As confidentially submitted to the Securities and Exchange Commission on February 13, 2018 as Amendment No. 1 to the confidential submission dated November 3, 2017. This draft registration statement has not been publicly filed with the Securities and Exchange Commission and all information herein remains confidential.

Registration No. 333-

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM S-1
REGISTRATION STATEMENT

Under
The Securities Act of 1933

UNUM THERAPEUTICS INC.

(Exact name of registrant as specified in its charter)

Delaware	**2834**	**46-5308248**
(State or other jurisdiction of incorporation or organization)	**(Primary Standard Industrial Classification Code Number)**	**(I.R.S. Employer Identification Number)**

200 Cambridge Park Drive, Suite 3100
Cambridge, Massachusetts 02140
(617) 945-5576
(Address, including zip code, and telephone number, including area code, of registrant's principal executive offices)

Charles Wilson
Chief Executive Officer
Unum Therapeutics Inc.
200 Cambridge Park Drive, Suite 3100
Cambridge, Massachusetts 02140
(617) 945-5576
(Name, address, including zip code, and telephone number, including area code, of agent for service)

Copies to:

Kingsley L. Taft, Esq. **Danielle Lauzon, Esq.** **Caitlin L. Murray, Esq.** **Goodwin Procter LLP** **100 Northern Avenue** **Boston, Massachusetts 02210** **(617) 570-1000**	**Christiana Stamoulis** **President and Chief Financial Officer** **Unum Therapeutics Inc.** **200 Cambridge Park Drive, Suite 3100** **Cambridge, Massachusetts 02140** **(617) 945-5576**	**Patrick O'Brien, Esq.** **Ropes & Gray LLP** **Prudential Tower** **800 Boylston Street** **Boston, Massachusetts 02199** **(617) 951-7000**

Approximate date of commencement of proposed sale to the public:
As soon as practicable after the effective date of this registration statement.

If any of the securities being registered on this Form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act of 1933, as amended, check the following box. ☐

If this Form is filed to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act, please check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. ☐

If this Form is a post-effective amendment filed pursuant to Rule 462(c) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. ☐

If this Form is a post-effective amendment filed pursuant to Rule 462(d) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. ☐

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

Large Accelerated Filer	☐	Accelerated Filer	☐
Non-Accelerated Filer	☒ (Do not check if a smaller reporting company)	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 to Section 7(a)(2)(B) of the Securities Act. ☒

CALCULATION OF REGISTRATION FEE

Title of Each Class of Securities to be Registered	**Proposed Maximum Aggregate Offering Price(1)(2)**	**Amount of Registration Fee**
Common Stock, par value $ 0.001 per share	$	$

(1) Estimated solely for the purpose of calculating the registration fee pursuant to Rule 457(o) under the Securities Act of 1933, as amended.
(2) Includes the offering price of shares that the underwriters may purchase pursuant to an option to purchase additional shares.

The registrant hereby amends this registration statement on such date or dates as may be necessary to delay its effective date until the registrant shall file a further amendment that specifically states that this registration statement shall thereafter become effective in accordance with Section 8(a) of the Securities Act of 1933, as amended, or until this registration statement shall become effective on such date as the Commission, acting pursuant to said Section 8(a), may determine.

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The information in this preliminary prospectus is not complete and may be changed. These securities may not be sold until the registration statement filed with the Securities and Exchange Commission is effective. This preliminary prospectus is not an offer to sell nor does it seek an offer to buy these securities in any jurisdiction where the offer or sale is not permitted.

PRELIMINARY PROSPECTUS (Subject to Completion)
Dated , 2018

Shares

Common Stock

Unum Therapeutics Inc. is offering shares of its common stock. This is our initial public offering and no public market exists for our common stock. We anticipate that the initial public offering price per share of our common stock will be between $ and $.

We intend to apply to list our common stock on The Nasdaq Global Market under the symbol "UNUM."

We are an "emerging growth company" as that term is used in the Jumpstart Our Business Startups Act of 2012 (JOBS Act), and, as such, we have elected to comply with certain reduced public company reporting requirements for this prospectus and future filings. See "Prospectus Summary—Implications of Being an Emerging Growth Company."

Investing in our common stock involves risks. See "Risk Factors" beginning on page 11.

	Price to Public	***Underwriting Discounts and Commissions(1)***	***Proceeds to Unum Therapeutics Inc. (Before Expenses)***
Per Share	*$*	*$*	*$*
Total	*$*	*$*	*$*

(1) See "Underwriters" beginning on page 164 of this prospectus for additional information regarding underwriting compensation.

We have granted the underwriters an option to purchase up to additional shares of our common stock to cover over allotments. The underwriters can exercise this option at any time within 30 days after the date of this prospectus.

The underwriters expect to deliver the shares of our common stock to purchasers on or about , 2018.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or determined if this prospectus is truthful or complete. Any representation to the contrary is a criminal offense.

MORGAN STANLEY *COWEN*

WEDBUSH PACGROW

, 2018

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Through and including , 2018 (25 days after the date of this prospectus), all dealers effecting transactions in these securities, whether or not participating in this offering, may be required to deliver a prospectus. This delivery requirement is in addition to the obligation of dealers to deliver a prospectus when acting as underwriters and with respect to their unsold allotments or subscriptions.

You should rely only on the information contained in this prospectus or in any free writing prospectus we file with the Securities and Exchange Commission. Neither we nor the underwriters have authorized anyone to provide you with information other than that contained in this prospectus or any free writing prospectus prepared by or on behalf of us or to which we have referred you. We take no responsibility for, and can provide no assurance as to the reliability of, any other information that others may give you. We and the underwriters are offering to sell, and seeking offers to buy, common stock only in jurisdictions where offers and sales are permitted. The information contained in this prospectus is accurate only as of the date on the front cover page of this prospectus, or other earlier date stated in this prospectus, regardless of the time of delivery of this prospectus or of any sale of our common stock.

The market data and certain other statistical information used throughout this prospectus are based on independent industry publications, governmental publications, reports by market research firms, or other independent sources that we believe to be reliable sources. Although we believe that these sources are reliable, we have not independently verified the information contained in such publications. While we are not aware of any misstatements regarding any third-party information presented in this prospectus, their estimates, in particular, as they relate to projections, involve numerous assumptions, are subject to risks and uncertainties, and are subject to change based on various factors, including those discussed under the section titled "Risk Factors" and elsewhere in this prospectus. Some data are also based on our good faith estimates.

PROSPECTUS SUMMARY

This summary highlights information contained elsewhere in this prospectus and does not contain all of the information that you should consider in making your investment decision. Before investing in our common stock, you should carefully read this entire prospectus, including our consolidated financial statements and the related notes included elsewhere in this prospectus. You should also consider, among other things, the matters described under "Risk Factors," "Business," and "Management's Discussion and Analysis of Financial Condition and Results of Operations," in each case appearing elsewhere in this prospectus. Unless the context otherwise requires, we use the terms "Unum," "company," "we," "us," and "our" in this prospectus to refer to Unum Therapeutics Inc. and, where appropriate, our subsidiary.

Overview

We are a clinical-stage biopharmaceutical company focused on the development and commercialization of novel immunotherapy products designed to harness the power of a patient's immune system to cure cancer. Our proprietary technology, called antibody-coupled T cell receptor (ACTR), is a universal, engineered cell therapy that is intended to be used in combination with a wide range of tumor-specific antibodies to target different tumor types. Our product candidates are composed of ACTR T cells co-administered with approved and commercially available antibodies or antibodies in preclinical or clinical development. Our vision is to use our ACTR platform to transform cancer treatment and deliver patient cures in many different hematologic and solid tumor cancers, improving upon current cell therapies.

