regional, national and international markets. Our assessment to date continues to support that we have not experienced any material delays or significant financial impacts directly related to the pandemic other than some minor disruptions to clinical operations, including patient enrollment in some of our clinical trials. We will continue to monitor the overall impact of the COVID-19 pandemic on our business, assets and operations, including our personnel, programs, expected timelines, expenses, third-party contract manufacturing, contract research organizations and clinical trials.

While we are currently continuing our clinical trials we have underway in sites in the United States, the United Kingdom, and Europe, we expect that COVID-19 precautions may directly or indirectly impact the timeline for some of our clinical trials, as a result of potential delays or difficulties in enrolling or assessing patients in our clinical trials, clinical site initiation, diversion of healthcare resources away from the conduct of clinical trials, interruption of key clinical trial activities, among other factors. While our third-party contract manufacturers continue to operate at or near normal levels and while we currently do not anticipate any interruptions to our contract manufacturers' processes, it is possible that the pandemic and response efforts may have an impact in the future on our third-party contract manufacturers' ability to produce quantities of our product candidates for preclinical testing and clinical trials. In addition, we rely on contract research organizations or other third parties to assist us with clinical trials, and we cannot guarantee that they will continue to perform their contractual duties in a timely and satisfactory manner as a result of the pandemic. Certain of our clinical trial sites have experienced, and others may experience in the future, delays in collecting, receiving and analyzing data from patients enrolled in our clinical trials for due to limited staff at such sites, limitation or suspension of on-site visits by patients, or patients' reluctance to visit the clinical trial sites during the pandemic. We and our contract research organizations may also need to make certain adjustments to the operation of our clinical trials in an effort to ensure the monitoring and safety of patients and minimize risk to trial integrity during the pandemic and generally. We could also see an impact on our ability to interact with regulators, ethics committees or other important agencies due to limitations in regulatory authority, personnel resources or otherwise.

In addition, in response to the ongoing spread of COVID-19, we have established testing protocols for personnel access to our headquarter offices and laboratory, although substantially all of our employees and contractors that continue to telecommute. The effects of the COVID-19 pandemic could adversely impact our business, assets, operations and clinical trials, particularly if the COVID-19 pandemic continues and persists for an extended period of time. See *"Risk factors—Our business could be adversely affected by the effects of health epidemics, including the recent outbreak of the novel coronavirus. A COVID-19 pandemic is ongoing in many parts of the world and may result in significant disruptions which could materially affect our operations, including at our headquarters in the San Francisco Bay Area and at our clinical trial sites."* for more information regarding the potential impact of the COVID-19 pandemic on our business and operations. We continue to actively monitor this situation and the possible effects on our business and operations.

Collaborations with AbbVie

Development and Option Agreement

On November 20, 2019, we entered into a Development and Option Agreement, which we refer to, as amended, as the Development and Option Agreement, with AbbVie in connection with our HPN217 program, which targets B cell maturation antigen, or BCMA. Pursuant to such agreement, we granted to AbbVie an option to a worldwide, exclusive license to our patents and know-how applicable to the HPN217 program to develop, manufacture, and commercialize products arising from the HPN217 program and targeting BCMA, or HPN217 Products. Under the Development and Option Agreement, we filed an IND for HPN217 and are responsible for conducting clinical development activities pursuant to a mutually agreed upon development plan, including conducting a Phase 1/2 clinical trial of HPN217, in order for AbbVie to determine whether it wishes to exercise its option to a worldwide, exclusive license to such HPN217 program. We initiated a Phase 1/2 clinical trial in April 2020.

Under the Development and Option Agreement, AbbVie may exercise its license option at any time during a period commencing on the effective date of the agreement and expiring after a specified period following delivery by us of a specified data package arising from the first Phase 1/2 trial for the HPN217 Products. Following AbbVie's exercise of its option, and except for completion of certain development activities by us under the development plan, AbbVie will be solely responsible, at its cost, for the development, manufacture and commercialization of HPN217 and any other HPN217 Products. AbbVie is required to use commercially reasonable efforts to develop and obtain regulatory approval for one HPN217 Product, for at least one indication, for use in each Major Market (as defined in the Development and Option Agreement).

AbbVie paid an upfront payment of $30.0 million and, in June 2020, a development milestone payment of $50.0 million, as we dosed our first patient in the Phase 1/2 clinical trial of HPN217 in April 2020. If AbbVie exercises its option, AbbVie will pay us an option exercise fee of $200.0 million. Following option exercise, AbbVie will be required to make further payments to us of up to $230.0 million in the aggregate for the achievement of specified development, regulatory and commercial sales milestones for HPN217 Products. We will also receive tiered royalties on net sales by AbbVie, its affiliates and sublicensees of HPN217 Products at percentages ranging from the high single digits to the very low double digits, subject to specified offsets and reductions. Royalties will be payable under the Development and Option Agreement on a product-by-product and country-by-country basis commencing on the date of first commercial sale of HPN217 and other HPN217 Products, and ending on the later of expiration of all valid claims of specified licensed patents in such country, expiration of regulatory exclusivity in such country, or ten years following first commercial sale of such HPN217 Product in such country.

We will recognize revenue under the Development and Option Agreement as the initial development activities are performed using an input method, according to the costs incurred as related to the estimated costs for the development and regulatory activities to be performed through the completion of a Phase 1/2 clinical trial of HPN217. Accordingly, of the $30.0 million upfront payment received in 2019 and $50.0 million development milestone received in 2020, $13.8 million and $1.7 million of revenue was recognized for the year ended 2020 and 2019, respectively, and as of December 31, 2020, we had $ 64.5 million of deferred revenue under the Development and Option Agreement.

Amended and Restated Discovery Collaboration Agreement

On November 20, 2019, we entered into an Amended and Restated Discovery Collaboration and License Agreement, or the Restated Collaboration Agreement, with AbbVie, which agreement amends and restates the Discovery Collaboration and License Agreement entered into between us and AbbVie, dated October 10, 2017 and amended April 3, 2019, or the Original Collaboration Agreement. Pursuant to the Original Collaboration Agreement, we granted to AbbVie worldwide exclusive rights to develop and commercialize products that incorporate our proprietary TriTAC technology together with soluble TCRs provided by AbbVie that bind to targets accepted by the parties. Under the terms of the Original Collaboration Agreement, AbbVie was allowed to designate up to two targets, which it selected in 2017 and 2019, respectively. Pursuant to the Restated Collaboration Agreement, the worldwide, exclusive license granted to AbbVie under the Collaboration Agreement to develop and commercialize products that incorporate our proprietary Tri-specific T-cell Activating Construct, or TriTAC, platform technology together with soluble T cell receptors, or TCRs,

provided by AbbVie has been expanded to cover products that incorporate antibodies provided by AbbVie or by us. The expansion of the collaboration also allows AbbVie to designate up to six additional targets, selected during a specified period following the effective date, to be the subject of activities under the collaboration. During a period of up to four years following the date of AbbVie's designation of each target for the products, and confirmation of target availability, we and AbbVie will conduct certain research and discovery activities under a mutually agreed discovery and research plan in connection with the creation and evaluation of constructs comprising our proprietary TriTAC technology, in conjunction with the soluble TCR or antibody sequences directed at the agreed upon targets of interest. We may not, including through any third party, develop or commercialize any competing product that binds to any of the included targets. As was the case under the Original Collaboration Agreement, following the discovery phase, AbbVie will be solely responsible, at its cost, for the development, manufacture and commercialization of the products that arise from the activities under the discovery plan. AbbVie is required to use commercially reasonable efforts to develop and commercialize one such product directed to each target for which the discovery activities were completed in each Major Market (as defined in the Restated Collaboration Agreement).

In addition to the upfront payment of $17.0 million already paid under the Original Collaboration Agreement, we received an upfront payment of $20.0 million under the Restated Collaboration Agreement for AbbVie's right to select two additional targets and an option to select up to four further targets. AbbVie will be required to make payments to us, upon target selection, of $10.0 million for each target, up to four further targets selected by AbbVie. For each of the up to eight targets selected, we will receive up to $300.0 million in the aggregate for the achievement of specified development, regulatory and commercial sales milestones for licensed products indicated for human therapeutic or prophylactic use, totaling up to $2.4 billion in the aggregate, if such licensed products are successfully progressed against all-included targets and indications. We will also be eligible to receive tiered royalties on net sales by AbbVie, its affiliates and sublicensees of licensed products at percentages in the mid-single digits, subject to specified offsets and reductions. Royalties will be payable under the Restated Collaboration Agreement on a product-by-product and country-by-country basis commencing on the date of first commercial sale of each product, and ending on the later of expiration of all valid claims of specified licensed patents in such country, expiration of regulatory exclusivity in such country or ten years following first commercial sale of such product in such country. If licensed products are developed and commercialized for diagnostic or veterinary use, or certain screening or monitoring uses, the parties have agreed to negotiate an appropriate reduction in the economic terms applicable to such non-therapeutic and prophylactic applications.

We recognized revenue under the Original Collaboration Agreement over a period in which related research and development activities occur. Accordingly, of the $17.0 million upfront payment received in 2017, $3.7 million and $4.0 million of revenue was recognized during the years ended 2020 and 2019, respectively, and, as of December 31, 2020, we had $4.3 million of deferred revenue under the Original Collaboration Agreement.

We will recognize revenue under the Restated Collaboration Agreement over a period in which related research and development activities occur. Accordingly, of the $20.0 million upfront payment received in 2019, no revenue was recognized for the year ended 2020 and 2019. As of December 31, 2020, we had $20.0 million of deferred revenue under the Restated Collaboration Agreement.

The Restated Collaboration Agreement will terminate upon the date of the expiration of all AbbVie's royalty payment obligations in all countries. The Restated Collaboration Agreement may be terminated by either party immediately for the insolvency of the other party or on 90 days' written notice for an uncured material breach of such agreement by the other party. AbbVie may also terminate the Restated Collaboration Agreement in its entirety or on a target-by-target or country-by-country basis for any reason on 30 days' written notice to the Company. In addition, AbbVie may terminate the Restated Collaboration Agreement immediately in its entirety or on a target-by-target basis if AbbVie considers in good faith that there has been a failure of the discovery or development efforts with respect to such target, or that further development or commercialization of products directed to such target is not advisable as a result of a serious safety issue.

License Agreement with Werewolf Therapeutics, Inc.

In March 2018, we entered into an assignment and license agreement, or the Werewolf Agreement, with Werewolf Therapeutics, Inc., or Werewolf, a portfolio company of MPM Capital, Inc., a holder of more than 5% of our capital stock. Dr. Luke Evnin, a member of our Board until June 2020, is the Chairman of the board of directors of Werewolf. Under the Werewolf Agreement, we assigned certain patents that relate to certain inducible polypeptides (and binding moiety for conditional activation of certain polypeptides) to Werewolf and granted to Werewolf a non-exclusive, royalty-bearing, sublicenseable license under certain other patents owned by us and relating to certain proteins, to make, use and commercialize products that are covered by such patents in the field of molecules comprising a certain polypeptide. Werewolf assigned certain patents to us relating to adoptive cell therapies and binding moieties for conditional activation of immunoglobulin and non-immunoglobulin molecules. Under the Werewolf Agreement, Werewolf paid us an upfront fee of $0.5 million. If Werewolf commercializes products covered by the licensed patents, then beginning on the first sale of such products, Werewolf will be obligated to pay to us a royalty on net sales of such products by Werewolf, its affiliates and licensees at a percentage in the low single digits, subject to an obligation to make a minimum annual royalty payment at an amount in the low hundreds of thousands of dollars.

In December 2019, we and Werewolf amended the Werewolf Agreement by entering into a Second Amended and Restated Assignment and License Agreement, or the Amended Werewolf Agreement, to include the grant to Werewolf of an exclusive, royalty-bearing, sublicensable license under certain patents owned by us and relating to certain proteins, to make, use, and commercialize products that are covered by such patents in the field of molecules comprising a certain protein. If Werewolf commercializes products covered by these licensed patents, then beginning on the first sale of such products, Werewolf will be obligated to pay to us a royalty on net sales of such products by Werewolf, its affiliates and licensees at a percentage in the low single digits, and this royalty cannot be added to any other royalty owed to us under the Amended Werewolf Agreement. In addition, each party granted to the other a non-exclusive, royalty-free, sublicensable, perpetual license under certain other patents relating to a certain binding domain of a certain protein, to make, use and commercialize products that are covered by such patents in a field defined by a certain type of molecule for each party.

Royalties on net sales will be recognized when the underlying sales occur. No royalty revenue was recognized under the Werewolf Agreement for the year ended December 31, 2020.

Financial Operations Overview

Revenue

We have no products approved for commercial sale and have not generated any revenue from product sales. Our collaboration and license revenue to date is related to work performed by us under the Restated Collaboration Agreement and Development and Option Agreement, and is recognized when designated research and development services are performed. To date, we have not received any milestone or royalty payments under the Original Collaboration Agreement or the Restated Collaboration Agreement. We expect that any collaboration and license revenue we generate from the Restated Collaboration Agreement and the Development and Option Agreement and any future collaboration partners will fluctuate from period to period as a result of the timing and amount of milestones and other payments. Additionally, for research and development services that we recognize over time, we measure our progress using an input method. The input methods we use are based on the effort we expend or costs we incur toward the satisfaction of our performance obligation. We estimate the amount of effort we expend, including the time we estimate it will take us to complete the activities, or costs we incur in a given period, relative to the estimated total effort or costs to satisfy the performance obligation. This results in a percentage that we multiply by the transaction price to determine the amount of revenue we recognize each period. This approach requires us to make numerous estimates and use significant judgement. If our estimates or judgements change over the course of the collaboration, they may affect the timing and amount of revenue that we recognize in the current and future periods.

Operating Expenses

Research and Development

Research and development expenses represent costs incurred in performing research, development and manufacturing activities in support of our own product development efforts and those of our collaborators, and include salaries, employee benefits, stock-based compensation, laboratory supplies, outsourced research and development expenses, professional services and allocated facilities-related costs. We expense both internal and external research and development expenses as they are incurred. We do not allocate our costs by product candidates, as our research and development expenses include internal costs, such as payroll and other personnel expenses, and external costs, neither of which are tracked by product candidate. In particular, with respect to internal costs, several of our departments support multiple product candidate research and development programs. Non-refundable advance payments for services that will be used or rendered for future research and development activities are recorded as prepaid expenses and recognized as expenses as the related services are performed.

We expect our research and development expenses to continue to increase substantially in absolute dollars for the foreseeable future as we advance our product candidates into and through preclinical studies and clinical trials, pursue regulatory approval of our product candidates and expand our pipeline of product candidates. The process of conducting the necessary preclinical and clinical research to obtain regulatory approval is costly and time consuming. The actual probability of success for our product candidates may be affected by a variety of factors, including the safety and efficacy of our product candidates, early clinical data, investment in our clinical programs, the ability of collaborators to successfully develop our licensed product candidates, competition, manufacturing capability and commercial viability. We may never succeed in achieving regulatory approval for any of our product candidates. As a result of the uncertainties discussed above, we are unable to determine the duration and completion costs of our research and development projects or when and to what extent we will generate revenue from the commercialization and sale of our product candidates.

General and Administrative

Our general and administrative expenses consist primarily of personnel costs, allocated facilities costs and other expenses for outside professional services, including legal, human resource, audit and accounting services. Personnel costs consist of salaries, benefits and stock-based compensation. We expect to incur additional expenses as a result of operating as a public company, including expenses related to compliance with the rules and regulations of the Securities and Exchange Commission, or the SEC, Nasdaq and any other securities exchange on which our securities are traded, additional insurance expenses, investor relations activities and other administrative and professional services. We also expect to increase the size of our administrative staff and functions to support the growth of our business and the requirements of a public company.

Other Expense, net

Other expense, net is primarily comprised of foreign currency transaction gains or losses related to certain transactions with European third-party vendors.

Results of Operations

Comparison of Years Ended December 31, 2020 and 2019

	Year Ended December 31,			
	2020	2019	Change ($)	Change (%)
	(dollars in thousands)			
Revenue:				
Collaboration and license revenue	$ 17,444	$ 5,777	$ 11,667	202%
Total revenue	17,444	5,777	11,667	202%
Operating expenses:				
Research and development	52,565	41,592	10,973	26%
General and administrative	16,210	22,391	(6,181)	-28%
Total operating expenses	68,775	63,983	4,792	7%
Loss from operations	(51,331)	(58,206)	(6,875)	-12%
Interest income	1,449	2,676	(1,227)	-46%
Other expense	(26)	(42)	(16)	38%
Net loss	$ (49,908)	$ (55,572)	$ (5,664)	-10%

Revenue

Collaboration and license revenue increased by $11.7 million, or 202%, for the year ended December 31, 2020 compared to the year ended December 31, 2019. The increase was primarily due to a $12.1 million increase in revenue recognized related to the Development and Option Agreement which was entered into in November 2019, for research and development services performed, partially offset by a decrease of $0.4 million revenue recognized for research and development services performed under the Restated Collaboration Agreement.

Research and Development

The following table summarizes our research and development expenses incurred during the respective periods:

	Year Ended December 31,	
	2020	2019
	(In thousands)	
Product and clinical development	21,583	$ 17,208
Research and technology services	2,526	2,747
Laboratory supplies and equipment	2,441	2,226
Pharmacology services	727	1,303
Personnel-related	15,234	8,728
Facility and other allocated expenses	6,106	6,412
Consulting	3,948	2,968
Total research and development expenses	$ 52,565	$ 41,592

Research and development expenses increased by $11.0 million, or 26%, in 2020 compared to 2019. The increase was primarily due to a $6.5 million increase in personnel-related expenses due to an increase in headcount, $3.8 million increase in product and clinical development expense and pharmacology services due to development of four identified product candidates, which includes conducting preclinical and clinical studies to support ongoing clinical development, a $1.0 million increase in consulting expenses primarily due to preparation of our HPN424, HPN536, HPN217 and HPN328 clinical trials, which was offset by a $0.3 million decrease in facility and other allocated expenses.

General and Administrative

General and administrative expenses decreased by $6.2 million, or 28%, in 2020 compared to 2019. The decrease was primarily due to a $8.4 million decrease in legal fees and related expenses associated with the Maverick Therapeutics, Inc., or Maverick, litigation incurred in 2019, offset by a $2.2 million increase in personnel-related expenses due to an increase in headcount.

Interest Income, net

Interest income decreased by $1.2 million, or 46%, in 2020 compared to 2019. The decrease was primarily due to lower interest yields on our cash, money-market and marketable securities balances and higher amortization of premiums associated marketable securities purchases.