In our ongoing Phase I clinical trial using our lead ACTR construct, ACTR087, to treat adult patients with relapsed or refractory non-Hodgkin lymphoma (r/r NHL), we have demonstrated clinical proof of concept, as evidenced by ACTR T cell expansion and persistence, a favorable tolerability profile, and anti-tumor activity. We have recently completed patient enrollment into the dose escalation phase of this trial and are advancing towards testing in an expanded patient cohort using an optimized dose of ACTR087 to support potential registration trials.

Our pipeline also includes two additional product candidates in clinical testing. We have commenced a Phase I clinical trial of ACTR707, a modified ACTR construct, used in combination with rituximab in adult patients with r/r NHL and a Phase I clinical trial of ACTR087 used in combination with the novel antibody SEA-BCMA in adult patients with r/r multiple myeloma. We expect to file an investigational new drug application (IND) in 2018 for ACTR707 used in combination with trastuzumab, an FDA-approved antibody, to treat patients with solid tumor cancers that overexpress the human epidermal growth factor receptor 2 (HER2+ cancers). In the longer term, we aim to leverage our ACTR platform to develop a broad range of product candidates to address many different hematologic and solid tumor cancers.

Immuno-oncology, the use of a patient's immune system to treat cancer, is one of the most actively pursued areas of research in drug discovery and development. Adoptive cell therapies are one immuno-oncology approach for cancer treatment. Adoptive cell therapy starts with the isolation of immune cells from a patient, followed by genetic modification of these cells outside the patient's body. Modified cells are then re-introduced into the patient to treat disease. Chimeric antigen receptor (CAR)-T cells are one type of adoptive cell therapy. While CAR-T's efficacy in hematologic cancers has been impressive, limited clinical data have been reported on the use of CAR-Ts in solid tumor cancers and the results have been much less encouraging than in the hematologic cancer setting. Severe side effects, such as cytokine release syndrome (CRS) and neurotoxicity, have been observed in some patients. For certain CARs, on-target, off-tumor effects have led to patient deaths. These toxicities and specific solid tumor challenges create a need to better control the activity of these therapies.

Our product candidates use patient-derived T cells, which are genetically modified to express the ACTR protein and co-administered with a tumor-specific antibody. ACTR is a chimeric protein which combines components from proteins normally found on both T cells and natural killer cells, two types of human immune cells. The natural killer cell component enables binding to tumor cell-bound antibodies and the T cell component enables potent cytotoxicity, proliferation, and persistence. Tumor-targeting antibodies administered with ACTR T cells bind to the surface of the tumor cell and, in effect, label it for ACTR T cell attack. When an ACTR T cell encounters a tumor cell bound with antibodies, it binds to those antibodies and kills the tumor cell through a process known as antibody-dependent cellular cytotoxicity (ADCC), a function not normally observed with T cells. No special modification of the tumor-specific antibody is required in order for ADCC to take place.

ACTR T cells can be directed to a wide range of different cancer cell antigens through the co-administration of antigen-specific antibodies. Thus, we believe an ACTR T cell can be used in many different cancer types. Preclinical data from in vivo testing show that ACTR T cell-mediated tumor killing activity may be adjusted by modulating the dose of the targeting antibodies. This ability to adjust ACTR T cell activity could make it possible to define an optimal dose through clinical testing to maximize tumor-killing activity and minimize toxicity.

We have a broad product pipeline that includes three clinical stage product candidates:

- Our most advanced product candidate, ACTR087 used in combination with rituximab, is being tested in adult patients with r/r NHL in an ongoing Phase I clinical trial called ATTCK-20-2. Two dose levels were explored in the dose escalation phase of this trial. Expansion and persistence of ACTR T cells was observed in all patients evaluable for response in both tested dose levels for as long as monitoring continued, consistent with what has been observed in CAR-T trials. At the first dose level of this trial, seven patients were treated with ACTR087 used in combination with rituximab and six patients were evaluable for response. Of the six evaluable patients, two complete responses and one partial response were observed. No adverse events commonly associated with T cell activation (CRS or neurotoxicity) of any grade were observed at this dose level. At the second dose level of this trial, nine patients were treated with ACTR087 used in combination with rituximab, and we are continuing to assess patients for response. Three partial responses have thus far been observed. We also observed dose-limiting toxicities in three patients within this cohort and concluded that under this treatment regimen, the second dose level exceeds the maximum tolerated dose. We have recently completed patient enrollment into the dose escalation phase of this trial and are advancing towards testing in an expanded patient cohort using an optimized dose of ACTR087 to support potential registration trials. In parallel with this ongoing Phase I clinical trial, we plan to initiate a Phase II clinical trial exploring ACTR087 used in combination with rituximab in adult patients with r/r NHL who received prior CD19 CAR-T therapy.
- Our second clinical stage product candidate, ACTR707 used in combination with rituximab, is being tested in adult patients with r/r NHL in a Phase I, multi-center, open-label clinical trial called ATTCK-20-03. ACTR707 is a modified ACTR construct designed to generate a more potent and sustained immune response to overcome immunosuppressive tumor microenvironments commonly found in solid tumor cancers. ACTR707 demonstrated activity against both hematologic and solid tumor cancers in preclinical studies. We expect to report initial data from the clinical trial in , and we plan to continue enrolling patients in this trial into . We expect to leverage data from the Phase I clinical trial in future studies by combining ACTR707 with a variety of antibodies targeting different cancers.
- Our third clinical stage product candidate, ACTR087 used in combination with SEA-BCMA, is the first product candidate resulting from our strategic collaboration with Seattle Genetics, Inc. (Seattle Genetics). We are currently enrolling and dosing adult patients with r/r multiple myeloma in a Phase I multi-center trial and we expect to report safety and response data from this trial in .

- ACTR707 used in combination with trastuzumab is currently in late preclinical development as a potential treatment for HER2+ solid tumor cancers. We plan to file an IND and initiate clinical testing of ACTR707 used in combination with trastuzumab in .

Our Pipeline

The following table summarizes our product candidate pipeline:

Product Candidates	Indication	Clinical Phase	Last Event	Next Expected Event
ACTR087+rituximab	r/r B cell non-Hodgkin lymphoma	Phase I	Completion of dose escalation	Initiation of cohort expansion
	r/r B cell non-Hodgkin lymphoma, patients who received prior CD19 CAR-T therapy			Initiation of Phase II trial
ACTR707+rituximab	r/r B cell non-Hodgkin lymphoma	Phase I	Initiated Phase I dose escalation	Interim safety and efficacy data
ACTR087+SEA-BCMA *(collaboration with Seattle Genetics)*	r/r multiple myeloma	Phase I	Initiated Phase I dose escalation	Interim safety and efficacy data
ACTR707+trastuzumab	HER2+ cancers	Preclinical	Initiated non-clinical studies to support IND filing	IND filing

We have obtained and retained worldwide commercial rights to the majority of our product candidates, including our lead product candidate, ACTR087 used in combination with rituximab. We intend to establish our own commercial organization in the United States where we believe we can address physicians with a direct specialty sales force. Our commercial strategy for markets outside the United States may include the use of strategic partners or the establishment of our own commercial infrastructure. We plan to further evaluate these alternatives as we approach potential approval of our product candidates.

In June 2015, we announced a global strategic collaboration with Seattle Genetics to identify, research, develop, and commercialize two novel antibody-coupled ACTR therapies incorporating Seattle Genetics' proprietary antibodies. Under the terms of the collaboration, we will conduct preclinical research and clinical development activities through Phase I clinical trials and Seattle Genetics will provide all of the funding for those activities. We plan to work together to co-develop and fund product candidates after Phase I clinical trials. We will co-commercialize any successfully developed product candidates and share equally any profits and losses on any co-developed product candidates in the United States. Seattle Genetics retains exclusive commercial rights outside of the United States. The first product candidate under our collaboration is ACTR087 used in combination with Seattle Genetics' SEA-BCMA antibody for r/r multiple myeloma.

Clinical development and commercialization of ACTR products are supported by our efforts to optimize manufacturing from the initial collection of a patient's white blood cells through the re-infusion of a formulated ACTR T cell product (i.e., from "vein-to-vein"). To this end, we have developed a largely automated ACTR manufacturing process with quality, scalability, cost, and consistency in mind. We are currently addressing clinical manufacturing needs for both viral vector and ACTR T cells with contract manufacturing organizations (CMOs) to increase flexibility and mitigate risks. As our product candidates advance through clinical trials, we expect to secure commercial manufacturing capacity using one or more CMOs or by establishing our own commercial manufacturing good manufacturing practices (GMP) facility.

We believe that the quality of our people has a strong and positive impact on our ability to develop and capitalize on our ACTR platform. We have assembled a team of highly skilled and experienced employees,

directors, scientific advisors, and consultants with broad capabilities in oncology drug discovery and development. In addition, our scientific founder and an inventor of our key patents relating to ACTR087, Dario Campana, M.D., Ph.D., is considered a world leader in cancer cell therapy. Dr. Campana continues to support our efforts as Chair of our Scientific Advisory Board.

Our Strategy

Our goal is to transform cancer treatment through the application of our universal ACTR platform in a wide range of hematologic and solid tumor cancers. Key elements of our strategy include the following objectives:

- ***Expedite clinical development, regulatory approval, and commercialization of our product candidate ACTR087 used in combination with rituximab.*** We plan to continue to advance our lead product candidate, ACTR087 used in combination with rituximab, for the treatment of adult patients with r/r NHL. If we believe the Phase I data are compelling, we plan to discuss with the FDA the potential to move to a registration trial in adult patients with r/r NHL upon completion of the current Phase I clinical trial. Additionally, we plan to initiate a Phase II clinical trial in to evaluate ACTR087 used in combination with rituximab in adult patients with r/r NHL who received prior CD19 CAR-T therapy.
- ***Leverage our universal ACTR platform to broaden our product portfolio rapidly and cost effectively.*** ACTR is an investigational engineered cell therapy that we believe can be used in combination with a wide range of tumor-targeting antibodies to pursue different antigens and cancer indications. ACTR does not need to be modified for use with different antibodies, and antibodies do not need to be modified for use with ACTR. This allows us to leverage our investment in ACTR and the investment by third parties in existing antibodies across different ACTR–antibody combinations, tumor types, and indications. We expect the universality of our ACTR platform will allow us to prosecute four product candidates in Phase I clinical trials within the next months.
- ***Expand our pipeline with increased focus on solid tumor product candidates***. With a particular aim at creating an ACTR that addresses the specific challenges associated with attacking solid tumor cancers, we have developed a modified ACTR construct called ACTR707. We plan to use ACTR707 to rapidly progress ACTR product candidates targeting solid tumor cancers into clinical development, starting with ACTR707 used in combination with trastuzumab for HER2+ cancers. We aim to continue to improve the functionality of the ACTR T cell in solid tumor cancers through (i) additional genetic modifications to exploit new supporting biology in the tumor microenvironment and (ii) introducing new manufacturing process modifications.
- ***Establish manufacturing capacity and leverage our process development capabilities to create a competitive advantage in T cell manufacturing.*** We designed a process using a closed automated system to support our clinical development plans and have devoted significant resources to optimizing process development. We currently engage CMOs to use our process for production of GMP material. In the future, we intend to establish our own GMP manufacturing facility.
- ***Establish commercialization and marketing capabilities to support current and future product candidates.*** We plan to establish a U.S.-focused specialty sales and marketing organization in advance of receipt of regulatory approval of the first ACTR product candidate. We intend to leverage the infrastructure developed for our first approved ACTR product to facilitate commercialization of any additional product candidates for which we gain approval. In addition, we will build upon physician familiarity and experience with the first approved ACTR product to accelerate adoption of subsequent products.

Risks Associated with Our Business

Our ability to implement our business strategy is subject to numerous risks, as more fully described in the section entitled "Risk Factors" immediately following this prospectus summary. These risks include, among others:

- We have incurred net losses in every year since our inception and anticipate that we will continue to incur net losses in the future. If we fail to obtain additional financing, we may be unable to complete the development and commercialization of our product candidates.
- Since the number of subjects that we have dosed, or plan to dose, in our ongoing or planned Phase I clinical trials is small, the results from such clinical trials, once completed, may be less reliable than results achieved in larger clinical trials, which may hinder our efforts to obtain regulatory approval for our product candidates.
- Our product candidates may cause undesirable side effects or have other properties that could halt their clinical development, prevent their regulatory approval, require expansion of the trail size, limit their commercial potential, or result in significant negative consequences. For example, in the second dose level of our ongoing Phase I clinical trial called ATTCK-20-2, we have observed ACTR087-related serious adverse events (SAEs), including two deaths. We also experienced one non-ACTR087-related death that followed an ACTR087-related severe CRS. These events resulted in the FDA placing the trial on clinical hold pending submission of certain information relating to the ATTCK-20-2 clinical trial. The clinical hold was removed in February 2018, following review of this information by the FDA. However, if we continue to observe severe side effects in our clinical trials, such trials may be halted or put on an additional clinical hold prior to completion if there is determined to be an unacceptable safety risk for patients.
- Our clinical trials may fail to demonstrate adequately the safety and efficacy of any of our product candidates, which would prevent or delay regulatory approval and commercialization. The FDA regulatory approval process is lengthy and time-consuming, and we may experience significant delays in the clinical development and regulatory approval of our product candidates.
- Our business is highly dependent on the success of ACTR087 used in combination with rituximab or ACTR707 used in combination with rituximab, our lead product candidates, and other ACTR-antibody combinations that we may develop.
- Our ACTR T cell product candidates represent a novel approach to cancer treatment, which creates significant challenges for us.
- We have entered into a strategic collaboration with Seattle Genetics and may form or seek collaborations or strategic alliances or enter into additional licensing arrangements in the future, and we may not realize the benefits of such alliances or licensing arrangements.
- We face significant competition from other biotechnology and pharmaceutical companies, and our operating results will suffer if we fail to compete effectively.
- We rely and will rely on third parties to conduct our clinical trials. If these third parties do not properly and successfully carry out their contractual duties or meet expected deadlines, we may not be able to obtain regulatory approval of or commercialize our product candidates. We expect to rely on third parties to manufacture our clinical product supplies, and we may rely on third parties for at least a portion of the manufacturing process of our product candidates, if approved. Our business could be harmed if those third parties fail to provide us with sufficient quantities of clinical product supplies or product candidates or fail to do so at acceptable quality levels or prices.
- We depend on intellectual property licensed from third parties and termination of any of these licenses could result in the loss of significant rights, which would harm our business.