Other Expense, net

Other expense decreased for the year ended December 31, 2020, compared to the year ended December 31, 2019. The decrease was primarily due to lower losses from foreign currency fluctuation.

Liquidity and Capital Resources

Liquidity

Since our inception and through December 31, 2020, we have financed our operations primarily through proceeds from the issuance of convertible notes, the sale of redeemable convertible preferred stock and warrants, the sale of common stock, and upfront payments received by us from our collaboration and license agreements. As of December 31, 2020, we had $150.0 million in cash and cash equivalents and marketable securities, an accumulated deficit of $168.1 million and working capital of $81.8 million.

In January 2021, we sold an aggregate 6,764,704 shares of our common stock for $108.1 million in net proceeds after deducting underwriting discounts and commissions and offering costs.

In October and November 2020, pursuant to our Sales Agreement, with Cantor Fitzgerald, we received approximately $3.0 million in net proceeds from the sale of shares of our common stock. We expect to continue to incur substantial costs in order to conduct research and development activities necessary to develop and commercialize our product candidates. Additional capital will be needed to undertake these activities and commercialization efforts, and, therefore, we intend to raise such capital through the issuance of additional equity, borrowings, and potentially strategic alliances with other companies. However, if such financing is not available at adequate levels or on acceptable terms, we could be required to significantly reduce operating expenses and delay, reduce the scope of or eliminate some of the development programs or commercialization efforts, out-license intellectual property rights to our product candidates and sell unsecured assets, or a combination of the above, any of which may have a material adverse effect on the our business, results of operations, financial condition and/or out ability to fund our scheduled obligations on a timely basis or at all.

The COVID-19 pandemic has resulted, and is likely to continue to result, in significant national and global economic disruption and may adversely affect our business. Uncertainty exists concerning the magnitude of the impact and duration of the COVID-19 pandemic. As such, we are uncertain as to what effect the pandemic will have on our financial condition, liquidity, and future results of operations. We are actively monitoring this situation and the possible effects on its financial condition, liquidity, operations, suppliers, industry, and personnel. Given the daily evolution of the COVID-19 pandemic and the response to curb its spread, currently we are not able to estimate the effects of the COVID-19 pandemic to our results of operations, financial condition, or liquidity. If the disruption caused by the COVID-19 pandemic persists and deepens, we could experience an inability to access additional capital, which could in the future negatively affect our results of operations.

Capital Resources

Our primary uses of cash are to fund net losses and operating expenses, which consist primarily of funding our clinical and preclinical trials, research and development expenditures and related personnel costs. Cash used to fund operating expenses is

impacted by the timing of when we pay these expenses, as reflected in the change in our outstanding accounts payable and accrued expenses. The timing and amount of our future funding requirements depends on many factors, including the following:

- the scope, rate of progress, results and cost of our preclinical studies, clinical trials and other related activities;
- the cost of manufacturing clinical supplies, and establishing commercial supplies, of our product candidates and any products that we may develop;
- the number and characteristics of product candidates that we pursue;
- the cost, timing and outcomes of regulatory approvals;
- the cost and timing of establishing sales, marketing and distribution capabilities;
- the terms and timing of any other collaborative, licensing and other arrangements that we may establish;
- the timing, receipt and amount of sales, profit sharing or royalties, if any, from our potential products;
- the cost of preparing, filing, prosecuting, defending and enforcing any patent claims and other intellectual property rights
- the extent to which we acquire or invest in businesses, products or technologies, although we currently have no commitments or agreements relating to any of these types of transactions;
- the compliance and administrative costs associated with being a public company; and
- the cost of attracting, hiring and retaining additional administrative, clinical, regulatory and scientific personnel.

In March 2020, we entered into a Sales Agreement, with Cantor Fitzgerald under which we may offer and sell, from time to time at our sole discretion through Cantor Fitzgerald, as our sales agent, shares of our common stock having an aggregate offering price of up to $75.0 million. Cantor Fitzgerald may sell the common stock by any method permitted by law deemed to be an “at the market offering” as defined in Rule 415(a)(4) of the Securities Act of 1933, as amended, including sales made directly on or through Nasdaq or on any other existing trading market for our common stock. Any shares of our common stock sold will be issued pursuant to our shelf registration statement on Form S-3 (File No. 333-237175). We will pay Cantor Fitzgerald a commission up to 3.0% of the gross sales proceeds of any shares of our common stock sold through Cantor Fitzgerald under the Sales Agreement. As of December 31, 2020, we had sold 192,069 shares of our common stock pursuant to our Sales Agreement with Cantor Fitzgerald, for net proceeds of approximately $3.0 million.

Based on our current business plans, we believe that our existing cash, cash equivalents and marketable securities, funding from our collaborations and partners and most recently, net proceeds from our January 2021 underwritten follow on public offering and sales of our common stock under the Sales Agreement in October 2020 and November 2020, will be sufficient to fund our planned operations for at least the next 12 months from the issuance date of these audited financial statements. However, we will require additional capital in order to complete development of our product candidates and commercialize our products, if approved. We may seek to raise any necessary additional capital through a combination of public or private equity offerings, debt financings, collaborations, strategic alliances, licensing arrangements and other marketing and distribution arrangements. There can be no assurance that we will be successful in acquiring additional funding at levels sufficient to fund our operations or on terms favorable to us. If we are unable to obtain adequate financing when needed, we may have to delay, reduce the scope of or suspend one or more of our preclinical studies and clinical trials, research and development programs or commercialization efforts. Because of the numerous risks and uncertainties associated with the development and commercialization of our product candidates and the extent to which we may enter into additional collaborations with third parties to participate in their development and commercialization, we are unable to estimate the amounts of increased capital outlays and operating expenditures associated with our current and anticipated preclinical studies and clinical trials. To the extent that we raise additional capital through additional collaborations, strategic alliances or licensing arrangements with third parties, we may have to relinquish valuable rights to our product candidates, future revenue streams, research programs or product candidates or to grant licenses on terms that may not be favorable to us. If we do raise additional capital through public or private equity or convertible debt offerings, the ownership interest of our existing stockholders will be diluted, and the terms of these securities may include liquidation or other preferences that adversely affect our stockholders’ rights. If we raise additional capital through debt financing, we may be subject to covenants limiting or restricting our ability to take specific actions, such as incurring additional debt, operating and capital leases, making capital expenditures or declaring dividends.

Please see the section entitled “Risk Factors” for additional risks associated with our substantial capital requirements and the challenges we may face in raising capital.

Cash Flows

	Year Ended December 31,	
	2020	2019
	(In thousands)	
Net cash (used in) provided by:		
Operating activities	$ (8,616)	$ (2,891)
Investing activities	(63,626)	(69,315)
Financing activities	4,676	71,449
Net increase (decrease) in cash, cash equivalents, and restricted cash	$ (67,566)	$ (757)

Cash Flows from Operating Activities

In 2020, cash used in operating activities was $8.6 million, which consisted of a net loss of $49.9 million and a net change of $33.4 million in our net operating assets and liabilities, partially offset by $7.9 million in non-cash charges. The non-cash charges consisted of stock-based compensation of $4.9 million, depreciation and amortization of $2.1 million, amortization operating right-of-use lease asset of $0.4 million and net amortization of premiums and discounts on marketable securities of $0.5 million. The change in operating assets and liabilities was primarily due to an increase in deferred revenue of $31.5 million resulting from the upfront payments of $50 million cash milestone received from AbbVie related to the Development Option Agreement in June 2020 and an increase in accrued liabilities of $6.1 million primarily related to timing for ongoing research and development activities, which was offset by a decrease of $1.5 million in prepaid expenses and other assets, a decrease of $1.2 million in accounts payable resulting from the timing of payments made for operating costs and a decrease of $1.4 million in operating lease obligations.

In 2019, cash used in operating activities was $2.9 million, which consisted of a net loss of $55.6 million and a net change of $49.0 million in our net operating assets and liabilities, partially offset by $3.6 million in non-cash charges. The non-cash charges consisted of stock-based compensation of $2.1 million, depreciation and amortization of $0.9 million, amortization operating right-of-use lease asset of $1.2 million and net amortization of premiums and discounts on marketable securities of $0.5 million. The change in operating assets and liabilities was primarily due to an increase in deferred revenue of $45.3 million resulting from the upfront payments of $30 million from the Development and Option Agreement and $20 million from the Restated Collaboration Agreement, a net increase in accounts payable and accrued liabilities of $2.5 million related to legal fees associated with Maverick litigation and timing of research and development activities, an increase in prepaid expenses and other current assets of $1.8 million resulting from the timing of payments made for operating costs to support our operations as a public company and timing for ongoing research and development activities and a decrease in other assets of $3.0 million resulting from the recognition of deferred IPO costs.

Cash Flows from Investing Activities

In 2020, cash used in investing activities of $63.6 million primarily related to purchases of marketable securities and property and equipment consisting primarily of laboratory equipment offset by the maturity and sale of marketable securities.

In 2019, cash used in investing activities of $69.3 million primarily related to purchases of marketable securities and property and equipment consisting primarily of laboratory equipment offset by the maturity and sale of marketable securities.

Cash Flows from Financing Activities

In 2020, cash provided by financing activities of $4.7 million was primarily related to proceeds received from the sale of our common stock pursuant to our Sales Agreement with Cantor Fitzgerald in October 2020 and November 2020, or net proceeds of approximately $3.0 million. In addition, we received $1.7 million cash from the exercise of stock options and employee stock purchases under the employee stock purchase plan.

In 2019, cash provided by financing activities of $71.4 million was primarily related to the proceeds received from our IPO in February 2019.

Contractual Obligations and Other Commitments

The following table summarizes our contractual obligations as of December 31, 2020:

	Payments due by period				
	Less than 1 year	1 to 3 years	4 to 5 years	After 5 years	Total
	(In thousands)				
Operating lease obligations	$ 2,355	$ 8,195	$ 2,908	$ 4,525	$ 17,983
Total	$ 2,355	$ 8,195	$ 2,908	$ 4,525	$ 17,983

The obligations noted above represent operating lease obligations related to our currently occupied premises at 131 Oyster Point Blvd in South San Francisco, California that commenced in July 2019 and expires in June 2027. The initial annual base rent is approximately $2.2 million, and such amount will increase by 3.5% annually on each anniversary of the commencement date, equaling approximately $20.0 million over the eight-year lease term. In connection with the lease, we will maintain a letter of credit for the benefit of the landlord in the amount of $0.5 million. Under the lease agreement, we have an option to extend the lease for an additional period of eight years. As of December 31, 2020, we have not determined whether we will exercise our option to extend the lease term.

In December 2016, we entered into a royalty transfer agreement with MPM Oncology Charitable Foundation, Inc. and UBS Optimus Foundation pursuant to which we will pay 0.5% of our annual global net sales to each of the counterparties for products that incorporate or utilize intellectual property that was discovered or developed by us prior to our initial public offering.

In October 2015, we entered into a collaboration and license agreement with AGC Biologics, Inc. (formerly known as CMC ICOS Biologics, Inc.), or AGC, for certain manufacturing-related technology, and in July 2016, we entered into a development and manufacturing agreement with AGC. Pursuant to these agreements, so long as AGC is our exclusive manufacturer, we will not owe AGC any milestone or royalty payments for the use of their manufacturing technology. However, if AGC is no longer our exclusive manufacturer, and we still use such technology, we will owe AGC specified milestones of up to $350,000 per specified product and a royalty on net sales of these products of less than 1%. We have an option to buy out these royalty obligations by making a one-time payment to AGC in a dollar amount in the mid-single digit millions. See “Business—Collaboration and License Agreements—Agreements with AGC Biologics, Inc.”

In addition, we enter into agreements in the normal course of business with contract research organizations for clinical trials and with vendors for preclinical studies and other services and products for operating purposes, which are generally cancelable upon written notice. These payments are not included in this table of contractual obligations.

Off-Balance Sheet Arrangements

Since our inception, we have not engaged in any off-balance sheet arrangements, as defined in the rules and regulations of the SEC.

Critical Accounting Polices and Estimates

Our management’s discussion and analysis of our financial condition and results of operations is based on our financial statements, which have been prepared in accordance with GAAP. The preparation of these financial statements requires us to make estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities at the date of the financial statements, as well as the reported revenue generated, and reported expenses incurred during the reporting periods. Our estimates are based on our historical experience and on various other factors that we believe are reasonable under the circumstances, the results of which form the basis for making judgments about the carrying value of assets and liabilities that are not readily apparent from other sources. Actual results may differ from these estimates under different assumptions or conditions.

While our significant accounting policies are described in the notes to our financial statements included elsewhere in this Annual Report on Form 10-K, we believe that the following critical accounting policies are most important to understanding and evaluating our reported financial results.

Revenue Recognition

Effective January 1, 2017, we early adopted on a full retrospective basis Accounting Standards Codification Topic 606, *Revenue from Contracts with Customers*, or Topic 606. This standard applies to all contracts with customers, except for contracts that are within the scope of other standards, such as leases, insurance, collaboration arrangements and financial instruments. In accordance with ASC 606, we recognize revenue when our customer obtains control of promised goods or services, in an amount that reflects the consideration which we expect to receive in exchange for those goods or services.

To determine revenue recognition for arrangements that we determine are within the scope of Topic 606, we perform the following five steps:

(i) identify the contract(s) with a customer;
(ii) identify the performance obligations in the contract;
(iii) determine the transaction price;
(iv) allocate the transaction price to the performance obligations in the contract; and
(v) recognize revenue when or as we satisfy a performance obligation.

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

We allocate the transaction price to each performance obligation on a relative stand-alone selling price basis. The stand-alone selling price may be, but is not presumed to be, the contract price. In determining the allocation, we maximize the use of observable inputs. When the stand-alone selling price of a good or service is not directly observable, we estimate the stand-alone selling price for each performance obligation using assumptions that require judgment. Acceptable estimation methods include, but are not limited to: (i) the adjusted market assessment approach, (ii) the expected cost plus margin approach, and (iii) the residual approach (when the stand-alone selling price is not directly observable and is either highly variable or uncertain). In order for the residual approach to be used, we must demonstrate that (a) there are observable stand-alone selling prices for one or more of the performance obligations and (b) one of the two criteria in ASC 606-10- 32-34(c)(1) and (2) is met. The residual approach cannot be used if it would result in a stand-alone selling price of zero for a performance obligation, as a performance obligation, by definition, has value on a stand-alone basis.

An option in a contract to acquire additional goods or services gives rise to a performance obligation only if the option provides a material right to the customer that it would not receive without entering into that contract. Factors that we consider in evaluating whether an option represents a material right include, but are not limited to: (i) the overall objective of the arrangement, (ii) the benefit the collaborator might obtain from the arrangement without exercising the option, (iii) the cost to exercise the option (e.g. priced at a significant and incremental discount) and (iv) the likelihood that the option will be exercised. With respect to options determined to be performance obligations, we recognize revenue when those future goods or services are transferred or when the options expire.

We enter into corporate collaborations under which we may obtain upfront license fees, research and development funding, and development, regulatory and commercial milestone payments and royalty payments. Our performance obligations under these arrangements may include licenses of intellectual property, distribution rights, research and development services, delivery of manufactured product and/or participation on joint steering committees.

- *Licenses of Intellectual Property.* If the license to our intellectual property is determined to be distinct from the other performance obligations identified in the arrangement, we recognize revenue from upfront fees allocated to the license when the license is transferred to the customer and the customer is able to use and benefit from the license. For licenses that are bundled with other promises, we utilize judgement to assess the nature of the combined performance obligation to determine whether the combined performance obligation is satisfied over time or at a point in time and, if over time, the appropriate method of measuring proportional performance for purposes of recognizing revenue from non-refundable, upfront fees. We evaluate the measure of proportional performance each reporting period and, if necessary, adjust the measure of performance and related revenue recognition. We recognize collaboration revenue by measuring the progress toward complete satisfaction of the performance obligation using an input measure. In order to recognize revenue over the research and development period, we measure actual costs incurred to date compared to the overall total expected costs to satisfy the performance obligation. Revenues are recognized as the program costs are incurred. We will re-evaluate the estimate of expected costs to satisfy the performance obligation each reporting period and make adjustments for any significant changes.

- *Milestone Payments.* At the inception of each arrangement that includes development, regulatory or commercial milestone payments, we evaluate whether the milestones are considered probable of being reached and estimates the amount to be included in the transaction price. Topic 606 suggests two alternatives to use when estimating the amount of variable consideration: the expected value method and the most likely amount method. Under the expected value method, an entity considers the sum of probability-weighted amounts in a range of possible consideration amounts. Under the most likely amount method, an entity considers the single most likely amount in a range of possible consideration amounts. Whichever method is used, it should be consistently applied throughout the life of the contract; however, it is not necessary for us to use the same approach for all contracts. We expect to use the most likely amount method for development and regulatory milestone payments. If it is probable that a significant revenue reversal would not occur, the associated milestone value is included in the transaction price. Milestone payments that are not within our or the licensee's control, such as regulatory approvals, are not considered probable of being achieved until those approvals are received. The transaction price is then allocated to each performance obligation on a relative stand-alone selling price basis. We recognize revenue as or when the performance obligations under the contract are satisfied. At the end of each subsequent reporting period, we re-evaluate the probability or achievement of each such milestone and any related constraint, and if necessary, adjust our estimates of the overall transaction price. Any such adjustments are recorded on a cumulative catch-up basis, which would affect revenues and earnings in the period of adjustment.
- *Commercial Milestones and Royalties.* For arrangements that include sales-based royalties, including milestone payments based on the level of sales, and in which the license is deemed to be the predominant item to which the royalties relate, we recognize revenue when the related sales occur. To date, we have not recognized any royalty revenue resulting from our collaboration arrangements.

Upfront payments and fees are recorded as deferred revenue upon receipt or when due, and may require deferral of revenue recognition to a future period until we perform our obligations under these arrangements. Amounts payable to us are recorded as accounts receivable when our right to consideration is unconditional.

See Note 7, "Collaboration and License Agreements" for additional details regarding our collaboration arrangements with AbbVie.