Corporate History

We were incorporated under the laws of the State of Delaware in March 2014. Our principal executive office is located at 200 Cambridge Park Drive, Suite 3100, Cambridge, Massachusetts 02140, and our telephone number is (617) 945-5576. Our website address is www.unumrx.com. We do not incorporate the information on or accessible through our website into this prospectus, and you should not consider any information on, or that can be accessed through, our website as part of this prospectus.

Implications of Being an Emerging Growth Company

We qualify as an "emerging growth company" as defined in the Jumpstart Our Business Startups Act of 2012, as amended (JOBS Act). As an emerging growth company, we may take advantage of specified reduced disclosure and other requirements that are otherwise applicable generally to public companies. These provisions include:

- only two years of audited financial statements in addition to any required unaudited interim financial statements with correspondingly reduced "Management's Discussion and Analysis of Financial Condition and Results of Operations" disclosure;
- reduced disclosure about our executive compensation arrangements;
- no non-binding advisory votes on executive compensation or golden parachute arrangements; and
- exemption from the auditor attestation requirement in the assessment of our internal control over financial reporting.

We may take advantage of these exemptions for up to five years or such earlier time that we are no longer an emerging growth company. We would cease to be an emerging growth company on the date that is the earliest of (i) the last day of the fiscal year in which we have total annual gross revenues of $1.07 billion or more; (ii) the last day of our fiscal year following the fifth anniversary of the date of the closing of this offering; (iii) the date on which we have issued more than $1 billion in nonconvertible debt during the previous three years; or (iv) the date on which we are deemed to be a large accelerated filer under the rules of the Securities and Exchange Commission (SEC). We may choose to take advantage of some but not all of these exemptions. We have taken advantage of reduced reporting requirements in this prospectus. Accordingly, the information contained herein may be different from the information you receive from other public companies in which you hold stock.

We have irrevocably elected to "opt out" of the exemption for the delayed adoption of certain accounting standards and, therefore, will be subject to the same new or revised accounting standards as other public companies that are not emerging growth companies.

THE OFFERING

Common stock offered by us	shares.
Common stock to be outstanding immediately after this offering	shares (shares if the underwriters exercise their option to purchase additional shares in full).
Underwriters' option to purchase additional shares	We have granted a 30-day option to the underwriters to purchase up to an aggregate of additional shares of common stock from us at the public offering price, less underwriting discounts and commissions, on the same terms as set forth in this prospectus. The underwriters may exercise this option solely for the purpose of covering over-allotments, if any, made in connection with the offering of the shares of common stock offered by this prospectus.
Use of proceeds	We estimate that we will receive net proceeds from the sale of shares of our common stock in this offering of approximately $ million, or $ million if the underwriters exercise their option to purchase additional shares in full, assuming an initial public offering price of $ per share, which is the midpoint of the price range set forth on the cover page of this prospectus, and after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us. We intend to use the net proceeds from this offering, together with our existing cash, cash equivalents, and marketable securities, to advance ACTR087 used in combination with rituximab for adult patients with r/r B cell non-Hodgkin lymphoma through the completion of our ongoing Phase I clinical trial; to fund a Phase II clinical trial of ACTR087 used in combination with rituximab for adult patients with r/r non-Hodgkin lymphoma who received prior CD19 CAR-T therapy; to advance ACTR707 used in combination with rituximab for adult patients with r/r B cell non-Hodgkin lymphoma through the completion of our Phase I clinical trial; to advance ACTR707 used in combination with trastuzumab through submission of an IND and to fund our Phase I clinical trial for this product candidate; and the remainder to develop any additional product candidates that we select, to expand headcount and internal capabilities, and for working capital and other general corporate purposes. For a more complete description of our intended use of the proceeds from this offering, see "Use of Proceeds."
Risk factors	You should carefully read the "Risk Factors" section of this prospectus for a discussion of factors that you should consider before deciding to invest in our common stock.
Proposed Nasdaq Global Market symbol	"UNUM"

The number of shares of our common stock to be outstanding after this offering is based on 36,789,850 shares of our common stock outstanding as of January 31, 2018, after giving effect to the automatic conversion of all outstanding shares of our preferred stock as of January 31, 2018 into an aggregate of 20,771,850 shares of common stock upon the closing of this offering, and excludes:

- 4,947,399 shares of our common stock issuable upon the exercise of stock options outstanding as of January 31, 2018, at a weighted average exercise price of $2.55 per share;
- 1,542,601 shares of our common stock available for future issuance as of January 31, 2018 under our 2015 Stock Incentive Plan, as amended (2015 Plan), which will become available for issuance under our 2018 Stock Option and Incentive Plan (2018 Plan) upon effectiveness of the 2018 Plan;
- shares of our common stock reserved for future issuance under our 2018 Plan, which will become effective upon the effectiveness of the registration statement of which this prospectus is a part; and
- shares of our common stock reserved for future issuance under our 2018 Employee Stock Purchase Plan (2018 ESPP), which will become effective upon the effectiveness of the registration statement of which this prospectus is a part.

Unless otherwise indicated, all information in this prospectus reflects or assumes the following:

- the filing of our amended and restated certificate of incorporation upon the closing of this offering and the effectiveness of our amended and restated bylaws upon the effectiveness of the registration statement of which this prospectus is a part;
- the automatic conversion of all outstanding shares of our preferred stock into an aggregate of 20,771,850 shares of common stock upon the closing of this offering;
- no exercise of outstanding options after January 31, 2018;
- a 1-for- reverse split of our common stock effected on ; and
- no exercise by the underwriters of their option to purchase up to additional shares of common stock in this offering.

Summary Consolidated Financial Data

You should read the following summary consolidated financial data together with our consolidated financial statements and the related notes appearing elsewhere in this prospectus and the "Selected Consolidated Financial Data" and "Management's Discussion and Analysis of Financial Condition and Results of Operations" sections of this prospectus. We have derived the consolidated statement of operations data for the years ended December 31, 2015 and 2016 from our audited consolidated financial statements appearing elsewhere in this prospectus. The consolidated statement of operations data for the nine months ended September 30, 2016 and 2017 and the consolidated balance sheet data as of September 30, 2017 have been derived from our unaudited consolidated financial statements appearing elsewhere in this prospectus and have been prepared on the same basis as the audited consolidated financial statements. In the opinion of management, the unaudited data reflects all adjustments, consisting only of normal, recurring adjustments, necessary for a fair statement of the financial information in those statements. Our historical results are not necessarily indicative of the results that may be expected in the future, and our results for any interim period are not necessarily indicative of results that may be expected for any full year.

	Year Ended December 31,		Nine Months Ended September 30,	
	2015	2016	2016	2017
	(in thousands, except per share data)			
Consolidated Statement of Operations Data:				
Collaboration revenue	$ 2,986	$ 6,355	$ 4,608	$ 6,237
Operating expenses:				
Research and development	6,852	21,992	15,296	22,270
General and administrative	2,726	3,433	2,599	3,239
Total operating expenses	9,578	25,425	17,895	25,509
Loss from operations	(6,592)	(19,070)	(13,287)	(19,272)
Other income (expense):				
Interest income	—	265	179	287
Other income, net	—	681	681	183
Total other income, net	—	946	860	470
Net loss	(6,592)	(18,124)	(12,427)	(18,802)
Accretion of redeemable convertible preferred stock to redemption value	(43)	(64)	(49)	(49)
Net loss attributable to common stockholders	$ (6,635)	$ (18,188)	$ (12,476)	$ (18,851)
Net loss per share attributable to common stockholders, basic and diluted[1]	$ (0.41)	$ (1.14)	$ (0.78)	$ (1.18)
Weighted average common shares outstanding, basic and diluted[1]	16,000	16,000	16,000	16,001
Pro forma net loss per share attributable to common stockholders, basic and diluted (unaudited)[2]		$ (0.49)		$ (0.51)
Pro forma weighted average common shares outstanding, basic and diluted (unaudited)[2]		36,772		36,773

(1) See Note 13 to our consolidated financial statements appearing elsewhere in this prospectus for details on the calculation of basic and diluted net loss per share attributable to common stockholders.

(2) See Note 13 to our consolidated financial statements appearing elsewhere in this prospectus for details on the calculation of basic and diluted pro forma net loss per share attributable to common stockholders.

	As of September 30, 2017		
	Actual	Pro Forma(2)	Pro Forma As Adjusted(3)
	(in thousands)		
Consolidated Balance Sheet Data:			
Cash, cash equivalents, and marketable securities	$ 48,360	$ 48,360	$
Working capital(1)	39,925	39,925	
Total assets	56,393	56,393	
Redeemable convertible preferred stock	77,135	—	
Total stockholders' equity (deficit)	(42,653)	34,482	

(1) We define working capital as current assets less current liabilities.

(2) The pro forma balance sheet data give effect to the automatic conversion of all outstanding shares of our preferred stock into an aggregate of 20,771,850 shares of common stock upon the closing of this offering.

(3) The pro forma as adjusted balance sheet data give further effect to our issuance and sale of shares of common stock in this offering at an assumed initial public offering price of $ per share, which is the midpoint of the price range set forth on the cover page of this prospectus, after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us.

The pro forma as adjusted information discussed above is illustrative only and will change based on the actual initial public offering price and other terms of this offering determined at pricing. A $1.00 increase (decrease) in the assumed initial public offering price of $ per share, which is the midpoint of the price range set forth on the cover page of this prospectus, would increase (decrease) the pro forma as adjusted amount of each of cash, cash equivalents, and marketable securities, working capital, total assets, and total stockholders' equity by $ million, assuming that the number of shares offered by us, as set forth on the cover page of this prospectus, remains the same and after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us. An increase (decrease) of 1,000,000 shares in the number of shares offered by us, as set forth on the cover page of this prospectus, would increase (decrease) the pro forma as adjusted amount of each of cash, cash equivalents, and marketable securities, working capital, total assets, and total stockholders' equity by $ million, assuming no change in the assumed initial public offering price per share and after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us.

RISK FACTORS

Investing in our common stock involves a high degree of risk. You should carefully consider the risks described below, as well as the other information in this prospectus, including our financial statements and the related notes and "Management's Discussion and Analysis of Financial Condition and Results of Operations," before deciding whether to invest in our common stock. The occurrence of any of the events or developments described below could harm our business, financial condition, results of operations and growth prospects. In such an event, the market price of our common stock could decline and you may lose all or part of your investment. Additional risks and uncertainties not presently known to us or that we currently deem immaterial also may impair our business operations.

Risks Related to Our Business and Industry

We have incurred net losses in every year since our inception and anticipate that we will continue to incur net losses in the future.

We are a clinical-stage biopharmaceutical company with a limited operating history. Investment in biopharmaceutical product development is highly speculative because it entails substantial upfront capital expenditures and significant risk that any potential product candidate will fail to demonstrate adequate effect or an acceptable safety profile, gain regulatory approval and become commercially viable. We have no products approved for commercial sale and have not generated any revenue from product sales to date, and we continue to incur significant research and development and other expenses related to our ongoing operations. As a result, we are not profitable and have incurred losses in each period since our inception in March 2014. For the years ended December 31, 2015 and 2016, we reported a net loss of $6.6 million and $18.1 million, respectively, and for the nine months ended September 30, 2017, we reported a net loss of $18.8 million. As of September 30, 2017, we had an accumulated deficit of $44.6 million. We expect to continue to incur significant losses for the foreseeable future, and we expect these losses to increase as we continue our research and development of, and seek regulatory approvals for, product candidates.

Even if we succeed in commercializing one or more of our product candidates, we will continue to incur substantial research and development and other expenditures to develop and market additional product candidates. We may encounter unforeseen expenses, difficulties, complications, delays and other unknown factors that may adversely affect our business. The size of our future net losses will depend, in part, on the rate of future growth of our expenses and our ability to generate revenue. Our prior losses and expected future losses have had and will continue to have an adverse effect on our stockholders' equity and working capital.

Our ACTR T cell product candidates represent a novel approach to cancer treatment, which creates significant challenges for us.

Our ACTR T cell product candidates involve (1) harvesting T cells from the patient's blood via leukapheresis, (2) genetically engineering the T cells to incorporate the ACTR transgene, (3) expanding the number of engineered T cells to the desired dose level and (4) infusing the engineered ACTR T cells back into the patient with or following the administration of the antibody. Advancing this novel and personalized investigational therapy creates significant challenges for us, including:

- educating medical personnel about the administration of the ACTR-combination therapy;
- educating medical personnel regarding the potential side effect profile of our product candidates, such as the potential adverse side effects related to cytokine release syndrome, neurotoxicity or autoimmune or rheumatologic disorders;
- administering chemotherapy to patients in advance of administering our product candidates, which may increase the risk of adverse side effects;

- sourcing clinical and, if approved, commercial, supplies for the materials used to manufacture and process our product candidates;
- manufacturing viral vectors to deliver ACTR to T cells;
- developing a robust and reliable ACTR T cell manufacturing process, including efficiently managing shipment of patient cells from and to clinical sites, minimizing potential contamination to the cell product and effectively scaling manufacturing capacity to meet demand;
- managing costs of inputs and other supplies while scaling production;
- using medicines to manage adverse side effects of our product candidates, which may not adequately control the side effects and/or may have a detrimental impact on the efficacy of the treatment;
- obtaining and maintaining regulatory approval from the U.S. Food and Drug Administration (FDA); and
- establishing sales and marketing capabilities upon obtaining any regulatory approval to gain market acceptance of a novel therapy.

In developing our product candidates we have not exhaustively explored different options in the design of the ACTR construct and in the method for manufacturing ACTR T cells. We may find our existing ACTR T cells and manufacturing process may be substantially improved with future design or process changes, necessitating development of new backup ACTR constructs and further clinical testing and delaying launch of our first products. For example:

- We have made a large number of ACTR constructs and used preclinical tests to select product candidates to advance into clinical testing. The preclinical tests are limited in their ability to predict behavior in patients. As we gain clinical experience with ACTR, new learnings may prompt us to select other ACTR constructs for clinical development.
- We have used a retroviral vector to deliver ACTR to T cells. In the future, we may find that a lentiviral vector offers advantages. Switching from retroviral to lentiviral delivery would necessitate additional process development and clinical testing and delay existing product candidates.
- The process by which patient cells are converted into an ACTR T cell has many steps that can influence quality and activity. We have explored a subset of variables and expect to continue to improve and optimize the manufacturing process. Depending upon the nature of the process changes, we may be compelled to perform bridging studies and/or to re-start clinical development, causing delays in time to market and potentially introducing a risk of failure if new processes do not perform as expected.