Research and Development Expenses and Accrued Research and Development Costs

We expense research and development costs as incurred. Research and development expenses consist of personnel costs for our research and product development employees. Also included are non-personnel costs such as professional fees payable to third parties for preclinical and preclinical studies, clinical trials and research services, production of materials for clinical trials, laboratory supplies and equipment maintenance and depreciation, intellectual property licenses and other consulting costs. We estimate preclinical and clinical study and research expenses based on the services performed, pursuant to contracts with research institutions that conduct and manage preclinical studies, clinical trials and research services on our behalf. We estimate these expenses based on discussions with management and external service providers as to the progress or stage of completion of services and the contracted fees to be paid for such services. We record the estimated costs of research and development activities based upon the estimated amount services provided but not yet invoiced, and include these costs in development expenses. We accrue for these costs based on factors such as estimates of the work completed and in accordance with agreements established with our third-party service provides under the service agreements. We make significant judgments and estimates in determining the accrued liabilities balance in each reporting period. As actual costs become known, we adjust our accrued liabilities. We have not experienced any material differences between accrued costs and actual costs incurred. However, the status and timing of actual services performed may vary from our estimates, resulting in adjustments to expense in future periods. Changes in these estimates that result in material changes to our accruals could materially affect our results of operations. Payments associated with licensing agreements to acquire exclusive license to develop, use, manufacture and commercialize products that have not reached technological feasibility and do not have alternate future use are expensed as incurred.

Payments made to third parties under these arrangements in advance of the performance of the related services by the third parties are recorded as prepaid expenses until the services are rendered. Such payments are evaluated for current or long-term classification based on when such services are expected to be received.

Stock-Based-Compensation

We maintain a stock-based compensation plan as a long-term incentive for employees, consultants and members of our board of directors. The plan allows for the issuance of non-statutory options, or NSOs, and incentive stock options to employees and NSOs to nonemployees.

Share-based payments are measured using fair-value-based measurements and recognized as compensation expense over the service period in which the awards are expected to vest. Our fair-value-based measurements of awards to employees and directors as of the grant date utilize the single-option award-valuation approach, and we use the straight-line method for expense attribution. The valuation model used for calculating the estimated fair value of stock awards is the Black-Scholes option-pricing model. The Black-Scholes model requires us to make assumptions and judgments about the variables used in the calculations, including the expected term (weighted-average period of time that the options granted are expected to be outstanding), the expected volatility of our common stock, the related risk-free interest rate and the expected dividend. We have elected to recognize forfeitures of share-based payment awards as they occur.

Effective January 1, 2018, we early adopted ASU No. 2018-07, *Compensation – Stock Compensation (Topic 718): Improvements to Nonemployee Share-Based Payment Accounting* ("ASU 2018-07"). The new guidance requires equity-classified share-based payment awards issued to nonemployees to be measured on the grant date, instead of being measured through the performance completion date under the pre-existing guidance. For stock-based awards issued to non-employees, we record expense related to stock options based on the fair value of the options calculated using the Black-Scholes option-pricing model based on the measured grant date. For stock-based awards issued to non-employees prior to January 1, 2018, we recorded expense related to stock options based on the fair value of the options calculated using the Black-Scholes option-pricing model, remeasured at each reporting period until the options vest over the service performance period.

We estimate the fair value of stock options granted to our employees on the grant date, and rights to acquire stock granted under our Employee Stock Purchase Plan ("ESPP"), and the resulting stock-based compensation expense, using the Black-Scholes option-pricing model.

The Black-Scholes option-pricing model requires the use of highly subjective assumptions which determine the fair value of stock-based awards. These assumptions include:

- *Expected term.* The expected term represents the period that stock-based awards are expected to be outstanding. The expected term for option grants is determined using the simplified method. The simplified method deems the term to be the average of the time-to-vesting and the contractual life of the stock-based awards.
- *Expected volatility*. Since we have a limited trading history for our common stock, the expected volatility was estimated based on the average volatility for comparable publicly traded biotechnology companies over a period equal to the expected term of the stock option grants. The comparable companies were chosen based on their similar size, stage in the life cycle or area of specialty.
- *Risk-free interest rate*. The risk-free interest rate is based on the U.S. Treasury zero coupon issues in effect at the time of grant for periods corresponding with the expected term of option.
- *Expected dividend*. We have never paid dividends on our common stock and have no plans to pay dividends on our common stock. Therefore, we used an expected dividend yield of zero.

Fair Value of Common Stock

Prior to our IPO in February 2019, the fair values of the shares of common stock underlying our share-based awards were estimated on each grant date by our board of directors. Given the absence of a public trading market for our common stock prior to our February 2019 IPO, our board of directors exercised reasonable judgment and considered a number of objective and subjective factors to determine the best estimate of the fair value of our common stock, including our stage of development; our actual operating results and financial performance; progress of our research and development efforts; conditions in the industry and economy in general; the rights, preferences and privileges of our convertible preferred stock relative to those of our common stock; the likelihood of achieving a liquidity event for the holders of our common stock, such as an initial public offering or a sale of our company, given prevailing market conditions; equity market conditions affecting comparable public companies; the lack of marketability of our common stock and the results of independent third-party valuations. Valuations of our common stock were prepared by an unrelated third-party valuation firm in accordance with the guidance provided by the American Institute of Certified Public Accountants 2013 Practice Aid, Valuation of Privately-Held-Company Equity Securities Issued as Compensation.

For our valuations performed prior to December 31, 2018, we used the Option Pricing Model (OPM) Backsolve method to estimate the fair value of our common stock. In an option pricing method, or OPM, framework, the backsolve method for inferring the equity value implied by a recent financing transaction involves making assumptions for the expected time to liquidity, volatility and risk-free rate and then solving for the value of equity such that value for the most recent financing equals the amount paid. Furthermore, as of each of the valuation dates prior to December 31, 2018, we were at an early stage of development and future liquidity events were difficult to forecast. We applied a discount for lack of marketability to account for a lack of access to an active public market.

Subsequent to the completion of our IPO in February 2019, our board of directors determines the fair value of our common stock based on the closing price of our common stock as reported on the date of grant on the primary stock exchange on which our common stock is traded.

Recent Accounting Pronouncements

See Note 2 to our financial statements included elsewhere in this report for more information.

Emerging Growth Company Status

We are an emerging growth company, as defined in the Jumpstart Our Business Startups Act of 2012, or the JOBS Act. Under the JOBS Act, emerging growth companies can delay adopting new or revised accounting standards issued subsequent to the enactment of the JOBS Act until such time as those standards apply to private companies. We elected to use this extended transition period for complying with new or revised accounting standards that have different effective dates for public and private companies until the earlier of the date that we (i) are no longer an emerging growth company or (ii) affirmatively and irrevocably opt out of the extended transition period provided in the JOBS Act. As a result, these financial statements may not be comparable to companies that comply with the new or revised accounting pronouncements as of public company effective dates. We early adopted ASU 2014-09, *Revenue from Contracts with Customers* (Accounting Standards Codification Topic 606), ASU 2016-09, *Stock Compensation—Improvements to Employee Share-Based Payment Accounting*, and ASU 2018-07, *Compensation – Stock Compensation (Topic 718): Improvements to Nonemployee Share-Based Payment Accounting*, ASU No. 2016-02, *(Topic 842), Leases*, as the JOBS Act does not preclude an emerging growth company from early adopting a new or revised accounting standard earlier than the time that such standard applies to private companies. We expect to use the extended transition period for any other new or revised accounting standards during the period in which we remain an emerging growth company.

We will remain an emerging growth company until the earliest of (i) the last day of our first fiscal year (a) following the fifth anniversary of the completion of our IPO, (b) in which we have total annual gross revenues of at least $1.07 billion or (c) in which we are deemed to be a large accelerated filer, which means the market value of our common stock that is held by non-affiliates exceeds $700.0 million as of the prior June 30th and (ii) the date on which we have issued more than $1.0 billion in non-convertible debt securities during the prior three-year period.

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

Interest Rate Risk

Market risk represents the risk of loss that may impact our financial position due to adverse changes in financial market prices and rates. We are exposed to market risks in the ordinary course of our business. Our market risk exposure is primarily the result of fluctuations that may cause the market value of these assets to fluctuate. We are exposed to market risk related to changes in interest rates. We had cash, cash equivalents and marketable securities of $150.0 million as of December 31, 2020, which consisted primarily of money market funds and marketable securities, largely composed of investment grade, short- to intermediate-term fixed income securities and cash, cash equivalents and marketable securities of $155.1 million as of December 31, 2019, which consisted primarily of money market funds and marketable securities, largely composed of investment grade, short- to intermediate-term fixed income securities.

The primary objective of our investment activities is to preserve capital to fund our operations. We also seek to maximize income from our investments without assuming significant risk. To achieve our objectives, we maintain a portfolio of investments in a variety of securities of high credit quality and short-term duration, according to our board-approved investment policy. Our investments are subject to interest rate risk and could fall in value if market interest rates increase. A hypothetical 10% relative change in interest rates during any of the periods presented would not have had a material impact on our consolidated financial statements.

Item 8. Financial Statements and Supplemental Data

The information required to be filed in this item appears under “Exhibits and Financial Statement Schedules” in Part IV, Item 15 of this Annual Report on Form 10-K and is set forth on pages F-1 to F-30.

The following financial statements of the registrant, related notes and report of independent registered public accounting firm are set forth beginning on page F-1 of this 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

Our management, with the participation of our Chief Executive Officer and Chief Financial Officer, have evaluated our disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) of the Exchange Act) as of the end of the period covered by this Annual Report on Form 10-K. Based on that evaluation, our chief executive officer and our chief financial officer have concluded that, as of the end of the period covered by this Annual Report on Form 10-K, our disclosure controls and procedures are designed at a reasonable assurance level and are effective to provide reasonable assurance that information we are required to disclose in reports that we file or submit under the Exchange Act is recorded, processed, summarized, and reported within the time periods specified in SEC rules and forms, and that such information is accumulated and communicated to our management, including the Chief Executive Officer and the Chief Financial Officer, as appropriate, to allow timely decisions regarding required disclosures.

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 defined in Rules 13a-15(f) and 15d-15(f) of the Exchange Act. Our management, under the supervision and with the participation of our Chief Executive Officer and Chief Financial Officer, conducted an evaluation of the effectiveness of our internal control over financial reporting as of December 31, 2020 based on the framework in Internal Control-Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 Framework). Based on the results of its evaluation, our management concluded that our internal control over financial reporting was effective as of December 31, 2020.

Changes in Internal Control over Financial Reporting

There were no changes in our internal control over financial reporting identified in connection with the evaluation required by Rule 13a-15(d) and 15d-15(d) of the Exchange Act that occurred during the quarter ended December 31, 2020 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

Inherent Limitation on the Effectiveness of Internal Control

The effectiveness of any system of internal control over financial reporting, including ours, is subject to inherent limitations, including the exercise of judgment in designing, implementing, operating, and evaluating the controls and procedures, and the inability to eliminate misconduct completely. Accordingly, in designing and evaluating the disclosure controls and procedures, management recognizes that any system of internal control over financial reporting, including ours, no matter how well designed and operated, can only provide reasonable, not absolute assurance of achieving the desired control objectives. In addition, the design of disclosure controls and procedures must reflect the fact that there are resource constraints and that management is required to apply its judgment in evaluating the benefits of possible controls and procedures relative to their costs. Moreover, 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. We intend to continue to monitor and upgrade our internal controls as necessary or appropriate for our business, but cannot assure you that such improvements will be sufficient to provide us with effective internal control over financial reporting.

Item 9B. Other Information.

None.

PART III

Item 10. Directors, Executive Officers and Corporate Governance

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 definitive proxy statement to be filed with the SEC on Schedule 14A in connection with our 2020 Annual Meeting of Shareholders, or the Proxy Statement, which is expected to be filed not later than 120 days after December 31, 2020.

Item 11. Executive Compensation

Information required by this item is incorporated by reference to the information set forth in the sections titled “Executive Compensation,” “Director Compensation” and “Committees of the Board of Directors — Compensation Committee Interlocks and Insider Participation” in the Proxy Statement.

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

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 the Proxy Statement and is incorporated herein by reference.

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

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 the Proxy Statement and is incorporated herein by reference.

Item 14. Principal Accounting Fees and Services.

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” in the Proxy Statement.

PART IV

Item 15. Exhibits and Financial Statement Schedules.

(a) The following documents are filed as part of this Annual Report on Form 10-K:

1. Financial Statements:

The following financial statements and schedules of the Registrant are contained in Part II, Item 8, "Financial Statements and Supplementary Data" of this Annual Report on Form 10-K:

2. Financial Statement Schedules

No financial statement schedules are provided because the information called for is not required or is shown either in the financial statements or notes thereto.

(b) Exhibits

The exhibits listed in the following "Exhibit Index" are filed, furnished or incorporated by reference as part of this Annual Report.

EXHIBIT INDEX

Number	Exhibit Description	Form	File No.	Exhibit	Filing Date	Filed Herewith
2.1¥*	Asset Transfer Agreement by and between the Registrant and Maverick Therapeutics, Inc., dated as of December 30, 2016, as amended	S-1	333-229040	2.1	1/29/2019	
3.1	Amended and Restated Certificate of Incorporation of the Registrant	10-Q	001-38800	3.1	8/5/2019	
3.2	Amended and Restated Bylaws of the Registrant	8-K	001-38800	3.2	2/13/2019	
4.1	Form of Common Stock Certificate.	S-1	333-229040	4.1	1/29/2019	
4.2	Amended and Restated Investors' Rights Agreement, dated as of November 9, 2018, by and among the Registrant and certain of its stockholders.	S-1	333-229040	4.2	12/27/2018	
4.3	Description of Registrant's securities registered pursuant to Section 12 of the Securities Exchange Act of 1934	10-K	001-38800 20709109	4.3	3/12/2020	
10.1+	Form of Indemnification Agreement between the Registrant and each of its directors and executive officers	S-1	333-229040	10.4	1/4/2019	
10.2+	Harpoon Therapeutics, Inc. 2015 Equity Incentive Plan and related form agreements	S-1	333-229040	10.1	12/27/2018	
10.3+	Harpoon Therapeutics, Inc. 2019 Equity Incentive Plan and related form agreements	S-1	333-229040	10.2	1/29/2019	
10.4+	Harpoon Therapeutics, Inc. Amended and Restated Employee Stock Purchase Plan and related form agreements	S-1	333-229040	10.3	1/29/2019	
10.5+	Employment Offer Letter by and between Gerald McMahon and the Registrant, dated as of December 10, 2016	S-1	333-229040	10.5	12/27/2018	
10.6+	Employment Offer Letter by and between Holger Wesche and the Registrant, dated as of March 17, 2015, as amended	S-1	333-229040	10.6	12/27/2018	
10.7+	Employment Offer Letter by and between Natalie Sacks and the Registrant, dated as of September 13, 2018	S-1	333-229040	10.7	12/27/2018	
10.8+	Non-Employee Director Compensation Policy	S-1	333-229040	10.10	1/29/2019	
10.9	Royalty Transfer Agreement by and between the Registrant, MPM Oncology Charitable Foundation, Inc. and the UBS Optimus Foundation, dated as of December 1, 2016, as amended	S-1	333-229040	10.13	12/27/2018	
10.10¥	First Amended and Restated Assignment and License Agreement between the Registrant and Werewolf Therapeutics, Inc., dated as of October 19, 2018	S-1	333-229040	10.14	12/27/2018	
10.11¥	CHEF 1 Collaboration and License Agreement between the Registrant and CMC ICOS Biologics, Inc., dated October 26, 2015	S-1	333-229040	10.15	12/27/2018	
10.12¥	Amendment to CHEF1 Collaboration and License Agreement and Development and Manufacturing Services Agreement between Registrant and AGC Biologics, Inc. (previously CMC ICOS Biologics, Inc.), dated as of December 12, 2018	S-1	333-229040	10.21	1/29/2019	
10.13¥	Development and Manufacturing Services Agreement between the Registrant and CMC ICOS Biologics, Inc., dated July 5, 2016	S-1	333-229040	10.16	12/27/2018	
10.14	Lease by and between the Registrant and HCP Oyster Point III LLC, dated as of July 27, 2018	S-1	333-229040	10.19	12/27/2018	
10.15+	Employment Offer Letter by and between Georgia Erbez and the Registrant, dated as of October 19, 2018	S-1	333-229040	10.20	1/4/2019	
10.16¥	Amended and Restated Discovery Collaboration and License Agreement between the Registrant and AbbVie Biotechnology Ltd., dated as of November 20, 2019	10-K	001-38800	10.17	3/12/2020	
10.17¥	Development and Option Agreement between the Registrant and AbbVie Biotechnology Ltd., dated as of November 20, 2019	10-K	001-38800	10.18	3/12/2020	
10.18¥	Second Amended and Restated Assignment and License Agreement between the Registrant and Werewolf Therapeutics, Inc., dated as of December 20, 2019	10-K	001-38800	10.19	3/12/2020	
10.19+	Fifth Amended and Restated Consulting Agreement by and between Patrick Baeuerle and the Registrant, dated as of March 3, 2020	10-K	001-38800	10.20	3/12/2020	
10.20	Controlled Equity Offering℠ Sales Agreement, dated March 13, 2020, between Cantor Fitzgerald & co. and the Registrant.	S-3	333-237175	1.1	3/13/2020	

Number	Exhibit Description	Form	File No.	Exhibit	Filing Date	Filed Herewith
10.21¥*	First Amendment to the Development and Option Agreement between the Registrant and Abbvie Biotechnology Ltd., dated as of April 21, 2020	10-Q	001-38800	10.1	08/05/2020	
10.22*	Side Letter Amendment to Development and Option Agreement between the Registrant and AbbVie Biotechnology Ltd., dated April 15, 2020	10-Q	001-38800	10.2	08/05/2020	
21.1	List of subsidiaries of the Registrant	S-1	333-229040	21.1	12/27/2018	
23.1	Consent of Independent Registered Public Accounting Firm					x
24.1	Power of Attorney (included on signature page to this Form 10-K)					x
31.1	Certification of Chief Executive Officer pursuant to Exchange Act Rules 13a-14(a) and 15d-14(a), as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002					x
31.2	Certification of Chief Financial Officer pursuant to Exchange Act Rules 13a-14(a) and 15d-14(a), as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002					x
32.1†	Certifications of Chief Executive Officer and Chief Financial Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002					x
101.INS	XBRL Instance Document					
101.SCH	XBRL Taxonomy Schema Linkbase Document					
101.CAL	XBRL Taxonomy Definition Linkbase Document					
101.DEF	XBRL Taxonomy Calculation Linkbase Document					
101.LAB	XBRL Taxonomy Labels Linkbase Document					
101.PRE	XBRL Taxonomy Presentation Linkbase Document					

†	The certifications attached as Exhibit 32.1 that accompany this Annual Report on Form 10-K, are deemed furnished and not filed with the Securities and Exchange Commission and are not to be incorporated by reference into any filing of Harpoon Therapeutics, Inc. under the Securities Act of 1933, as amended, or the Securities Exchange Act of 1934, as amended, whether made before or after the date of this Annual Report on Form 10-K, irrespective of any general incorporation language contained in such filing.
+	Indicates management contract or compensatory plan.
¥	Confidential treatment has been granted as to certain portions of this exhibit, which portions have been omitted and submitted separately to the Securities and Exchange Commission.
*	Certain schedules and/or exhibits to this agreement have been omitted in accordance with Item 601(b)(2) of Regulation S-K. A copy of any omitted schedule and/or exhibit will be furnished to the Securities and Exchange Commission upon request.
**	Portions of this exhibit have been omitted in accordance with Item 601(b)(10) of Regulation S-K.