Our business is highly dependent on the success of ACTR087 used in combination with rituximab or ACTR707 used in combination with rituximab, our lead product candidates, and other ACTR-antibody combinations that we may develop.

Our business and future success depend on our ability to obtain regulatory approval of and then successfully commercialize one of our product candidates, such as ACTR087 used in combination with rituximab and other product combinations that we develop using antibodies in combination with ACTR087 or ACTR707. All of our product candidates, including ACTR087 used in combination with rituximab and ACTR 707 used in combination with rituximab, are in the early stages of development and will require additional clinical and non-clinical development, regulatory review and approval, substantial investment, access to sufficient commercial manufacturing capacity and significant marketing efforts before we can generate any revenue from product sales. In addition, because ACTR087 used in combination with rituximab and ACTR707 used in combination with rituximab are our two most advanced product candidates, and because all our other product candidates are based on our ACTR platform, if either of these product candidates encounters safety, efficacy, or manufacturing problems, developmental delays, regulatory, or commercialization difficulties or other problems, our development plans and business would be significantly harmed.

Our clinical trials may fail to demonstrate adequately the safety and efficacy of any of our product candidates, which would prevent or delay regulatory approval and commercialization.

Before obtaining regulatory approvals for the commercial sale of our product candidates, including ACTR087 used in combination with rituximab and other product candidates that we develop using antibodies in combination with ACTR087 and ACTR707, we must demonstrate through lengthy, complex and expensive preclinical testing and clinical trials that our product candidates are both safe and effective for use in each target indication. 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, and, because our product candidates are in an early stage of development, there is a high risk of failure and we may never succeed in developing marketable products. The results of preclinical studies and early clinical trials of our product candidates may not be predictive of the results of later-stage clinical trials. There is typically an extremely high rate of attrition from the failure of product candidates proceeding through clinical trials. Product candidates in later stages of clinical trials may fail to show the desired safety and efficacy profile 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, insufficient durability of efficacy, or unacceptable safety issues, notwithstanding promising results in earlier trials. Most product candidates that commence clinical trials are never approved as products.

Any clinical trials that we may conduct may not demonstrate the efficacy and safety necessary to obtain regulatory approval to market our product candidates. If the results of our ongoing or future clinical trials are inconclusive with respect to the efficacy of our product candidates, if we do not meet the clinical endpoints with statistical and clinically meaningful significance, or if there are safety concerns associated with our product candidates, we may be prevented or delayed in obtaining marketing approval for such product candidates. In some instances, there can be significant variability in safety or efficacy results between different clinical trials of the same product candidate due to numerous factors, including changes in trial procedures set forth in protocols, differences in the size and type of the patient populations, changes in and adherence to the clinical trial protocols and the rate of dropout among clinical trial participants.

We designed our Phase I clinical trial of ACTR087 used in combination with rituximab primarily to assess safety and efficacy in adult patients with r/r NHL. The preliminary results from the Phase I clinical trial of ACTR087 used in combination with rituximab may not be indicative of the final analysis of this Phase I clinical trial, especially given the small number of patients that we plan to dose in the trial. In addition, the Phase I results may not predict results for any further clinical testing of ACTR087 used in combination with rituximab or other product candidates that we have developed, or may develop in the future, using antibodies in combination with ACTR087 and ACTR707 or in different indications.

Additionally, as of the most recent data cutoff date of January 15, 2018, approximately 12% (two out of 17) of ACTR087 treated patients in our Phase I clinical trial of ACTR087 used in combination with rituximab, called ATTCK-20-2, experienced ACTR087-related severe cytokine release syndrome (CRS) and 6% (one out of 17) of patients experienced ACTR087-related neurotoxicity, which was fatal. Of the two events of CRS, one patient subsequently experienced a fatal case of enterococcal sepsis considered related to ACTR087 and one patient subsequently experienced a fatal case of sepsis considered not related to ACTR087. These events resulted in the FDA placing this trial on clinical hold in December 2017 pending submission of certain information relating to the ATTCK-20-2 clinical trial. The clinical hold was removed in February 2018, following review of this information by the FDA. Several protocol and dosing changes were made in early 2018, which we expect to reduce the incidence of adverse events and better manage those events that do occur. If severe safety events are observed in patients treated in the future in spite of the modifications outlined above, the FDA may determine, at any time, that there is an unacceptable safety risk for patients and we may be required to stop the trial prior to its completion or our ongoing clinical trials may be halted or put on further clinical holds prior to completion.

In addition, even if the trials are successfully completed, clinical data are often susceptible to varying interpretations and analyses, and we cannot guarantee that the FDA or foreign regulatory authorities will interpret the results as we do, and more trials could be required before we submit our product candidates for approval. For instance, although our lead product candidates will be dosed in refractory patients with antibodies that the patients have already received, we plan to test future product candidates in patients that have never received the co-administered antibody in prior treatment and with antibodies that have never been independently evaluated for safety or efficacy. As a result, it may be difficult to demonstrate that the ACTR construct, rather than the antibody alone, is causing an observed effect. We cannot guarantee that the FDA will view the ACTR construct as having efficacy even if positive results are observed in these clinical trials. To the extent that the results of the trials are not satisfactory to the FDA or foreign regulatory authorities for support of a marketing application, approval of our product candidates may be significantly delayed, or we may be required to expend significant additional resources, which may not be available to us, to conduct additional trials in support of potential approval of our product candidates.

We cannot guarantee that our product candidates will show any functionality in the solid tumor environment.

While we plan to develop product candidates for use in solid tumor cancers, including ACTR707 used in combination with trastuzumab for HER2+ cancers, we cannot guarantee that our product candidates will show any functionality in the solid tumor environment. The cellular environment in which solid tumor cancers exist is inimical to T cells due to several factors including: (1) immunosuppressive cells (e.g., regulatory T cells (Tregs), myeloid derived suppressor cells (MDSCs)), (2) immunosuppressive enzymes and signaling molecules (e.g., IDO1, TGF-beta), (3) limited nutrients (e.g., oxygen, glucose), and (4) toxic metabolites (e.g., reactive oxygen species, lactic acid). Together, these factors can limit the ability of T cells, including ACTR T cells, both to penetrate into the solid tumor and to function properly once there. As a result of these and other solid tumor challenges, our product candidates may not demonstrate efficacy in solid tumors. For example, our ACTR-based product candidates may not be able to access the solid tumor, and even if they do, they may not be able to exert anti-tumor effects in an immunosuppressive tumor microenvironment. In addition, the safety profile of our product candidates may differ in a solid tumor setting. If we are unable to make our product candidates function in solid tumor cancers, our development plans and business may be significantly harmed.

Since the number of subjects that we have dosed, or plan to dose, in our ongoing or planned Phase I clinical trials is small, the results from such clinical trials, once completed, may be less reliable than results achieved in larger clinical trials, which may hinder our efforts to obtain regulatory approval for our product candidates.