Item 16. Form 10-K Summary

None.

SIGNATURES

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

Date: March 10, 2021

HARPOON THERAPEUTICS, INC.

By: /s/ Gerald McMahon, Ph.D.

Gerald McMahon, Ph.D.

President and Chief Executive Officer

POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints Gerald McMahon, Ph.D. and Georgia Erbez, and each of them, as his or her true and lawful attorneys-in-fact and agents, with full power of substitution for him or her, and in his or her name in any and all capacities, to sign any and all amendments to this Annual Report on Form 10-K, and to file the same, with exhibits thereto and other documents in connection therewith, with the U.S. 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 requisite and necessary to be done therewith, as fully to all intents and purposes as he or she might or could do in person, hereby ratifying and confirming all that said attorneys-in-fact and agents, and either of them, his or her substitute or substitutes, may lawfully do or cause to be done by virtue hereof.

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

Signature	Title	Date
/s/ Gerald McMahon, Ph.D. Gerald McMahon, Ph.D.	President, Chief Executive Officer and Director *(Principal Executive Officer)*	March 10, 2021
/s/ Georgia Erbez Georgia Erbez	Chief Financial Officer *(Principal Financial and Accounting Officer)*	March 10, 2021
/s/ Ron Hunt Ron Hunt	Chairman of the Board of Directors	March 10, 2021
/s/ Andrew Robbins Andrew Robbins	Director	March 10, 2021
/s/ Mark Chin Mark Chin	Director	March 10, 2021
/s/ Jonathan Drachman, M.D. Jonathan Drachman, M.D.	Director	March 10, 2021
/s/ Julie Eastland Julie Eastland	Director	March 10, 2021
/s/ Joseph Bailes Joseph Bailes	Director	March 10, 2021
/s/ Scott Myers Scott Myers	Director	March 10, 2021
/s/ Joanne Viney Joanne Viney	Director	March 10, 2021

HARPOON THERAPEUTICS, INC.
INDEX TO FINANCIAL STATEMENTS

Report of Independent Registered Public Accounting Firm

To the Stockholders and the Board of Directors of Harpoon Therapeutics, Inc.

Opinion on the Financial Statements

We have audited the accompanying balance sheets of Harpoon Therapeutics, Inc. (the Company), as of December 31, 2020 and 2019, the related statements of operations and comprehensive loss, convertible preferred stock and stockholders' equity (deficit) and cash flows for each of the three years in the period ended December 31, 2020, 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, 2020 and 2019, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2020 in conformity with U.S. generally accepted accounting principles.

Basis for Opinion

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

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

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

/s/ Ernst & Young LLP

We have served as the Company's auditor since 2017.

Redwood City, California
March 10, 2021

HARPOON THERAPEUTICS, INC.
Balance Sheets
(In thousands, except share and per share amounts)

	December 31, 2020	December 31, 2019
Assets		
Current assets		
Cash and cash equivalents	$ 21,170	$ 88,736
Short-term marketable securities	104,860	59,337
Prepaid expenses and other current assets	3,724	2,544
Total current assets	129,754	150,617
Property and equipment, net	10,188	11,383
Long-term marketable securities	23,946	7,056
Operating lease right-of-use asset	6,583	7,015
Other assets	1,121	533
Total assets	$ 171,592	$ 176,604
Liabilities, convertible preferred stock and stockholders' equity		
Current liabilities		
Accounts payable	1,572	2,594
Accrued liabilities	13,845	7,495
Deferred revenue, current	31,299	11,207
Operating lease liabilities, current	1,202	1,217
Total current liabilities	47,918	22,513
Deferred revenue, noncurrent	57,522	46,144
Operating lease liabilities, net of current portion	12,313	13,727
Total liabilities	117,753	82,384
Commitments and contingencies (Note 6)		
Stockholders' equity		
Common stock, $0.0001 par value; 150,000,000 shares authorized at December 31, 2020 and 2019; 25,553,172 shares and 24,904,848 shares issued and outstanding at December 31, 2020 and 2019, respectively	3	3
Additional paid-in capital	221,904	212,339
Accumulated other comprehensive income	3	41
Accumulated deficit	(168,071)	(118,163)
Total stockholders' equity	53,839	94,220
Total liabilities, convertible preferred stock and stockholders' equity	$ 171,592	$ 176,604

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

HARPOON THERAPEUTICS, INC.
Statements of Operations and Comprehensive Loss
(in thousands, except share and per share data)

	For the year ended December 31,		
	2020	**2019**	**2018**
Revenue			
Collaboration and license revenue	$ 17,444	$ 5,777	$ 4,750
Total revenue	17,444	5,777	4,750
Operating expenses			
Research and development	52,565	41,592	26,368
General and administrative	16,210	22,391	6,106
Total operating expenses	68,775	63,983	32,474
Loss from operations	(51,331)	(58,206)	(27,724)
Interest income	1,449	2,676	395
Other expense	(26)	(42)	(37)
Net loss	(49,908)	(55,572)	(27,366)
Other comprehensive loss:			
Net unrealized (loss) gain on marketable securities	(38)	41	—
Comprehensive loss	$ (49,946)	$ (55,531)	$ (27,366)
Net loss per share, basic and diluted	(1.99)	(2.56)	(25.65)
Weighted-average common shares used in computing net loss per share, basic and diluted	25,034,947	21,746,461	1,066,877

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

HARPOON THERAPEUTICS, INC.
Statements of Convertible Preferred Stock and Stockholders' Equity (Deficit)
(in thousands, except share and per share data)

	Convertible Preferred Stock		Common Stock		Additional	Note Receivable	Accumulated Other		Total Stockholders'
	Shares	Amount	Shares	Amount	Paid-In Capital	from Stockholder	Comprehensive Income/(Loss)	Accumulated Deficit	Equity (Deficit)
Balances at December 31, 2017	6,989,973	$ 39,841	948,294	$ 1	$ 8,309	$ (28)	$ —	$ (35,225)	$ (26,943)
Issuance of Series B convertible preferred stock at $6.39 per share upon extinguishment of 2016 Notes and 2017 Notes, net of issuance costs of $8	3,128,540	19,992	—	—	—	—	—	—	—
Issuance of Series C convertible preferred stock at $10.77 per share, net of issuance costs of $256	6,499,935	69,744	—	—	—	—	—	—	—
Issuance of common stock for exercise of stock options	—	—	125,533	—	122		—	—	122
Vesting of early exercised stock options	—	—	56,025	—	36	—	—	—	36
Stock-based compensation	—	—	—	—	644	28	—	—	672
Vesting of Founder's shares	—	—	81,567	—	—	—	—	—	—
Repurchase of common stock	—	—	—	—	—	—	—	—	—
Net loss and comprehensive loss	—	—	—	—	—	—	—	(27,366)	(27,366)
Balances at December 31, 2018	16,618,448	129,577	1,211,419	1	9,111	—	—	(62,591)	(53,479)
Conversion of Series A, B, and C convertible preferred stock into common stock	(16,618,448)	(129,577)	16,618,448	1	129,575	—	—	—	129,576
Issuance of common stock upon exercise of warrants	—	—	563,043	—		—	—	—	—
Issuance of common stock upon initial public offering, net of offering costs of $10,122	—	—	5,769,201	1	70,646	—	—	—	70,647
Issuance of common stock for exercise of stock options	—	—	572,436	—	803	—	—	—	803
Vesting of early exercised stock options	—	—	93,336	—	133	—	—	—	133
Stock-based compensation	—	—	—	—	2,071	—	—	—	2,071
Vesting of Founder's shares	—	—	22,181	—	—	—	—	—	—
Net loss	—	—	—	—	—	—	—	(55,572)	(55,572)
Other comprehensive income	—	—	—	—	—	—	41	—	41
Balances at December 31, 2019	—	—	24,850,064	3	212,339	—	41	(118,163)	94,220
Issuance of common stock pursuant to ATM facility, net of offering costs	—	—	192,069	—	3,032	—	—	—	3,032
Issuance of common stock under equity incentive plans including exercise of stock options	—	—	475,667	—	1,644	—	—	—	1,644
Vesting of early exercised stock options	—	—	35,372	—	29	—	—	—	29
Stock-based compensation	—	—		—	4,860	—	—	—	4,860
Net loss	—	—	—	—	—	—	—	(49,908)	(49,908)
Other comprehensive loss	—	—	—	—	—	—	(38)	—	(38)
Balances at December 31, 2020	—	$ —	25,553,172	$ 3	$ 221,904	$ —	$ 3	$ (168,071)	$ 53,839

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

HARPOON THERAPEUTICS, INC.
Statements of Cash Flows
(in thousands)

	For the year ended December 31,		
	2020	**2019**	**2018**
Cash flows from operating activities			
Net loss	$ (49,908)	$ (55,572)	$ (27,366)
Adjustments to reconcile net loss to net cash (used in) provided by operating activities			
Stock-based compensation expense	4,860	2,071	672
Depreciation and amortization	2,082	900	644
Non cash lease expense	432	1,202	
Net amortization of discounts on marketable securities	491	(541)	—
Changes in operating assets and liabilities			
Prepaid expenses and other assets	(1,179)	(1,814)	(507)
Other assets	(359)	3,042	—
Accounts payable	(1,228)	(1,761)	2,555
Accrued liabilities	6,151	4,288	1,048
Deferred revenue	31,470	45,309	(4,250)
Operating lease liabilities	(1,428)	(15)	—
Other long-term liabilities	—	—	78
Net cash (used in) provided by operating activities	(8,616)	(2,891)	(27,126)
Cash flows from investing activities			
Purchases of property and equipment	(683)	(3,516)	(663)
Purchases of marketable securities	(202,182)	(141,816)	—
Proceeds from repayment of note receivable	—	—	—
Maturities of marketable securities	139,239	76,017	—
Net cash (used in) provided by investing activities	(63,626)	(69,315)	(663)
Cash flows from financing activities			
Proceeds from issuance of common stock, net of issuance costs	3,032	70,646	—
Proceeds from issuance of convertible preferred stock, net of issuance costs	—	—	89,828
Proceeds from issuance of common stock in connection with employee benefit plans	1,644	803	158
Payments of deferred initial public offering costs	—	—	(1,660)
Net cash provided by financing activities	4,676	71,449	88,326
Net increase (decrease) in cash, cash equivalents, and restricted cash	(67,566)	(757)	60,537
Cash, cash equivalents, and restricted cash at beginning of period	89,203	89,960	29,423
Cash, cash equivalents, and restricted cash at end of period	$ 21,637	$ 89,203	$ 89,960
Supplemental disclosures of non-cash investing and financing information			
Conversion of preferred stock to common stock and additional paid-in capital	$ —	$ 129,577	$ —
Deferred follow on offering costs included in accrued liabilities	$ 229	$ —	$ —
Purchases of property and equipment included in accounts payable	$ 204	$ (16)	$ 28
Deferred initial public offering costs included in accounts payable and accrued liabilities	$ —	$ —	$ 1,309
Reclassification of employee stock liability to equity upon vesting	$ 29	$ 133	
Right-of-use asset obtained in exchange for lease obligation	$ —	$ 8,405	$ —
Modification of operating lease	$ —	$ (188)	$ —
Tenant improvements provided by landlord	$ —	$ 5,784	$ 6,648
Series C preferred stock issuance costs included in accounts payable and accrued liabilities	$ —	$ —	$ 92

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

1. Organization

Description of Business

Harpoon Therapeutics, Inc. (the "Company") is a clinical-stage immunotherapy company developing a novel class of T cell engagers that harness the power of the body's immune system to treat patients suffering from cancer and other diseases. T cell engagers are engineered proteins that direct a patient's own T cells to kill target cells that express specific proteins, or antigens, carried by the target cells. Using a proprietary Tri-specific T cell Activating Construct ("TriTAC"), platform, the Company is developing a pipeline of novel T cell engagers, or TriTACs, initially focused on the treatment of solid tumors and hematologic malignancies. In addition, the Company is also developing its ProTriTAC platform, which builds upon the core elements of the TriTAC platform by utilizing a prodrug approach designed to allow T cell engagers to address cancer targets that would otherwise be limited by on-target toxicities. The Company was incorporated in Delaware in March 2015 and is headquartered in South San Francisco, California.

Initial Public Offering

On February 7, 2019, the Company's registration statement on Form S-1 relating to its initial public offering ("IPO") was declared effective by the Securities and Exchange Commission ("SEC") and shares of its common stock began trading on the Nasdaq Global Select Market ("Nasdaq") on February 8, 2019. The public offering price of the shares sold in the IPO was $14.00 per share. The IPO closed in February 2019, pursuant to which the Company sold 5,769,201 shares of common stock, for gross proceeds of approximately $80.8 million, including the exercise in part of the underwriters' option to purchase additional shares. The Company received net proceeds from the IPO of approximately $70.7 million, after underwriting discounts, commissions and offering costs.

Immediately prior to the completion of the IPO on February 12, 2019, all outstanding shares of redeemable convertible preferred stock, including preferred stock warrants, were converted into 17,181,491 shares of common stock and $129.6 million was reclassified from temporary equity to additional paid in capital on the balance sheet. Subsequent to the closing of the IPO, there were no shares of redeemable convertible preferred stock outstanding.

Public Offering

In January 2021, the Company sold an aggregate of 6,764,704 shares of our common stock for $108.1 million in net proceeds after deducting underwriting discounts and commissions and offering expenses. The offering was made pursuant to the Company's shelf registration statement on Form S-3 (File No. 333-237175), declared effective by the SEC on April 23, 2020, a base prospectus dated April 23, 2020 and the related prospectus supplement dated January 6, 2021.

Liquidity

Since inception, the Company has incurred significant losses and has negative cash flows from operations. As of December 31, 2020, the Company had an accumulated deficit of $168.1 million. Management expects to continue to incur additional substantial losses in the foreseeable future as a result of the Company's research and development activities.

As of December 31, 2020, the Company had cash, cash equivalents, and marketable securities of $150.0 million, which is available to fund future operations. The Company believes that its cash, cash equivalents and marketable securities as of December 31, 2020, in addition to proceeds of $108.1 million from its follow on public offering in January 2021, potential proceeds from the sale of common stock under the Sales Agreement with Cantor Fitzgerald, provide sufficient capital resources to continue its operations for at least 12 months from the issuance date of this Annual Report. The Company may need to raise additional capital to support the completion of its research and development activities. The Company's activities are subject to significant risks and uncertainties, including failing to secure additional funding to continue to operationalize the Company's current technology and to advance the development of its product candidates.

The global pandemic caused by an outbreak of a novel strain of coronavirus ("COVID-19") has resulted, and is likely to continue to result, in national and global economic disruption and may adversely affect the Company's business. The Company is actively monitoring this situation and the possible effects on its financial condition, liquidity, operations, industry, and personnel.

2. Summary of Significant Accounting Policies

Basis of Presentation

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

Use of Estimates

The preparation of financial statements in conformity with GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities as of the date of the financial statements and the reported amounts of revenue and expenses during the reporting period. Significant estimates and assumptions made in the accompanying financial statements include, but are not limited to, the fair value of stock options, the research period of the collaboration agreements with AbbVie Biotechnology Ltd. ("AbbVie"), operating lease asset and lease liabilities, income tax uncertainties and certain accruals. As of December 31, 2020, the Company has not experienced a significant financial impact directly related to the COVID-19 pandemic but has experienced some minor disruptions to clinical operations, including patient enrollment in some of its clinical trials. The Company is uncertain as to what effect the pandemic will have on its financial condition, liquidity, and future results of operations. Management continues to actively monitor this situation and the possible effects on its financial condition, liquidity, operations, suppliers, industry, and personnel. The impact of the Company's business will depend on future developments that are highly uncertain, including as a result of new information that may emerge concerning COVID-19 and the actions taken to contain it or mitigate its impact.

Segment Reporting

Operating segments are identified as components of an enterprise about which separate discrete financial information is available for evaluation by the Company's Chief Operating Decision Maker in making decisions regarding resource allocation and assessing performance. To date, the Company has viewed its operations and manages its business as one segment operating primarily in the United States.

Cash, Cash Equivalents and Restricted Cash

The Company considers all highly liquid investments purchased with original maturities of three months or less from the purchase date to be cash equivalents. Cash equivalents consist primarily of amounts invested in money market accounts and are stated at fair value. There are no significant unrealized gains or losses on the money market funds for the periods presented.

For the year ended December 31, 2020 and 2019, the Company classified $0.5 million as restricted cash related to a letter of credit established for an operating lease entered into in August 2018. The restricted cash is classified in "Other assets" in the balance sheets and is comprised of a letter of credit required pursuant to the lease for the Company's corporate headquarters entered into in August 2018. See Note 6 Commitments and Contingencies for more information.

The following table provides a reconciliation of cash and cash equivalents and restricted cash reported within the balance sheets that sum to the total of the same amounts shown in the statement of cash flows.

	As of December 31,		
	2020	2019	2018
	(in thousands)		
Balance Sheets			
Cash and cash equivalents	$ 21,170	$ 88,736	$ 89,493
Restricted cash (included in other assets)	467	467	467
Cash, cash equivalents and restricted cash in Statements of Cash Flows	$ 21,637	$ 89,203	$ 89,960

Marketable Securities

The Company generally invests its excess cash in money market funds and investment grade short- to intermediate-term fixed income securities. Such investments are included in cash and cash equivalents, short-term marketable securities or long-term marketable securities on the balance sheets. Marketable securities with a maturity date greater than 90 days and less than one year at each balance sheet date are classified as short-term. Marketable securities with a maturity date greater than one year at each balance sheet date are classified as long-term. All of the Company's marketable securities are considered available-for-sale and are reported at fair value with unrealized gains and losses included as a component of stockholders' equity (deficit). The amortized cost of debt securities is adjusted for amortization of premiums and accretion of discounts to maturity, which is included in interest income, net on the statements of operations. Realized gains and losses and declines in value judged to be other-than-temporary, if any, on marketable securities are included in interest income, net on the statements of operations. The cost of securities sold is determined using specific identification.

The Company periodically evaluates whether declines in the fair values of its marketable securities below their amortized cost are other-than-temporary. This evaluation consists of several qualitative and quantitative factors regarding the severity and duration of the unrealized loss, as well as the Company's ability and intent to hold the marketable security until a forecasted recovery occurs. Additionally, the Company assesses whether it has plans to sell the marketable security or it is more likely than not it will be required to sell any marketable securities before recovery of its amortized cost basis. Factors considered include quoted market prices, recent financial results and operating trends, implied values from any recent transactions or offers of investee securities, credit quality of debt instrument issuers, other publicly available information that may affect the value of the marketable security, duration and severity of the decline in value, and the Company's strategy and intentions for holding the marketable security.

Concentration of Credit Risk

The Company is subject to credit risk from its portfolio of cash equivalents and marketable securities. The Company invests in money market funds through a major U.S. bank and is exposed to credit risk in the event of default by the financial institution to the extent of amounts recorded on the consolidated balance sheets. The Company invests in money market funds and investment grade short- to intermediate-term fixed income securities. Under its investment policy, the Company limits amounts invested in such securities by credit rating, maturity, industry group, investment type and issuer, except for securities issued by the U.S. government. The Company is not exposed to any significant concentrations of credit risk from these financial instruments. The goals of the Company's investment policy, in order of priority, are as follows: preservation of principal, liquidity of investments, fiduciary control of cash and investments, prevention of inappropriate concentrations of investments, and obtaining the best yields. The Company minimizes the amount of credit exposure by investing cash that is not required for immediate operating needs in money market funds and marketable securities.

Leases

The Company evaluates arrangements at inception to determine if an arrangement is or contains a lease. Operating lease assets represent the Company's right to use an underlying asset for the lease term and operating lease liabilities represent the Company's obligation to make lease payments arising from the lease. Operating lease assets and liabilities are recognized at the commencement date of the lease based upon the present value of lease payments over the lease term. When determining the lease term, the Company includes options to extend or terminate the lease when it is reasonably certain that the Company will exercise that option. The Company uses an incremental borrowing rate that the Company would expect to incur for a fully collateralized loan over a similar term under similar economic conditions to determine the present value of the lease payments.

The lease payments used to determine the Company's operating lease assets may include lease incentives and stated rent increases and are recognized in the Company's operating lease assets in the balance sheets. Operating lease liabilities are accreted over the term of the lease using the incremental borrowing rate and the associated expense is recorded to operating expenses in the statement of operations and comprehensive loss. The Company recognizes lease expenses on a straight-line basis over the lease term. Variable lease payments are recognized as the associated obligation is incurred.

Fair Value Measurement

Fair value is defined as the exchange price that would be received for an asset or paid to transfer a liability, or an exit price, in the principal or most advantageous market for that asset or liability in an orderly transaction between market participants on the measurement date, and established a fair value hierarchy that requires an entity to maximize the use of observable inputs, where available, and minimize the use of unobservable inputs when measuring fair value.

The Company measures fair value based on a three-level hierarchy of inputs, of which the first two are considered observable and the last unobservable. Unobservable inputs reflect the Company's own assumptions about current market conditions. The three-level hierarchy of inputs is as follows:

Level 1—Observable inputs such as unadjusted, quoted prices in active markets for identical assets or liabilities at the measurement date;

Level 2—Inputs (other than quoted prices included in Level 1) are either directly or indirectly observable for the asset or liability. These include quoted prices for similar assets or liabilities in active markets and quoted prices for identical or similar assets or liabilities in markets that are not active; 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.

To the extent that the valuation is based on models or inputs that are less observable or unobservable in the market, the determination of fair value requires more judgment. Accordingly, the degree of judgment exercised by the Company in determining fair value is greatest for instruments categorized in Level 3. A financial instrument's level within the fair value hierarchy is based on the lowest level of any input that is significant to the fair value measurement.

The carrying amounts reflected in the accompanying balance sheets for cash and cash equivalents, restricted cash, short-term marketable securities, prepaid expenses, other current assets, accounts payable, accrued expenses and other current liabilities approximate their fair values due to their short-term nature.

Property and Equipment, Net

Property and equipment are stated at cost less accumulated depreciation and amortization. Depreciation is computed on a straight-line basis over the estimated useful lives of the related assets, generally three to five years. Leasehold improvements are amortized using the straight-line method over the shorter of the assets' estimated useful lives or the remaining term of the lease. Depreciation and amortization begin at the time the asset is placed in service. Maintenance and repairs are charged to operations as incurred. Upon sale or retirement of assets, the cost and related accumulated depreciation are removed from the balance sheet and the resulting gain or loss is reflected in operations. There were no sales or retirement of assets for any of the periods presented.

Impairment of Long-Lived Assets

The Company evaluates its long-lived assets, including property and equipment, for impairment whenever events or changes in business circumstances indicate that the carrying amount of the assets or group of assets may not be fully recoverable. If indicators of impairment exist and the undiscounted future cash flows that the assets are expected to generate are less than the carrying amount of the assets, the Company reduces the carrying amount of the assets through an impairment charge to their estimated fair values based on a discounted cash flow approach or, when available and appropriate, to comparable market values. There were no impairments of long-lived assets for any of the periods presented.

Revenue Recognition

In accordance with Accounting Standards Codification ("ASC") Topic 606, *Revenue from Contracts with Customers* ("Topic 606"), the Company recognizes revenue when its customer obtains control of promised goods or services, in an amount that reflects the consideration which the Company expects to receive in exchange for those goods or services. To determine revenue recognition for arrangements that the Company determines are within the scope of Topic 606, the Company performs the following five steps: (i) identify the contract(s) with a customer; (ii) identify the performance obligations in the contract; (iii) determine the transaction price; (iv) allocate the transaction price to the performance obligations in the contract; and (v) recognize revenue when (or as) the Company satisfies a performance obligation. The Company only applies the five-step model to contracts when it is probable that it will collect the consideration it is entitled to in exchange for the goods and services it transfers to the customer. At contract inception, the Company assesses the goods or services promised within each contract that falls under the scope of Topic 606, determines those that are performance obligations and assesses whether each promised good or service is distinct. The Company then recognizes as revenue the amount of the transaction price that is allocated to the respective performance obligation when (or as) the performance obligation is satisfied.

The Company enters into corporate collaborations under which it may obtain upfront license fees, research and development funding, and development, regulatory and commercial milestone payments and royalty payments. The Company's performance obligations under these arrangements may include licenses of intellectual property, distribution rights, research and development services, delivery of manufactured product and/or participation on joint steering committees.

Licenses of intellectual property: If the license to the Company's intellectual property is determined to be distinct from the other performance obligations identified in the arrangement, the Company recognizes revenue from upfront license fees allocated to the license when the license is transferred to the customer and the customer is able to use and benefit from the license. For licenses that are bundled with other promises, the Company utilizes judgement to assess the nature of the combined performance obligation to determine whether the combined performance obligation is satisfied over time or at a point in time and, if over time, the appropriate method of measuring proportional performance for purposes of recognizing revenue from non-refundable, up-front fees. The Company evaluates the measure of proportional performance each reporting period and, if necessary, adjusts the measure of performance and related revenue recognition. The Company recognizes collaboration revenue by measuring the progress toward complete satisfaction of the performance obligation using an input measure. In order to recognize revenue over the research and development period, the Company measures actual costs incurred to date compared to the overall total expected costs to satisfy the performance obligation. Revenues are recognized as the program costs are incurred. The Company will re-evaluate the estimate of expected costs to satisfy the performance obligation each reporting period and make adjustments for any significant changes.

Milestone payments: At the inception of each arrangement that includes development, regulatory or commercial milestone payments, the Company evaluates whether the milestones are considered probable of being reached and estimates the amount to be included in the transaction price. Topic 606 suggests two alternatives to use when estimating the amount of variable consideration: the expected value method and the most likely amount method. Under the expected value method, an entity considers the sum of probability-weighted amounts in a range of possible consideration amounts. Under the most likely amount method, an entity considers the single most likely amount in a range of possible consideration amounts. Whichever method is used, it should be consistently applied throughout the life of the contract; however, it is not necessary for the Company to use the same approach for all contracts. The Company expects to use the most likely amount method for development and regulatory milestone payments. If it is probable that a significant revenue reversal would not occur, the associated milestone value is included in the transaction price. Milestone payments that are not within the Company's or the licensee's control, such as regulatory approvals, are not considered probable of being achieved until those approvals are received. The transaction price is then allocated to each performance obligation on a relative stand-alone selling price basis. The Company recognizes revenue as or when the performance obligations under the contract are satisfied. At the end of each subsequent reporting period, the Company re-evaluates the probability or achievement of each such milestone and any related constraint, and if necessary, adjusts its estimates of the overall transaction price. Any such adjustments are recorded on a cumulative catch-up basis, which would affect revenues and earnings in the period of adjustment.

Commercial milestones and royalties: For arrangements that include sales-based royalties, including milestone payments based on the level of sales, and in which the license is deemed to be the predominant item to which the royalties relate, the Company recognizes revenue when the related sales occur. To date, the Company has not recognized any royalty revenue resulting from its collaboration arrangements.

Upfront payments and fees are recorded as deferred revenue upon receipt or when due, and may require deferral of revenue recognition to a future period until the Company performs its obligations (i.e. research and development services) under these arrangements. Amounts due to the Company are recorded as accounts receivable when the Company's right to consideration is unconditional. Amounts recognized as revenue prior to receipt are recorded as contract assets included in prepaid expenses and other current assets on the balance sheet. If the Company expects to have an unconditional right to receive the consideration in the next twelve months, this will be classified in current assets.

Research and Development Expenses and Accrued Research and Development Costs

The Company expenses research and development costs as incurred. Research and development expenses consist of personnel costs for the Company's research and product development employees. Also included are non-personnel costs such as professional fees payable to third parties for preclinical studies, clinical trials, research services, production of materials for clinical trials, laboratory supplies and equipment maintenance and depreciation, intellectual property licenses and other consulting costs.

The Company estimates preclinical and clinical study and research expenses based on the services performed, pursuant to contracts with research institutions that conduct and manage preclinical studies, clinical trials and research services and manufacturing organizations in connection with the production of materials for clinical trials on its behalf. The Company estimates these expenses based on discussions with internal management personnel and external service providers as to the progress or stage of completion of services and the contracted fees to be paid for such services. The Company records the estimated costs of research and development activities based upon the estimated amount services provided but not yet invoiced and includes these costs in development expenses. The Company accrues for these costs based on factors such as estimates of the work completed and in accordance with agreements established with its third-party service provides under the service agreements. The Company makes significant judgments and estimates in determining the accrued liabilities balance in each reporting period. As actual costs become known, the Company adjusts its accrued liabilities. The Company has not experienced any material differences between accrued costs and actual costs incurred. However, the status and timing of actual services performed may vary from the Company's estimates, resulting in adjustments to expense in future periods. Changes in these estimates that result in material changes to the Company's accruals could materially affect the Company's results of operations. Payments associated with licensing agreements to acquire exclusive license to develop, use, manufacture and commercialize products that have not reached technological feasibility and do not have alternate future use are expensed as incurred.

Payments made to third parties under these arrangements in advance of the performance of the related services by the third parties are recorded as prepaid expenses until the services are rendered. Such payments are evaluated for current or long-term classification based on when such services are expected to be received.

Stock-Based Compensation

The Company maintains a stock-based compensation plan as a long-term incentive for employees, consultants and members of the Company's board of directors (the "Board"). The plan allows for the issuance of non-statutory options ("NSOs") and incentive stock options to employees and NSOs to non-employees.

Share-based payments are measured using fair-value-based measurements and recognized as compensation expense over the service period in which the awards are expected to vest. The Company's fair-value-based measurements of awards to employees, directors and consultants as of the grant date utilize the single-option award-valuation approach, and the Company uses the straight-line method for expense attribution. The fair-value-based measurements of options granted to nonemployees are remeasured at each period end until the options vest and are amortized to expense as earned. The valuation model used for calculating the estimated fair value of stock awards is the Black-Scholes option-pricing model. The Black-Scholes option-pricing model requires the Company to make assumptions and judgments about the variables used in the calculations, including the expected term (weighted-average period of time that the options granted are expected to be outstanding), the expected volatility of the Company's common stock, the related risk-free interest rate and the expected dividend yield. The Company has elected to recognize forfeitures of share-based payment awards as they occur.

Income Taxes

Income taxes are accounted for under the asset and liability method. Under this method, deferred tax assets and liabilities are recognized for the future tax consequences attributable to differences between the financial statement carrying amounts of existing assets and liabilities and their respective tax bases and operating loss and tax credit carryforwards. Deferred tax assets and liabilities are measured using enacted tax rates applied to taxable income in the years in which those temporary differences are expected to be realized. The effect on deferred tax assets and liabilities of a change in tax rates is recognized as income in the period that includes the enactment date. A valuation allowance is established when necessary to reduce deferred tax assets to the amount expected to be realized. Financial statement effects of uncertain tax positions are recognized when it is more-likely-than-not, based on the technical merits of the position, that it will be sustained upon examination. Interest and penalties related to unrecognized tax benefits are included as a component of other expense. To date, there have been no interest or penalties charged in relation to the unrecognized tax benefits.

The Company accounts for uncertain tax positions in accordance with ASC 740-10, *Accounting for Uncertainty in Income Taxes*. The Company assesses all material positions taken in any income tax return, including all significant uncertain positions, in all tax years that are still subject to assessment or challenge by relevant taxing authorities. Assessing an uncertain tax position begins with the initial determination of the position's sustainability and is measured at the largest amount of benefit that is greater than fifty percent likely of being realized upon ultimate settlement. As of each balance sheet date, unresolved uncertain tax positions must be reassessed, and the Company will determine whether (i) the factors underlying the sustainability assertion have changed and (ii) the amount of the recognized tax benefit is still appropriate. The recognition and measurement of tax benefits requires significant judgment. Judgment concerning the recognition and measurement of a tax benefit might change as new information becomes available.

The Company includes any penalties and interest expense related to income taxes as a component of provision for income tax as necessary. To date, there have been no interest or penalties charged in relation to the unrecognized tax benefits.

CARES Act

In March 2020, the U.S. government enacted the Coronavirus Aid, Relief, and Economic Security Act (the "CARES Act"), which includes modifications to the limitation on business interest expense and net operating loss provisions and provides a payment delay of employer payroll taxes during 2020 after the date of enactment. The Company has not taken advantage of the benefits provided by the CARES Act. Whether or not the company takes advantage of the credit and other applicable provisions of the CARES Act will not change the amount of income tax paid on the 2020 income tax returns, nor will these impact the GAAP tax expense/benefit expected to be recorded in 2020. As such, the Company does not expect the CARES Act to have a material impact on the Company's condensed financial statements.

Assembly Bill 85 (A.B. 85)

On June 29, 2020, California's Governor Newsom signed Assembly Bill 85 suspending California net operating loss ("NOL") utilization and imposing a cap on the amount of business incentives tax credits (R&D credit) for tax years 2020-2022. Given a projected GAAP and tax loss for 2020, the suspension does not have a material impact on the Company's provision for income taxes or condensed financial statements.

Net Loss Per Share

Basic net loss per share is calculated by dividing the net loss by the weighted-average number of shares of common stock outstanding during the period, without consideration for potentially dilutive securities. As discussed in Note 10, the unvested portion of early exercised stock options are excluded from the computation of weighted average shares as the continuing vesting of such shares is contingent on the holders' continued service to the Company. Diluted net loss per share is the same as basic net loss per share for each period presented, since the effects of potentially dilutive securities are antidilutive given the net loss of the Company.

Comprehensive Loss

Comprehensive loss includes net loss and certain changes in stockholders' equity (deficit) that are excluded from net loss, primarily unrealized gains or losses on the Company's marketable securities.

Deferred Offering Costs

At December 31, 2020, the Company had $0.6 million of deferred offering costs included in other assets on the balance sheet, consisting of legal, accounting and other fees and costs directly attributable to our Sales Agreement with Cantor Fitzgerald and the follow on public offering, which was completed in January 2021. The deferred offering costs attributable to the follow on public offering were offset against the gross proceeds of the follow on public offering in January 2021.

Emerging Growth Company Status

The Company is an emerging growth company, as defined in the Jumpstart Our Business Startups Act of 2012 (the "JOBS Act"). Under the JOBS Act, emerging growth companies can delay adopting new or revised accounting standards issued subsequent to the enactment of the JOBS Act until such time as those standards apply to private companies. The Company has elected to use this extended transition period for complying with new or revised accounting standards that have different effective dates for public and private companies until the earlier of the date that the Company (i) is no longer an emerging growth company or (ii) affirmatively and irrevocably opts out of the extended transition period provided in the JOBS Act. As a result, the accompanying financial statements may not be comparable to companies that comply with the new or revised accounting pronouncements as of public company effective dates.

As described in "Recently Adopted Accounting Pronouncements" below, the Company early adopted ASU No. 2014-09, Revenue from Contracts with Customers (Accounting Standards Codification Topic 606), ASU No. 2016-09, Stock Compensation—Improvements to Employee Share-Based Payment Accounting, ASU No. 2018-07, Compensation – Stock Compensation (Topic 718): Improvements to Nonemployee Share-Based Payment Accounting, and ASU No. 2016-02, (Topic 842) Leases, as the JOBS Act does not preclude an emerging growth company from adopting a new or revised accounting standard earlier than the time that such standard applies to private companies. The Company expects to use the extended transition period for any other new or revised accounting standards during the period in which it remains an emerging growth company.