A study design that is considered appropriate for regulatory approval includes a sufficiently large sample size with appropriate statistical power, as well as proper control of bias, to allow a meaningful interpretation of the results. In our ongoing Phase I clinical trial of ACTR087 used in combination with rituximab, for example, we have analyzed the dose-limiting toxicities of ACTR087 used in combination with rituximab in only 17 patients with r/r NHL so far, 12 of whom were evaluable for anti-tumor effects. The preliminary results of trials with smaller sample sizes, such as our ongoing Phase I clinical trial for ACTR087 used in combination with rituximab, can be disproportionately influenced by the impact the treatment had on a few individuals, which limits the ability to generalize the results across a broader community, thus making the study results less reliable than studies with a larger number of subjects. As a result, there may be less certainty that such product candidates would achieve a statistically significant effect in any future clinical trials. If we conduct any future clinical trials, we may not achieve a statistically significant result or the same level of statistical significance, if any, seen in our Phase I clinical trial, once completed.

We may not be able to file investigational new drug applications (INDs) or IND amendments to commence additional clinical trials on the timelines we expect, and even if we are able to, the FDA may not permit us to proceed.

We expect to submit an IND for an additional trial for a product candidate that we develop using an antibody in combination with ACTR707 in 2018. However, our timing of filing on the product candidate is dependent on further research. We cannot be sure that submission of an IND will result in the FDA allowing further clinical trials to begin, or that, once begun, issues will not arise that suspend or terminate such clinical trials. Additionally, even if such regulatory authorities agree with the design and implementation of the clinical trials set forth in an IND or clinical trial application, we cannot guarantee that such regulatory authorities will not change their requirements in the future. These considerations also apply to new clinical trials we may submit as amendments to existing INDs.

We have limited experience as a company conducting clinical trials or managing a manufacturing facility for our product candidates.

We have limited experience as a company in conducting clinical trials. In part because of this lack of experience, we cannot be certain that our ongoing clinical trials will be completed on time or if the planned clinical trials will begin or be completed on time, if at all. Large-scale trials would require significant additional financial and management resources and reliance on third-party clinical investigators, contract research organizations (CROs), or consultants. Relying on third-party clinical investigators or CROs may force us to encounter delays that are outside of our control.

In the future, we also intend to operate our own manufacturing facility, which will require significant resources, and we have limited experience as a company in expanding or managing a manufacturing facility. In part because of this lack of experience, we cannot be certain that our manufacturing facility will be completed on time, if at all, or if the planned clinical trials will begin or be completed on time, if at all. In part because of our inexperience, we may have unacceptable or inconsistent product quality success rates and yields, and we may be unable to maintain adequate quality control, quality assurance and qualified personnel. In addition, if we switch from one manufacturing facility to our own manufacturing facility for one or more of our product candidates in the future, we may need to conduct additional preclinical studies to bridge our modified product candidates to earlier versions. Failure to successfully create and operate our proposed manufacturing facility could adversely affect the commercial viability of our product candidates.

Our product candidates may cause undesirable side effects or have other properties that could halt their clinical development, prevent their regulatory approval, require expansion of the trial size, limit their commercial potential, or result in significant negative consequences.

Undesirable side effects caused by our product candidates could cause us or regulatory authorities, including institutional review boards (IRBs), to interrupt, delay, or halt clinical trials and could result in a more restrictive label or the delay or denial of regulatory approval by the FDA or other comparable foreign regulatory authorities. Further, clinical trials by their nature utilize a sample of the potential patient population. With a limited number of subjects and limited duration of exposure, rare and severe side effects of our product candidates may only be uncovered with a significantly larger number of patients exposed to the drug. Because of our dose escalation design for our clinical trials, undesirable side effects could also result in an expansion in the size of our clinical trials, increasing the expected costs and timeline of our clinical trials. Additionally, results of our trials could reveal a high and unacceptable severity and prevalence of side effects or unexpected characteristics.

In certain trials of CAR-based products, which also use an engineered T cell, side effects, such as CRS and neurotoxicity, arose that resulted in risk, injury, or death to the patients. We observed some of these side effects in the second dose level of our Phase I clinical trial of ACTR087 used in combination with rituximab, called ATTCK-20-2. These events resulted in the FDA placing the trial on clinical hold pending submission of certain information relating to the ATTCK-20-2 clinical trial. The clinical hold was removed in February 2018,

following review of this information by the FDA. We will likely continue to observe some or all of these side effects in our clinical trials at additional dosage levels. We have established safety management and monitoring guidelines for clinical investigators to detect and treat potential side effects. However, there is no guarantee that these medical interventions will be effective in preventing negative effects to the patient. Additionally, if we do continue to observe severe side effects in our clinical trials, our ongoing clinical trials may be halted or put on an additional clinical hold prior to completion if there is an unacceptable safety risk for patients.

Autoimmune reaction triggered by an interaction between a patient's naturally occurring antibodies and ACTR T cells is a theoretical safety risk unique to the ACTR approach. If a patient's self-generated antibodies were directed to a target expressed on the surface of cells in normal tissue (i.e., autoantibodies), ACTR would be directed to attack these tissues, potentially resulting in off-tumor effects. These autoantibodies may be present whether or not the patient has an active autoimmune disease. In our clinical testing, we have taken steps to minimize the likelihood of this happening (e.g., excluding patients with a history of autoimmune disease from our trials and screening for the presence of certain autoantibodies). To date, we have not observed any autoimmune adverse effects in clinical testing of ACTR. There is no guarantee, however, that we will not observe autoimmune reactions in the future and no guarantee that if we do, that we will be able to implement interventions to address the risk.

If unacceptable toxicities arise in the development of our product candidates, we could suspend or terminate our trials or the FDA or comparable foreign regulatory authorities, or local regulatory authorities such as IRBs, could order us to cease clinical trials. Competent national health authorities, such as the FDA, could also deny approval of our product candidates for any or all targeted indications. Treatment-related side effects could also affect patient recruitment or the ability of enrolled subjects to complete the trial or result in potential product liability claims. In addition, these side effects may not be appropriately recognized or managed by the treating medical staff, as toxicities resulting from T cell therapy are not normally encountered in the general patient population and by medical personnel. We expect to have to train medical personnel using ACTR to understand the side effect profile of ACTR for both our planned clinical trials and upon any commercialization of any product candidates, if approved. Inadequate training in recognizing or managing the potential side effects of ACTR could result in patient deaths. Any of these occurrences may harm our business, financial condition and prospects significantly.

If we encounter difficulties enrolling patients in our clinical trials, our clinical development activities could be delayed or otherwise adversely affected.

We may experience difficulties in patient enrollment in our clinical trials for a variety of reasons. The timely completion of clinical trials in accordance with their protocols depends, among other things, on our ability to enroll a sufficient number of patients who remain in the study until its conclusion. The enrollment of patients depends on many factors, including:

- the patient eligibility criteria defined in the protocol;
- the size of the patient population required for analysis of the trial's primary endpoints;
- the proximity of patients to trial sites;
- the design of the trial;
- our ability to recruit clinical trial investigators with the appropriate competencies and experience;
- our ability to obtain and maintain patient consents;
- reporting of the preliminary results of any of our clinical trials; and
- the risk that patients enrolled in clinical trials will drop out of the trials before the manufacturing and infusion of our product candidates or trial completion.