Recently Adopted Accounting Pronouncements

In February 2016, the Financial Accounting Standards Board ("FASB") issued ASU No. 2016-02 (Topic 842), Leases ("ASU 2016-02"). ASU 2016-02 requires an entity to recognize assets and liabilities arising from a lease for both financing and operating leases. ASU 2016-02 requires new qualitative and quantitative disclosures to help investors and other financial statement users better understand the amount, timing, and uncertainty of cash flows arising from leases. As a result of the Company having elected the extended transition period for complying with new or revised accounting standards pursuant to Section 107(b) of the JOBS Act, ASU 2016-02 is effective for the Company for the year ending December 31, 2020 and all interim periods thereafter. Effective January 1, 2019, the Company early adopted ASU No. 2016-02 using the alternative transition approach provided by ASU No. 2018-11. The Company elected certain practical expedients permitted under the transition guidance, including the election to carryforward historical lease classification. The Company also elected the short-term lease practical expedient, which allowed the Company to not recognize leases with a term of less than 12 months on the balance sheets. In addition, the Company elected the lease and non-lease components practical expedient, which allowed the Company to calculate the present value of the fixed payments without performing an allocation of lease and non-lease components. Adoption of the new standard resulted in recording operating lease right-of-use assets and operating lease liabilities of approximately $8.4 million and $15.1 million, respectively, on the balance sheets as of January 1, 2019. The lease liabilities represent the present value of the remaining lease payments of the Company's Tizona Lease and Cove Lease (see Note 6), discounted using the Company's incremental borrowing rate as of January 1, 2019. The corresponding right-of-use lease assets are recorded based on the lease liabilities, adjusted for the unamortized lease incentives received and the cumulative difference between rent expense and amounts paid under the Tizona Lease and Cove Lease. The adoption of ASU 2016-02 did not have a material impact on either the statement of operations or statement of cash flows for the year ended December 31, 2020.

In February 2018, the FASB issued ASU No. 2018-02, Income Statement – Reporting Comprehensive Income (Topic 220): Reclassification of Certain Tax Effects from Accumulated Other Comprehensive Income, which provided amended guidance to allow a reclassification from accumulated other comprehensive income to retained earnings for stranded tax effects from the Tax Cuts and Jobs Act (the "Tax Act"). The Company adopted the new standard on January 1, 2019 and did not have income tax effects of the Tax Act related to unrealized gains and losses on its marketable securities. The adoption of this standard did not have an impact on the Company's financial statements.

Recently Issued Accounting Pronouncements

In December 2019, the FASB issued ASU 2019-12, *Income Taxes (Topic 740): Simplifying the Accounting for Income Taxes*. The amendments in this ASU simplify the accounting for income taxes by removing certain exceptions to the general principles of ASC 740 in order to reduce cost and complexity of its application. The ASU removes the exception related to the incremental approach for intraperiod tax allocation as well as two exceptions related to accounting for outside basis differences of equity method investments and foreign subsidiaries. The ASU also amends the scope of ASC 740 related to a franchise tax (or similar tax) that is partially based on income; clarifies when a step-up in the tax basis of goodwill should be considered part of the business combination in which the book goodwill was originally recognized and when it should be considered a separate transaction; specifies that an entity is not required to allocate income tax expense to a legal entity that is both not subject to tax and disregarded by the taxing authority; and clarifies that all tax effects, both deferred and current, should be accounted for in the interim period that includes the enactment date. The ASU is effective for the Company on January 1, 2021, and interim periods within those fiscal years. The Company does not expect the adoption of this ASU will have a material impact on its financial statements.

In June 2016, the FASB issued ASU 2016-13, *Financial Instruments - Credit Losses (Topic 326): Measurement of Credit Losses on Financial Instruments* and subsequent amendments to the initial guidance: *ASU 2018-19* and *ASU 2019-04* (collectively, Topic 326). Topic 326 requires measurement and recognition of expected credit losses for financial assets held. The amendments apply to entities which hold financial assets that are not accounted for at fair value through net income as well as loans, debt securities, accounts receivables and any other financial assets not excluded from the scope that have the contractual right to receive cash. Topic 326 requires entities to record expected credit losses for certain financial instruments, including available-for-sale securities, as an allowance that reflect the entity's current estimate of credit losses expected to be incurred. For available-for-sale debt securities in unrealized loss positions, ASU 2016-13 requires allowances to be recorded instead of reducing the amortized cost of the investment. Under ASU 2019-10, *Financial Instruments—Credit Losses (Topic 326), Derivatives and Hedging (Topic 815), and Leases (Topic 842): Effective Dates*, the effective date for ASU 2016-13 has been deferred for credit losses for SEC filers that are eligible as a smaller reporting company. As such, the amended effective date for ASU 2016-13 is January 1, 2023. The Company is currently evaluating the effect of the adoption of this guidance on its financial statements.

In August 2018, the FASB issued ASU No. 2018-13, *Fair Value Measurement (Topic 820): Disclosure Framework – Changes to the Disclosure Requirements for Fair Value Measurement*, which modifies the disclosure requirements on fair value measurements. This standard became effective for the Company on January 1, 2020 and did not have a material impact on the Company's disclosures.

3. Fair Value Measurement

The following table presents information about the Company's financial assets that are measured at fair value and indicates the fair value hierarchy of the valuation:

	Fair Value Measurements at December 31, 2020			
	Total	Level 1	Level 2	Level 3
	(in thousands)			
Assets				
Cash Equivalents:				
Money market funds	$ 15,696	$ 15,696	$ —	$ —
Short-term marketable securities				
U.S. government treasuries	32,497	32,497	—	—
U.S. government securities	40,652	40,652		—
Corporate debt securities	21,641	—	21,641	—
U.S. government agency securities	10,071	—	10,071	—
Long-term marketable securities				
Corporate debt securities	9,080	—	9,080	—
U.S. government securities	12,294	12,294		—
U.S. government agency securities	2,571	—	2,571	—
Total cash equivalents and marketable securities	$ 144,502	$ 101,139	$ 43,363	$ —

	Fair Value Measurements at December 31, 2019			
	Total	Level 1	Level 2	Level 3
	(in thousands)			
Assets				
Cash Equivalents:				
Money market funds	$ 29,450	$ 29,450	$ —	$ —
U.S. government agency securities	7,597	—	7,597	—
Short-term marketable securities				
U.S. government securities	30,066	—	30,066	—
Corporate debt securities	15,552	—	15,552	—
U.S. government agency securities	13,719	—	13,719	—
Long-term marketable securities				
Corporate debt securities	1,508	—	1,508	—
U.S. government securities	5,049	—	5,049	—
U.S. government agency securities	499	—	499	—
Total cash equivalents and marketable securities	$ 103,440	$ 29,450	$ 73,990	$ —

The Company's Level 2 securities are valued using third-party pricing sources. The pricing services utilize industry standard valuation models, including both income- and market-based approaches, for which all significant inputs are observable, either directly or indirectly.

The Company has no Level 3 assets or liabilities as of December 31, 2020 or 2019. There were no transfers between Level 1 and Level 2 during the years ended December 31, 2020 and 2019.

The Company did not have any financial liabilities subject to fair value measurements on a recurring basis as of December 31, 2020 and 2019.

4. Available-for-Sale Securities

All marketable securities were considered available-for-sale at December 31, 2020. The amortized cost, gross unrealized holding gains or losses and fair value of the Company's marketable securities by major security type are summarized in the tables below:

	December 31, 2020			
	Amortized Cost	Gross Unrealized Gain	Gross Unrealized Loss	Fair Value
	(in thousands)			
Cash equivalents				
Money market funds	$ 15,696	—	—	$ 15,696
Total cash equivalents	15,696	—	—	15,696
Short-term marketable securities:				
U.S. government treasuries	32,493	3	—	32,496
U.S. government agency securities	10,070	1	—	10,071
U.S. government securities	40,638	21	(8)	40,651
Corporate debt securities	21,650	1	(9)	21,642
Total short-term marketable securities	104,851	26	(17)	104,860
Long-term marketable securities:				
U.S. government agency securities	2,568	4	—	2,572
U.S. government securities	12,298	—	(4)	12,294
Corporate debt securities	9,086	—	(6)	9,080
Total long-term marketable securities	23,952	4	(10)	23,946
Total	$ 144,499	$ 30	$ (27)	$ 144,502

	December 31, 2019			
	Amortized Cost	Gross Unrealized Gain	Gross Unrealized Loss	Fair Value
	(in thousands)			
Cash equivalents				
U.S. government agency securities	$ 7,597	—	—	$ 7,597
Money market funds	29,450	—	—	29,450
Total cash equivalents	37,047	—	—	37,047
Short-term marketable securities:				
U.S. government agency securities	13,716	3	—	13,719
U.S. government securities	30,072	—	(6)	30,066
Corporate debt securities	15,509	43	—	15,552
Total short-term marketable securities	59,297	46	(6)	59,337
Long-term marketable securities:				
U.S. government agency securities	499	—	—	499
U.S. government securities	5,045	4	—	5,049
Corporate debt securities	1,511	—	(3)	1,508
Total long-term marketable securities	7,055	4	(3)	7,056
Total	$ 103,399	$ 50	$ (9)	$ 103,440

As of December 31, 2020, some of the Company's marketable securities were in an unrealized loss position. The Company determined that it did have the ability and intent to hold all marketable securities that have been in a continuous loss position until maturity or recovery, thus there has been no recognition of any other-than-temporary impairment in the year ended December 31, 2020. All marketable securities with unrealized losses at December 31, 2020 balance sheet date have been in a loss position for less than twelve months or the loss is not material.

All of the Company's marketable securities have an effective maturity of less than two years.

5. Balance Sheet Components

Property and Equipment, Net

Property and equipment, net consists of the following:

	December 31,	
	2020	2019
	(in thousands)	
Laboratory equipment	$ 4,636	$ 3,757
Furniture and fixtures	585	576
Computer equipment and software	91	91
Leasehold improvements	8,872	8,873
Construction in progress	—	—
	14,184	13,297
Less: Accumulated depreciation and amortization	(3,996)	(1,914)
Total property and equipment, net	$ 10,188	$ 11,383

Depreciation and amortization expense for property and equipment amounted to $2.1 million, $1.6 million and $0.7 million for the years ended December 31, 2020, 2019, and 2018, respectively.

Accrued Liabilities

Accrued liabilities consist of the following:

	December 31,	
	2020	2019
Accrued research and development	$ 8,835	$ 3,893
Accrued personnel costs	3,860	2,575
Accrued professional and consulting fees	790	684
Accrued offering costs	229	—
Other	131	343
Total accrued liabilities	$ 13,845	$ 7,495

6. Commitments and Contingencies

Leases

In August 2018, the Company entered into a lease agreement for the office and laboratory space in South San Francisco, California (the “Cove Lease”). The lease has an initial term of eight years, beginning on the lease commencement date, with an option to extend the lease for an additional period of eight years. The lease commencement date was July 1, 2019 at which time the Company took occupancy. Pursuant to the terms of the lease, the Company is entitled to a tenant improvement allowance of approximately $5.2 million with the option for an additional tenant improvement allowance of approximately $1.4 million. The additional tenant improvement allowance of $1.4 million, which was exercised in December 2018, is treated as a loan from the landlord and is expected to be paid back (including interest) by the Company through additional rental payments. As of December 31, 2019, the full tenant improvement allowance of $6.6 million was utilized under this lease, which was recorded as leasehold improvements and a reduction to the tenant improvement allowance receivable on the balance sheet.

The Cove Lease includes an option to renew, exercisable at the Company's sole discretion, with a renewal term for an additional period of eight years. As of December 31, 2020, the Company has not determined whether it will exercise its option to extend the lease term. Therefore, the operating lease assets and lease liabilities only contemplate the initial lease terms. The Cove Lease qualifies as an operating lease. The following table summarizes the presentation in the Company's condensed balance sheets of its operating lease (in thousands):

	As of December 31, 2020
Assets:	
Operating lease right-of-use assets	$ 6,583
Liabilities	
Operating lease liabilities	$ 1,202
Operating lease liabilities, net of current portion	12,313
Total operating lease liabilities	$ 13,515

	As of December 31, 2019
Assets:	
Operating lease right-of-use assets	$ 7,015
Liabilities	
Operating lease liabilities	$ 1,217
Operating lease liabilities, net of current portion	13,727
Total operating lease liabilities	$ 14,944

The Company incurred $0.7 million, $0.4 million, and $0.2 million in variable lease costs for each of the years ended December 31, 2020, 2019, and 2018, respectively.

Future minimum lease payments under the Cove Lease as of December 31, 2020 are as follows (in thousands):

As of December 31, 2020	Operating Lease Commitments
2021	$ 2,355
2022	2,647
2023	2,731
2024	2,817
2025	2,908
Thereafter	4,525
Total future minimum lease payments	17,983
Less: Present value adjustment for minimum lease commitments	(4,468)
Total	$ 13,515

As of December 31, 2020, the weighted average remaining lease term was 6.50 years and the weighted average incremental borrowing rate used to determine the operating lease liability was 8.95%.

Rent expense was $1.7 million, $2.5 million and $1.2 million for the years ended December 31, 2020, 2019 and 2018, respectively. Amortization of the right-of-use lease assets was $0.4 million, $1.2 million, and zero for the years ended December 31, 2020, 2019 and 2018, respectively.

Indemnification

In the ordinary course of business, the Company enters into agreements that may include indemnification provisions. Pursuant to such agreements, the Company may indemnify, hold harmless and defend an indemnified party for losses suffered or incurred by the indemnified party. Some of the provisions will limit losses to those arising from third-party actions. In some cases, the indemnification will continue after the termination of the agreement. The maximum potential amount of future payments the Company could be required to make under these provisions is not determinable. The Company has never incurred material costs to defend lawsuits or settle claims related to these indemnification provisions. The Company has also entered into indemnification agreements with its directors and officers that may require the Company to indemnify its directors and officers against liabilities that may arise by reason of their status or service as directors or officers to the fullest extent permitted by Delaware corporate law. The Company currently has directors' and officers' insurance.

Maverick Litigation

On April 3, 2020, the Delaware Chancery Court issued a memorandum opinion, which related only to the Company's ProTriTAC platform. The Court ruled in favor of the Company on claims by Maverick Therapeutics, Inc. ("Maverick") for breach of contract and misappropriation of trade secrets and dismissed those claims. As part of that ruling, the Court determined that the Company's ProTriTAC technology is not in a field that is subject to a four year non-compete. The Court found in favor of Millennium Pharmaceuticals, Inc. ("Millennium") on its claim against the Company for fraud in inducing Millennium's investment in Maverick. The Court found that Millennium had not proved its claims for tortious interference with contract and business relations or unfair competition, and those claims were dismissed. The Court held a one-day trial on Millennium's damages claim on September 22, 2020, and closing arguments were held December 8, 2020. Through evidence and argument presented at trial and in related briefing, Millennium advanced a theory of alleged damages as high as approximately $147 million plus certain fees and interest. We advanced a theory of alleged damages amounting to zero dollars. We cannot predict the amount of damages for which the Court will find us liable. We could be required to pay significant monetary damages in connection with the Court's determination of damages related to the fraud ruling, which could have a material adverse effect on our financial condition and results of operations. No provision for a loss contingency has been recorded as the amount of damages, if any, is not estimable as of December 31, 2020.

7. Collaboration & License Agreements

Development and Option with AbbVie

On November 20, 2019, the Company entered into a Development and Option Agreement with AbbVie in connection with the Company's HPN217 program, which targets B cell maturation antigen, BCMA. Pursuant to such agreement, the Company granted to AbbVie an option to a worldwide, exclusive license under the Company's patents and know-how applicable to the HPN217 program to develop, manufacture, and commercialize products arising from the HPN217 program and targeting BCMA, or HPN217 Products. Under the Development and Option Agreement, the Company filed an IND for HPN217, and is responsible for conducting clinical development activities pursuant to a mutually agreed development plan, including conducting a Phase 1/2 clinical trial of HPN217, in order for AbbVie to determine whether it wishes to exercise its option to take a worldwide, exclusive license to such HPN217 program.

Under the Development and Option Agreement, AbbVie may exercise its license option at any time during a period commencing on the effective date of the agreement and expiring after a specified period following delivery by the Company of a specified data package arising from the first Phase 1/2 trial for the HPN217 Products. Following AbbVie's exercise of its option, and except for completion of certain development activities by the Company under the development plan, AbbVie will be solely responsible, at its cost, for the development, manufacture and commercialization of HPN217 and any other HPN217 Products. AbbVie is required to use commercially reasonable efforts to develop and obtain regulatory approval for one HPN217 Product, for at least one indication, for use in each of the United States and specified European markets.

Upon execution of the Development and Option Agreement, the Company received an upfront payment of $30.0 million. Additionally, in June 2020, the Company received a development milestone payment of $50.0 million as a result of initiating its Phase 1/2 clinical trial by dosing the first patient in the Phase 1/2 clinical trial of HPN217 in April 2020.

If AbbVie exercises its option to a worldwide, exclusive license, AbbVie will pay the Company an option exercise fee of $200.0 million. Following option exercise, AbbVie will be required to make further payments to the Company of up to $230.0 million in the aggregate for the achievement of specified development, regulatory and commercial sales milestones for HPN217 Products. The Company will also receive tiered royalties on net sales by AbbVie, its affiliates and sublicensees of HPN217 Products at percentages ranging from the high single digits to the very low double digits, subject to specified offsets and reductions. Royalties will be payable under the Development and Option Agreement on a product-by-product and country-by-country basis commencing on the date of first commercial sale of HPN217 and other HPN217 Products, and ending on the later of expiration of all valid claims of specified licensed patents in such country, expiration of regulatory exclusivity in such country, or ten years following first commercial sale of such HPN217 Product in such country.

The Development and Option Agreement will terminate upon the date of the expiration of all AbbVie's royalty payment obligations in all countries, or upon expiration of the license option period and the failure of AbbVie to exercise its license option. The Development and Option Agreement may be terminated by either party immediately for the insolvency of the other party or on 90 days' written notice for an uncured material breach of the Development and Option Agreement by the other party. AbbVie may also terminate the Development and Option Agreement in its entirety or on a country-by-country basis for any reason on 90 days' written notice to the Company.

The Company assessed the Development and Option Agreement in accordance with Topic 606 and concluded that AbbVie is a customer under this agreement. The Company identified the following performance obligation at the inception of the Development and Option Agreement consisting of the initial development activities.

The Company evaluated AbbVie's option to obtain a worldwide exclusive license for HPN217 to determine whether it provides AbbVie with any material rights. The Company concluded that the option was not issued at a significant and incremental discount, and therefore do not provide material rights. As such, the option is excluded as a performance obligation at the outset of the agreement.

At the inception of the agreement, the transaction price included the $30.0 million up-front consideration received in December 2019 and a development milestone of up to $50.0 million to be received upon dosing of the first patient in the HPN217 Phase 1/2 clinical trial within a specified time period, for a total transaction price of $80.0 million. In April 2020, the Company had achieved this development milestone as a result of dosing its first patient in the Phase 1/2 clinical trial of HPN 217 and received $50.0 million in June 2020. The remaining development, commercialization, and sales milestones along with sales-based royalties were not included in the transaction price, as these milestone amounts were fully constrained on the probability of achievement. The Company will reevaluate the transaction price at the end of each reporting period and as uncertain events are resolved or other changes in circumstances occur, and, if necessary, adjust its estimate of the transaction price.

The transaction price of $80.0 million, relates to a single unit of accounting. The initial development activities are considered a single unit of accounting. The Company recognizes revenue associated with the performance obligation as the initial development activities are performed using an input method, according to the costs incurred as related to the estimated costs for the development and regulatory activities to be performed through the completion of a Phase 1/2 clinical trial of HPN217. The transfer of control occurs over this time period and, in management's judgment, is the best measure of progress towards satisfying the performance obligation. Such estimates are reviewed by the Company on a periodic basis and, if necessary, the Company will adjust the measure of performance and related revenue recognition. As of December 31, 2020, the Company had changes to the overall estimated costs to satisfy the performance obligation and as such, the Company adjusted revenue recognized relative to the measure of performance. As a result, the Company recorded additional $0.8 million of revenue in the fourth quarter of 2020.

The Company recognized $13.8 million and $1.7 million of revenue for the year ended December 31, 2020 and 2019, respectively. As of December 31, 2020, the Company had recorded $64.5 million in deferred revenue, of which $41.5 million is classified as long-term and $23.0 million as short-term deferred revenue, in the accompanying balance sheet.

As of December 31, 2020, the Company will recognize royalty revenue in the period of sale of the related products, if any, based on the underlying contract terms. No such amounts were recognized during the year ended December 31, 2020.

Amended and Restated Discovery Collaboration Agreement with AbbVie

On November 20, 2019, the Company entered into an Amended and Restated Discovery Collaboration and License Agreement, or the Restated Collaboration Agreement, with AbbVie, which amends and restates the Discovery Collaboration and License Agreement entered into between the Company and AbbVie, dated October 10, 2017 and amended April 3, 2019, or the Original Collaboration Agreement. Pursuant to the Original Collaboration Agreement, the Company granted to AbbVie worldwide exclusive rights to develop and commercialize products that incorporates the Company's proprietary TriTAC technology together with soluble TCRs provided by AbbVie that bind to targets accepted by the parties. Under the terms of the Original Collaboration Agreement, AbbVie was allowed to designate up to two targets, which it selected in 2017 and 2019, respectively. Pursuant to the Restated Collaboration Agreement, the worldwide, exclusive license granted to AbbVie under the Original Collaboration Agreement to develop and commercialize products that incorporate our proprietary Tri-specific T-cell Activating Construct, or TriTAC, platform technology together with soluble T cell receptors, or TCRs, provided by AbbVie has been expanded to cover products that incorporate antibodies provided by AbbVie or by us. The expansion of the collaboration also allows AbbVie to designate up to six additional targets, selected during a specified period following the effective date, to be the subject of activities under the collaboration. During a period of up to four years following the date of AbbVie's designation of each target for the products, and confirmation of target availability, the Company and AbbVie will conduct certain research and discovery activities under a mutually agreed discovery and research plan in connection with the creation and evaluation of constructs comprising our proprietary TriTAC technology, in conjunction with the soluble TCR or antibody sequences directed at the agreed upon targets of interest. The Company may not, including through any third party, develop or commercialize any competing product that binds to any of the included targets. As was the case under the Original Collaboration Agreement, following the discovery phase, AbbVie will be solely responsible, at its cost, for the development, manufacture and commercialization of the products that arise from the activities under the discovery plan. AbbVie is required to use commercially reasonable efforts to develop and commercialize one such product directed to each target for which the discovery activities were completed in each Major Market (as defined in the Restated Collaboration Agreement).

In addition to the upfront payment of $17 million already paid under the Original Collaboration Agreement, under the Restated Collaboration Agreement, the Company received an upfront payment of $20 million for AbbVie's right to select two additional targets and an option to select up to four further targets. AbbVie will be required to make payments to the Company, upon target selection, of $10 million for each target, up to four further targets selected by AbbVie. For each of the up to eight targets selected, the Company will receive up to $300 million in the aggregate for the achievement of specified development, regulatory and commercial sales milestones for licensed products indicated for human therapeutic or prophylactic use, totaling up to $2.4 billion in the aggregate, if such licensed products are successfully progressed against all-included targets and indications. The Company will also be eligible to receive tiered royalties on net sales by AbbVie, its affiliates and sublicensees of licensed products at percentages in the mid-single digits, subject to specified offsets and reductions. Royalties will be payable under the Restated Collaboration Agreement on a product-by-product and country-by-country basis commencing on the date of first commercial sale of each product, and ending on the later of expiration of all valid claims of specified licensed patents in such country, expiration of regulatory exclusivity in such country or ten years following first commercial sale of such product in such country. If licensed products are developed and commercialized for diagnostic or veterinary use, or certain screening or monitoring uses, the parties have agreed to negotiate an appropriate reduction in the economic terms applicable to such non-therapeutic and prophylactic applications.

The Restated Collaboration Agreement will terminate upon the date of the expiration of all AbbVie's royalty payment obligations in all countries. The Restated Collaboration Agreement may be terminated by either party immediately for the insolvency of the other party or on 90 days' written notice for an uncured material breach of such agreement by the other party. AbbVie may also terminate the Restated Collaboration Agreement in its entirety or on a target-by-target or country-by-country basis for any reason on 30 days' written notice to the Company. In addition, AbbVie may terminate the Restated Collaboration Agreement immediately in its entirety or on a target-by-target basis if AbbVie considers in good faith that there has been a failure of the discovery or development efforts with respect to such target, or that further development or commercialization of products directed to such target is not advisable as a result of a serious safety issue.

The Company assessed the Collaboration and Restated Collaboration Agreement in accordance with Topic 606 and concluded that AbbVie is a customer under both agreements. The Company concluded that there are multiple promises under both the Collaboration and Restated Collaboration Agreement which include (1) research and development activities; (2) regulatory documentation and know-how; and (3) the license to the related technology. The Company combined these promises into a single performance obligation, as the Company is obliged to render specialized services for the research program, and other promises have either no significant value or are not distinct. The Company estimates that the $17.0 million upfront payment under the Original Collaboration Agreement will be recognized over a period in which ongoing research and development activities are incurred based on the projected activities to be performed over each reporting period relative to the total estimated performance period. Such estimates are reviewed by the Company on a periodic basis and, if necessary, the Company will adjust the measure of performance and related revenue recognition.

At the inception of the Original Collaboration Agreement, the Company determined that the transaction price was $17.0 million, which was all allocated to the two initial targets. The Company has evaluated the transaction price and has determined $17.0 million is still appropriate as of December 31, 2020. For the year ended December 31, 2020, 2019 and 2018, $3.7 million, $4.0 million and $4.3 million of revenue have been recognized in the accompanying statement of operations and comprehensive loss, respectively.

At the inception of the Restated Collaboration Agreement, the Company determined that the transaction price included the $20.0 million upfront payment received in December 2019. The Company allocates $10.0 million to each additional target selected. The company estimates that the $20.0 million upfront payment under the Restated Collaboration Agreement will be recognized over a period in which ongoing research and development activities are incurred based on the projected activities to be performed over each reporting period relative to the total estimated performance period. Such estimates are reviewed by the Company on a periodic basis and, if necessary, the Company will adjust the measure of performance and related revenue recognition. As of December 31, 2020, AbbVie has not yet selected a target under the Restated Collaboration Agreement, as such, no revenue was recognized and the upfront payment of $20.0 million is recorded as deferred revenue as of December 31, 2020.

As of December 31, 2020, the Company has recorded $24.3 million in deferred revenue, of which $16.0 million is classified as long-term and $8.3 million as short-term deferred revenue, in the accompanying balance sheet.

The Company determined that future contingent payments that may be received related to development and regulatory milestones under the Restated Collaboration Agreement are based on the performance of AbbVie and are constrained due to the fact that it was not probable that a significant reversal of cumulative revenue would not occur, as their achievement is highly dependent on the successful completion of the research activities. Accordingly, revenue for the achievement of these milestones will be recognized in the period that it is deemed probable that the milestone will be achieved. Any consideration related to commercialization and sales milestones, and sales-based royalties will be recognized when the related sales occur as they were determined to relate predominantly to the license granted to AbbVie and have been excluded from the transaction price. The Company will re-evaluate the transaction price in each reporting period as uncertain events are resolved or other changes in circumstances occur.

As of December 31, 2020, the Company has not recognized or earned any milestone payments under the Original Collaboration and Restated Collaboration Agreement. The Company will recognize royalty revenue in the period of sale of the related products, based on the underlying contract terms. No such amounts were recognized during the year ended December 31, 2020.

License Agreement with Werewolf Therapeutics, Inc.

In March 2018, the Company entered into an assignment and license agreement (the "Werewolf Agreement") with Werewolf Therapeutics, Inc. ("Werewolf"). Werewolf is affiliated with a holder of more than 5% of the Company's capital stock, and one member of the Board was, at the time, also the interim Chief Executive Officer of Werewolf and as such, Werewolf was deemed to be a related party. Pursuant to the Werewolf Agreement, the Company assigned certain patents and granted to Werewolf a non-exclusive, royalty-bearing, sublicensable license under certain other patents. In addition, Werewolf assigned certain patents to the Company. Under the Werewolf Agreement, the Company received an upfront fee of $0.5 million. If Werewolf commercializes products covered by the licensed patents, then beginning on the first sale of such products, the Company will be eligible to receive a royalty on net sales of such products by Werewolf, its affiliates and licensees at a percentage in the low single digits, subject to a minimum annual royalty payment at an amount in the low hundreds of thousands of dollars.

The Company assessed the Werewolf Agreement in accordance with Topic 606 and concluded that Werewolf is a customer, and there is only one promise and a performance obligation to deliver intellectual property license. The upfront fee of $0.5 million was recognized upfront during the year ended December 31, 2018 upon delivery of the license to Werewolf and royalties on net sales will be recognized when the underlying sales occur.

On December 20, 2019, the Company and Werewolf amended the Werewolf Agreement by entering into a Second Amended and Restated Assignment and License Agreement (the "Amended Werewolf Agreement") to include the grant to Werewolf of an exclusive, royalty-bearing, sublicensable license under certain patents owned by the Company and relating to certain proteins, to make, use, and commercialize products that are covered by such patents in the field of molecules comprising a certain protein. This license provides Werewolf with certain rights to enforce and defend these licensed patents. If Werewolf commercializes products covered by these licensed patents, then beginning on the first sale of such products, Werewolf will be obligated to pay to the Company a royalty on net sales of such products by Werewolf, its affiliates and licensees at a percentage in the low single digits, and this royalty cannot be added to any other royalty owed to the Company under the Amended Werewolf Agreement. In addition, each party granted to the other a non-exclusive, royalty-free, sublicensable, perpetual license under certain other patents relating to a certain binding domain of a certain protein, to make, use, and commercialize products that are covered by such patents in a field defined by a certain type of molecule for each party. The Amended Werewolf Agreement also includes a mutual release of claims regarding certain patent prosecution matters.

No royalty revenue was recognized under the Werewolf Agreement during the year ended December 31, 2020 or 2019.

Collaboration and License Revenue

For the years ended December 31, 2020, 2019 and 2018, collaboration and license revenue in the accompanying statements of operations and comprehensive loss is comprised of the following:

Collaboration and License Revenue	2020	2019	2018
AbbVie Restated Collaboration Agreement	$ 3,667	$ 4,039	$ 4,250
AbbVie Development and Option Agreement	13,777	1,738	—
Werewolf License Agreement	—	—	500
Total collaboration and license revenue	$ 17,444	$ 5,777	$ 4,750

8. Convertible Preferred Stock

In May 2017, the Company entered into a Series B Preferred Stock Purchase Agreement (the "Series B Agreement"), pursuant to which the Company issued 3,128,540 shares of its Series B convertible preferred stock at a purchase price of $6.39 per share for net proceeds of $19.7 million, of which $7.5 million was sold to related party investors of the Company. In addition, the Company issued an aggregate of 811,103 shares of Series B convertible preferred stock upon the extinguishment of the 2016 Notes and the 2017 Notes in an aggregate of $5.2 million.

In November 2018, the Company entered into a Series C Preferred Stock Purchase Agreement, pursuant to which the Company issued and sold approximately 6,499,935 million shares of its Series C convertible preferred stock at a purchase price of $10.77 per share for net proceeds of approximately $69.7 million, of which approximately $29.0 million was sold to related party investors of the Company.

Convertible preferred stock consists of the following:

	As of December 31, 2018			
	Shares Authorized	Shares Issued and Outstanding	Carrying Value	Aggregate Liquidation Preference
		(In thousands, except share data)		
Series A	15,000,000	3,050,329	$ 14,926	$ 15,008
Series B	35,000,000	7,068,184	44,906	45,166
Series C	32,000,000	6,499,935	69,745	70,004
	82,000,000	16,618,448	$ 129,577	$ 130,178

The Company classifies the convertible preferred stock outside of total stockholders' deficit because, in the event of certain "liquidation events" that are not solely within the control of the Company (including a merger, acquisition or sale of all or substantially all of the Company's assets), the shares would become redeemable at the option of the holders. The Company did not adjust the carrying values of the convertible preferred stock to the deemed liquidation values of such shares since a liquidation event was not probable at either of the reporting dates. Subsequent adjustments to increase or decrease the carrying values to the ultimate liquidation values will be made only if and when it becomes probable that such a liquidation event will occur.

On the completion of the IPO (see Note 1), all outstanding shares of convertible preferred stock were automatically converted into 16,618,448 shares of common stock. As of December 31, 2020, the Company did not have any convertible preferred stock issued or outstanding.

9. Equity

Stock Incentive Plans

2019 Equity Incentive Plan

The board of directors adopted, and the Company's stockholders approved the Company's 2019 Equity Incentive Plan (the "2019 Plan") in January 2019, which became effective as of immediately prior to the execution of the underwriting agreement for the Company's IPO in February 2019, after which, no further grants were made under the Company's 2015 Plan. Initially, the aggregate number of shares of our common stock that may be issued pursuant to stock awards under our 2019 Plan is 5,656,381, which is the sum of (1) 2,200,000 shares plus (2) the number of shares reserved, and remaining available for issuance, under our 2015 Plan at the time our 2019 Plan became effective and (3) the number of shares subject to stock options or other stock awards granted under our 2015 Plan that would have otherwise returned to our 2015 Plan (such as upon the expiration or termination of a stock award prior to vesting. The number of shares of our common stock reserved for issuance under our 2019 Plan will automatically increase on January 1 of each year, beginning on January 1, 2020 and continuing through and including January 1, 2029, by 5% of the total number of shares of our capital stock outstanding on December 31 of the preceding calendar year, or a lesser number of shares determined by our board of directors. The maximum number of shares that may be issued upon the exercise of incentive stock options under our 2019 Plan is 8,000,000 shares.

2015 Equity Incentive Plan

In 2015, the Company adopted the 2015 Equity Incentive Plan (the "2015 Plan"). The 2015 Plan provided for the Company to sell or issue common stock or restricted common stock, or to grant incentive stock options or nonqualified stock options for the purchase of common stock, to employees, members of the Board and consultants of the Company under terms and provisions established by the Board. Under the terms of the 2015 Plan, options may have been granted at an exercise price not less than fair market value. The Company generally grants stock-based awards with service conditions only. Options granted typically vest over a four-year period but may be granted with different vesting terms. In January 2019, the Company's board of directors adopted and stockholders approved the Company's 2019 Plan (noted above), which became effective immediately prior to the execution of the underwriting agreement for the Company's IPO in February 2019, at which point the 2015 Plan was terminated and no further grants were made under the Company's 2015 Plan. However, all outstanding stock awards granted pursuant to the 2015 Plan will continue to be subject to the terms and conditions as set forth in the agreements evidencing such stock award.

Stock Option Activity

The following summarizes option activity under the 2019 Plan and the 2015 Plan as combined:

	Number of Outstanding Options	Weighted Average Exercise Price	Weighted Average Remaining Contractual Life (in years)	Aggregate Intrinsic Value (in thousands)
Balance as of December 31, 2018	3,323,988	1.61	9.07	1,675
Options granted	322,412	13.21		
Options exercised	(572,436)	1.40		
Options cancelled	(88,864)	1.89		
Balance as of December 31, 2019	2,985,100	2.89	8.27	35,509
Options granted	1,147,621	14.28		
Options exercised	(414,782)	2.54		
Options cancelled	(88,061)	9.12		
Balance as of December 31, 2020	**3,629,878**	6.38	7.88	37,498
Vested and expected to vest as of December 31, 2020	3,629,878	6.38	7.88	37,498
Exercisable as of December 31, 2020	1,587,605	3.82	7.22	20,349

As of December 31, 2020, 2,284,525 shares were reserved by the Company to grant under the 2019 Plan. The aggregate intrinsic values of options outstanding, vested and exercisable, and vested and expected to vest were calculated as the difference between the exercise price of the options and the estimated fair value of the Company's common stock, as determined by the Board of Directors. The intrinsic value of options exercised for the years ended December 31, 2020, 2019 and 2018 was $6.7 million, $7.6 million and $0.1 million, respectively. There is no future tax benefit related to options exercised, as the Company has accumulated net operating losses at December 31, 2020, 2019 and 2018.

During the years ended December 31, 2020, 2019 and 2018, the estimated weighted-average grant-date fair value of the stock options vested was $2.63, $1.33 and $0.81 per share, respectively, and the estimated weighted-average grant-date fair value of stock options granted was $9.63, $8.91, and $1.41 per share, respectively.

Stock-Based Compensation

The fair value of employee and director stock option awards was estimated at the date of grant using a Black-Scholes option-pricing model with the following weighted-average assumptions:

	Year Ended December 31,		
	2020	2019	2018
Expected term (years)	5.99	5.86	6.06
Expected volatility	78.86%	77.71%	76.08%
Risk-free interest rate	1.03%	2.17%	2.89%
Expected dividend	0%	0%	0%

Prior to our IPO in February 2019, and due to no public market for the Company's common stock, the fair value of the shares of common stock underlying stock options has historically been determined by the Board based on the fair value of the common stock at the time of grant of the option by considering a number of objective and subjective factors including important developments in the Company's operations, valuations performed by an independent third party, sales of convertible preferred stock, actual operating results and financial performance, the conditions in the biotechnology industry and the economy in general, the stock price performance and volatility of comparable public companies, and the lack of liquidity of the Company's common stock, among other factors. Subsequent to the completion of our IPO, the fair value of common stock underlying stock option is based on the closing price of our common stock as reported on the date of grant on the primary stock exchange on which our common stock is traded.

The Black-Scholes option-pricing model requires the use of highly subjective assumptions which determine the fair value of stock-based awards. These assumptions include:

Expected Term—The expected term represents the period that stock-based awards are expected to be outstanding. The expected term for option grants is determined using the simplified method. The simplified method deems the term to be the average of the time-to-vesting and the contractual life of the stock-based awards.

Expected Volatility— The Company uses an average historical stock price volatility of comparable public companies within the biotechnology and pharmaceutical industry that were deemed to be representative of future stock price trends as the Company does not have sufficient trading history for its common stock. The Company will continue to apply this process until a sufficient amount of historical information regarding the volatility of its own stock price becomes available.

Risk-Free Interest Rate—The risk-free interest rate is based on the U.S. Treasury zero coupon issues in effect at the time of grant for periods corresponding with the expected term of option.

Expected Dividend—The Company has never paid dividends on its common stock and has no plans to pay dividends on its common stock. Therefore, the Company used an expected dividend yield of zero.

Total stock-based compensation was as follows:

	Year Ended December 31,		
	2020	2019	2018
	(in thousands)		
Research and development	$ 1,980	$ 656	$ 325
General and administrative	2,880	1,415	347
Total stock-based compensation	$ 4,860	$ 2,071	$ 672

Stock-based compensation related to non-employee awards, which is included in the table above, was $0.2 million, $0.2 million and $0.1 million for the years ended December 31, 2020, 2019 and 2018, respectively.

In addition to the stock-based compensation expense showing in the above table, as of December 31, 2020, there is an additional $10.2 million of unrecognized stock-based compensation related to unvested stock options that is expected to be recognized over a weighted-average period of 2.8 years.

2019 Employee Stock Purchase Plan

The board of directors adopted, and the Company's stockholders approved, the 2019 Employee Stock Purchase Plan, (the "2019 ESPP") in January 2019. The 2019 ESPP became effective in February 2019.

The initial reserve for purchase by participating employees under the 2019 ESPP an aggregate number of shares of common stock shall not exceed 250,000 shares. The maximum aggregate number of shares of common stock that may be issued under the 2019 ESPP is 750,000 shares. Additionally, the number of shares of common stock reserved for issuance under the 2019 ESPP will increase automatically each year, beginning on January 1, 2020 and continuing through and including January 1, 2029, in an amount equal to the lesser of (i) 1% of the total number of shares of the Registrant's capital stock outstanding on December 31 of the preceding calendar year, (ii) 750,000 shares of Common Stock and (iii) a number of shares of Common Stock designated by action of the Registrant's board of directors prior to the first day of any calendar year. The board of directors may act prior to the first day of any calendar year to provide that there will be no January 1 increase or that the increase will be for a lesser number of shares than would otherwise occur. Shares subject to purchase rights granted under the 2019 ESPP that terminate without having been exercised in full, the shares of Common Stock not purchased under such Purchase Right will again become available for issuance under the Plan.

An employee may not be granted rights to purchase stock under the 2019 ESPP if such employee (i) immediately after the grant would own stock possessing 5% or more of the total combined voting power or value of all classes of stock of the Company or (ii) holds rights to purchase stock under the 2019 ESPP that would accrue at a rate that exceeds $25,000 worth of our stock for each calendar year that the rights remain outstanding.

The administrator may approve offerings with a duration of not more than 27 months, and may specify one or more shorter purchase periods within each offering. Each offering will have one or more purchase dates on which shares of common stock will be purchased for the employees who are participating in the offering. The administrator, in its discretion, will determine the terms of offerings under the 2019 ESPP.

The 2019 ESPP permits participants to purchase shares of our common stock through payroll deductions with up to 15% of their earnings. The purchase price of the shares will be not less than 85% of the lower of the fair market value of our common stock on the first day of an offering or on the date of purchase.

The Company issued 60,885 shares under the 2019 ESPP during the year ended December 31, 2020. The Company has approximately 439,000 shares reserved for future issuance as of December 31, 2020.

	Year Ended December 31, 2020
Expected term (years)	0.5
Expected volatility	98.37%
Risk-free interest rate	0.14%
Expected dividend	0%

Restricted Stock

In 2015, the Company issued restricted stock awards to employees and directors under the 2015 Plan at a purchase price of $0.0005 per share. The shares related to restricted stock awards are subject to a lapsing repurchase right upon termination of employment at the original purchase price. In order to vest, the holders are required to provide continued service to the Company. For accounting purposes, unvested restricted stock awards are not considered issued and outstanding and therefore are not reflected as issued and outstanding in the accompanying statements of convertible preferred stock and stockholders' equity (deficit) until the awards vest. The Company did not have any restricted shares as of December 30, 2020.

Early Exercised Stock Options

The terms of the 2015 Plan permit option holders to exercise stock options before they are vested, subject to certain limitations. The shares related to early exercised stock options are subject to our lapsing repurchase right upon termination of employment at the original purchase price. In order to vest, the holders are required to provide continued service to the Company. The proceeds are initially recorded in other current liabilities and are reclassified to common stock and paid-in capital as the repurchase right lapses. As of December 31, 2020 and 2019, there was $26,000 and $55,000, respectively, recorded in other current liabilities relating to shares subject to repurchase. For accounting purposes, unvested early exercised shares are not considered issued and outstanding until the awards vest. As a result of early exercises under the 2015 Plan, 20,839, and 56,211, shares had not vested and were subject to repurchase as of December 31, 2020 and 2019, respectively.

Note Receivable from Stockholder

In August 2016, the Company received a recourse promissory note from our then CEO and President, in connection with this individual's purchase of 152,516 shares of our common stock at a price of $0.59 per share. The principal amount of the note was approximately $90,000, and accrued simple interest at a rate of 1.22% per year. The note, along with accrued interest, can be prepaid without penalty and is due on the earlier of (i) August 29, 2022, (ii) the pricing of an IPO or the closing of an acquisition of the Company, in either case if the note's existence would violate any applicable law, (iii) the date the Company determines that any change in the Company's status or the individual's status would cause the note to be deemed a prohibited extension of credit under Section 402 of the Sarbanes-Oxley Act of 2002, as amended, or any applicable law or (iv) on demand by the Company in certain circumstances. In 2016, upon the individual ceasing to be employed by the Company, the Company repurchased 105,067 shares of common stock at a price per share of $0.59 per share for a total cash payment of $62,000. As of December 31, 2016 and 2017, the outstanding loan balance was $28,000, which is recorded as a component of total stockholders' deficit in the accompanying balance sheets. As of December 31, 2018 the outstanding balance of $28,000 was cancelled and the cancellation was recorded as stock-based compensation on the Company's statement of operations and comprehensive loss.

10. Income Taxes

	December 31,		
	2020	2019	2018
Computed expected tax benefit (at federal statutory income tax rate of 21%)	$ (10,481)	$ (11,584)	$ (5,747)
State tax	(4,231)	(4,599)	(2,686)
Stock compensation	321	(490)	87
Tax credits	1,552	587	1,802
Change in valuation allowance	12,540	16,059	6,497
Other	299	27	47
Total provision for income taxes	$ —	$ —	$ —

Since inception, the Company has only generated pretax losses. For the years ended December 31, 2020 and 2019, the Company recorded no provision for income taxes due to the losses incurred. Significant components of the Company's deferred tax assets and liabilities as of December 31, 2020 and 2019 consisted of the following:

	December 31,	
	2020	2019
	(in thousands)	
Deferred tax assets:		
Net operating loss carry forwards	$ 28,198	$ 26,730
Stock-based compensation	329	368
Deferred revenue	13,274	2,239
Lease liability	3,791	4,190
Other	927	674
Total deferred tax assets	46,519	34,201
Less: valuation allowance	(44,654)	(32,113)
Net deferred tax assets	1,865	2,088
Fixed assets	(23)	(125)
Right-of-use asset	(1,842)	(1,963)
Net deferred tax assets	$ —	$ —

The Company's accounting for deferred taxes involves the evaluation of a number of factors concerning the realizability of its net deferred tax assets. The Company primarily considered such factors as its history of operating losses, the nature of the Company's deferred tax assets, and the timing, likelihood and amount, if any, of future taxable income during the periods in which those temporary differences and carryforwards become deductible. At present, the Company does not believe that it is more likely than not that the deferred tax assets will be realized; accordingly, a full valuation allowance has been established and no deferred tax asset is shown in the accompanying balance sheets. The valuation allowance increased by approximately $12.5 million and $17.9 million during the years ended December 31, 2020 and 2019.

The Company has net operating carryforwards for federal and California income tax purposes of approximately $202.8 million and $190.9 million as of December 31, 2020 and 2019. The federal net operating loss carryforwards of $23.1 million, if not utilized, will expire beginning in 2035 and $77.1 million is carryforward indefinitely. The state net operating loss carryforwards of $102.7 million, if not utilized, will expire beginning in 2035.

The Company has research and development credit carryforwards for federal and California income tax purposes of approximately $10.3 million and $6.4 million as of December 31, 2020 and 2019. The federal credit carryforwards of $6.7 million, if not utilized, will expire beginning in 2035. The state credit carryforwards indefinitely.

Federal and California tax laws impose significant restrictions on the utilization of net operating loss carryforwards in the event of a change in ownership of the Company, as defined by Internal Revenue Code Section 382 ("Section 382"). The Company believes a change in ownership, as defined by Section 382, has occurred but a formal study has not been completed. In addition, in the future the Company may experience ownership changes, which may limit the utilization of net operating loss carryforwards or other tax attributes.

The Company has not reflected any benefit of such net operating loss carryforwards in the accompanying financial statements. The Company has established a full valuation allowance against its deferred tax assets due to the uncertainty surrounding the realization of such assets.

Uncertain Tax Benefits

The Company recognizes uncertain tax positions when it is more likely than not, based on the technical merits, that the position will not be sustained upon examination. No liability related to uncertain tax positions is recorded on the financial statements related to uncertain tax positions.

A reconciliation of the beginning and ending amount of unrecognized tax benefits is as follows:

	December 31,		
	2020	2019	2018
	(in thousands)		
Unrecognized tax benefits at January 1	$ 5,844	$ 3,438	$ 422
Additions for tax positions taken in the current year	3,972	2,656	3,016
Reductions for tax positions taken in the prior year	(295)	(250)	—
Unrecognized tax benefits at December 31	$ 9,521	$ 5,844	$ 3,438

The Company does not anticipate any significant changes to unrecognized tax benefits over the next 12 months. The Company recognizes interest and penalties related to uncertain tax positions in income tax expense. To the extent accrued interest and penalties do not ultimately become payable, amounts accrued will be reduced and reflected as a reduction of the provision for income taxes in the period that such determination is made. Interest and penalties have not been accrued for 2020, 2019 and 2018.

The Company files income tax returns in the United States and California. The years 2015 through 2019 remain open to U.S. federal and state examination to the extent of the utilization of net operating loss and credit carryovers. As of December 31, 2020, the Company is not under examination by the Internal Revenue Services or any state tax jurisdiction.

On March 27, 2020, the Coronavirus, Aid, Relief and Economic Stimulus Act (CARES Act) was enacted. The CARES Act contains several provisions (Employee Retention Credit, Payroll Protection Loan, Paid Leave and defer payment of employer's share of payroll tax) that Harpoon may considered. As of December 31, 2020, the Company has not taken advantage of the benefits provided by the CARES Act. Whether or not the company takes advantage of the credit and other applicable provisions of the CARES Act will not change the amount of income tax paid on the 2020 income tax returns, nor will these impact the GAAP tax expense/benefit expected to be recorded in 2020.

On June 29, 2020, California's Governor Newsom signed AB85 suspending California net operating loss (NOL) utilization and imposing a cap on the amount of business incentives tax credits (R&D credit) for tax years 2020-2022. Given an expected tax loss for 2020, the suspension does not have a material impact on the Company's provision for income taxes in its condensed financial statements.

11. Net Loss Per Share

The following outstanding potentially dilutive common stock equivalents have been excluded from the calculation of diluted net loss per share for the periods presented due to their anti-dilutive effect:

	As of December 31,		
	2020	2019	2018
Convertible preferred stock (as converted)	—	—	16,618,448
Common stock options issued and outstanding	3,629,878	2,985,100	3,323,988
ESPP shares issuable and outstanding	11,881	11,523	—
Restricted Stock subject to future vesting	—	—	22,178
Early exercised stock options subject to future vesting	20,839	56,211	149,565
Warrants to purchase shares of common stock	—	—	565,270
Total	3,662,598	3,052,834	20,679,449

The following table summarizes the computation of basic and diluted net loss per share attributable to common stockholders of the Company (in thousands, except per share data):

	As of December 31,		
	2020	2019	2018
Net loss	(49,908)	(55,572)	(27,366)
Weighted-average shares used to compute basic and diluted net loss per share	25,034,947	21,746,461	1,066,877
Basic and diluted net loss per common share	(1.99)	(2.56)	(25.65)

12. Quarterly Results (Unaudited)

The following table is in thousands, except per share amounts:

	Quarters Ended			
	March 31, 2020	June 30, 2020	September 30, 2020	December 31, 2020
Statement of operations data:				
Revenue				
Collaboration and license revenue	$ 3,297	$ 2,762	$ 3,893	$ 7,492
Total revenue	3,297	2,762	3,893	7,492
Operating expenses				
Research and development	12,519	11,924	13,057	15,065
General and administrative	3,913	3,945	4,428	3,924
Total operating expenses	16,432	15,869	17,485	18,989
Loss from operations	(13,135)	(13,107)	(13,592)	(11,497)
Interest income	584	415	299	151
Other expense	(1)	—	(14)	(11)
Net loss	$ (12,552)	$ (12,692)	$ (13,307)	$ (11,357)
Other comprehensive loss:				
Net unrealized gain (loss) on marketable securities	430	(229)	(115)	(124)
Comprehensive loss	$ (12,122)	$ (12,921)	$ (13,422)	$ (11,481)
Net loss per share, basic and diluted	(0.51)	(0.51)	(0.53)	(0.45)
Weighted-average common shares used in computing net loss per share, basic and diluted	24,843,275	24,961,183	25,081,680	25,250,766

	Quarters Ended			
	March 31, 2019	June 30, 2019	September 30, 2019	December 31, 2019
Statement of operations data:				
Revenue				
Collaboration and license revenue	$ 1,063	$ 1,063	$ 1,417	$ 2,234
Total revenue	1,063	1,063	1,417	2,234
Operating expenses				
Research and development	9,382	9,971	9,533	12,706
General and administrative	5,832	3,734	8,493	4,333
Total operating expenses	15,214	13,705	18,026	17,039
Loss from operations	(14,151)	(12,642)	(16,609)	(14,805)
Interest income	576	840	728	532
Other expense	(4)	(15)	(26)	4
Net loss	$ (13,579)	$ (11,817)	$ (15,907)	$ (14,269)
Other comprehensive loss:				
Net unrealized gain (loss) on marketable securities	26	84	(25)	(42)
Comprehensive loss	$ (13,553)	$ (11,733)	$ (15,932)	$ (14,311)
Net loss per share, basic and diluted	(1.01)	(0.49)	(0.65)	(0.58)
Weighted-average common shares used in computing net loss per share, basic and diluted	13,475,222	24,294,211	24,457,402	24,606,894

13. Subsequent Event

On January 11, 2021, the Company completed a follow on public offering of 6,764,704 shares of its common stock at an offering price of $17.00 per share, including 882,352 shares sold pursuant to the exercise in full by the underwriters of their overallotment option, resulting in a net proceeds of approximately $108.1 million, after deducting underwriting discounts and commissions and offering costs payable by the Company.

Exhibit 23.1

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We consent to the incorporation by reference in the following Registration Statements of Harpoon Therapeutics, Inc.:

- Registration Statement on Form S-8 (No. 333-229592) pertaining to the Harpoon Therapeutics, Inc. 2015 Equity Incentive Plan, 2019 Equity Incentive Plan and 2019 Employee Stock Purchase Plan;

- Registration Statement on Form S-8 (No. 333-237173) pertaining to the Harpoon Therapeutics, Inc. 2019 Equity Incentive Plan and 2019 Employee Stock Purchase Plan; and

- Registration Statement on Form S-3 (No. 333-237175) of Harpoon Therapeutics, Inc.

of our report dated March 10, 2021 with respect to the financial statements of Harpoon Therapeutics, Inc., included in this Annual Report (Form 10-K) for the year ended December 31, 2020.

/s/ Ernst & Young LLP

Redwood City, California
March 10, 2021

Exhibit 31.1

CERTIFICATION PURSUANT TO
RULES 13a-14(a) AND 15d-14(a) UNDER THE SECURITIES EXCHANGE ACT OF 1934,
AS ADOPTED PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Gerald McMahon, certify that:

1. I have reviewed this annual report on Form 10-K of Harpoon 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 and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

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

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

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

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

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

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

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

Date: March 10, 2021

By: /s/ Gerald McMahon, Ph.D.

Gerald McMahon, Ph.D.
President and Chief Executive Officer
(Principal Executive Officer)

Exhibit 31.2

CERTIFICATION PURSUANT TO
RULES 13a-14(a) AND 15d-14(a) UNDER THE SECURITIES EXCHANGE ACT OF 1934,
AS ADOPTED PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Georgia Erbez, certify that:

1. I have reviewed this annual report on Form 10-K of Harpoon 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 and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

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

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

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

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

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

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

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

Date: March 10, 2021

By: /s/ Georgia Erbez

Georgia Erbez
Chief Financial Officer
(Principal Financial Officer)

Exhibit 32.1

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

Pursuant to the requirement set forth in Rule 13a-14(b) of the Securities Exchange Act of 1934, as amended, (the "Exchange Act") and Section 1350 of Chapter 63 of Title 18 of the United States Code (18 U.S.C. §1350), Gerald McMahon, President and Chief Executive Officer of Harpoon Therapeutics, Inc. (the "Company"), and Georgia Erbez, Chief Financial Officer of the Company, each hereby certifies that, to the best of his or her knowledge:

1. The Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2020, to which this Certification is attached as Exhibit 32.1 (the "Annual Report"), fully complies with the requirements of Section 13(a) or Section 15(d) of the Exchange Act; and

2. The information contained in the Annual Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Dated: March 10, 2021

IN WITNESS WHEREOF, the undersigned have set their hands hereto as of the 10th day of March, 2021.

Date: March 10, 2021 By: /s/ Gerald McMahon, Ph.D.
Gerald McMahon, Ph.D.
President and Chief Executive Officer

Date: March 10, 2021 By: /s/ Georgia Erbez
Georgia Erbez
Chief Financial Officer