In addition, our clinical trials will compete with other clinical trials for product candidates that are in the same therapeutic areas as our product candidates, and this competition will 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. Since the number of qualified clinical investigators is limited, we expect to conduct some of our clinical trials at the same clinical trial sites that some of our competitors use, which will reduce the number of patients who are available for our clinical trials at such clinical trial sites. Moreover, because our product candidates represent a departure from more commonly used methods for cancer treatment, potential patients and their doctors may be inclined to use conventional therapies, such as chemotherapy and hematopoietic stem cell transplantation, rather than enroll patients in any future clinical trial. Additionally, because some of our clinical trials are in patients with relapsed/refractory cancer, the patients are typically in the late stages of the disease and may experience disease progression independent from our product candidates, making them unevaluable for purposes of the trial and requiring additional enrollment.

Delays in patient enrollment may result in increased costs or may affect the timing or outcome of our ongoing and planned clinical trials, which could prevent completion or commencement of these trials and adversely affect our ability to advance the development of our product candidates.

Clinical trials are expensive, time-consuming, and difficult to design and implement.

Human clinical trials are expensive and difficult to design and implement, in part because they are subject to rigorous regulatory requirements. Because our product candidates are based on new technology and engineered on a patient-by-patient basis, we expect that they will require extensive research and development and have substantial manufacturing and processing costs. In addition, costs to treat patients with relapsed or refractory cancer and to treat potential side effects that may result from our product candidates can be significant. Accordingly, our clinical trial costs are likely to be significantly higher than those for more conventional therapeutic technologies or drug product candidates. In addition, our proposed personalized product candidates involve several complex and costly manufacturing and processing steps, the costs of which will be borne by us.

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, and our estimates of the prevalence of our target patient populations may be inaccurate.

Cancer therapies are sometimes characterized as first line, second line, or third line, and the FDA often approves new therapies initially only for a particular line of use. When cancer is detected early enough, first line therapy is sometimes adequate to cure the cancer or prolong life without a cure. Whenever first line therapy, usually chemotherapy, antibody drugs, tumor-targeted small molecules, hormone therapy, radiation therapy, surgery, or a combination of these, proves unsuccessful, second line therapy may be administered. Second line therapies often consist of more chemotherapy, radiation, antibody drugs, tumor-targeted small molecules, or a combination of these. Third line therapies can include hematopoietic stem cell transplantation in certain cancers, chemotherapy, antibody drugs, and small molecule tumor-targeted therapies, more invasive forms of surgery, and new revolutionary technologies. We expect to initially seek approval of our product candidates in most instances at least as a third line therapy, for use in patients with relapsed or refractory metastatic cancer. Subsequently, for those products that prove to be sufficiently safe and beneficial, if any, we would expect to seek approval as a second line therapy and potentially as a first line therapy, but there is no guarantee that our product candidates, even if approved as a third or subsequent line of therapy, would be approved for an earlier line of therapy, and, prior to any such approvals, we may have to conduct additional clinical trials.

Our projections of both the number of people who have the cancers we are targeting, as well as the subset of people with these cancers in a position to receive a particular line of therapy and who have the potential to benefit from treatment with our product candidates, are based on our beliefs and estimates. These estimates have been derived from a variety of sources, including scientific literature, surveys of clinics, patient foundations or market research, and may prove to be incorrect. Further, new therapies may change the estimated incidence or

prevalence of these cancers. The number of patients may turn out to be lower than expected. Additionally, the potentially addressable patient population for our product candidates may be limited or may not be amenable to treatment with our product candidates. For instance, we expect ACTR087 used in combination with rituximab to initially target a small patient population that suffers from r/r NHL. Even if we obtain significant market share for our product candidates within our addressable patient population, because the potential target populations are small, we may never achieve profitability without obtaining regulatory approval for additional indications, including use as first or second line therapy.

If we fail to develop additional product candidates, our commercial opportunity will be limited.

We have developed a pipeline of product candidates and intend to pursue clinical development of additional product candidates that combine ACTR T cells with different antibodies and target different tumor types. Developing, obtaining regulatory approval for and commercializing additional product candidates will require substantial additional funding beyond the net proceeds of this offering and is prone to the risks of failure inherent in medical product development. We cannot provide you any assurance that we will be able to successfully advance any of these additional product candidates through the development process.

Even if we receive FDA approval to market additional product candidates for the treatment of cancer, we cannot assure you that any such product candidates will be successfully commercialized, widely accepted in the marketplace or more effective than other commercially available alternatives. If we are unable to successfully develop and commercialize additional product candidates, our commercial opportunity will be limited. Moreover, a failure in obtaining regulatory approval of additional product candidates may have a negative effect on the approval process of any other, or result in losing approval of any approved product candidate.

ACTR therapies rely on the use of antibodies to target specific cancers, which are developed by third parties. We are limited in our ability to apply ACTR to a wider range of potential target cancers by our ability to partner for or acquire these antibodies on commercially reasonable terms.

ACTR therapies require the use of tumor-specific antibodies, which guide the ACTR and bind to the antigens on the surface of a tumor, to target specific types of cancers. Many of our current and proposed clinical trials rely on the use of commercially available and well-understood antibodies, such as rituximab and trastuzumab. Our ability to develop and commercialize our ACTR T cells used in combination with rituximab, trastuzumab, or any other FDA-approved antibody will depend on our ability to purchase such antibodies on commercially reasonable terms for the clinical trials and their availability for the commercialized product, if approved.

We also plan to expand the use of our ACTR platform in combination with one or more other antibodies that have not yet been approved for marketing by the FDA or similar regulatory authorities outside of the United States, as planned with our product candidate ACTR087 used in combination with SEA-BCMA in adult patients with r/r multiple myeloma. Our ability to develop product candidates using unapproved antibodies will rely on our ability to acquire such antibodies through partnerships or collaborations on commercially reasonable terms. However, we cannot be certain that potential future collaborations will provide us with a steady supply of antibodies that we can utilize in combination with ACTR to develop future product candidates. If we are unable to enter into such strategic collaborations on commercially reasonable terms or fail to realize the benefits of any such collaboration, we may be limited to using approved antibodies in combination with ACTR087, ACTR707, or any other future ACTR construct we may develop.

We have entered into a collaboration agreement with Seattle Genetics, pursuant to which Seattle Genetics will generate antibodies against two target antigens to use in combination with ACTR T cells to develop future product candidates. Under the agreement, Seattle Genetics had the option to elect a third target antigen, but its option expired unexercised in June 2017. We cannot be certain that the collaboration agreement with Seattle Genetics will provide us with antibodies that we can successfully combine with ACTR T cells.

The failure to enter into a successful collaboration or the expense of purchasing an approved antibody may delay our development timelines, increase our costs and jeopardize our ability to develop ACTR087, ACTR707, or any other future ACTR construct we may develop as a commercially viable drug, which could result in delays in product development and harm our business.

ACTR therapies rely on the use of antibodies to target specific cancers, which the FDA may revoke approval for or may not approve, independent of the safety or efficacy of our ACTR T cells.

We have developed, are developing, and intend to develop product candidates using ACTR087 or ACTR707 used in combination with one or more currently approved antibodies, such as rituximab for r/r NHL and trastuzumab for HER2+ cancers. If the FDA or similar regulatory authorities outside of the United States revoke approval of any antibodies we use in combination with ACTR087, ACTR707 or any other future cell product candidates based on our ACTR platform, we will not be able to market any products made in combination with such revoked antibodies.

If safety or efficacy issues arise with any of these antibodies, we could experience significant regulatory delays, and the FDA or similar regulatory authorities outside of the United States may require us to redesign or terminate the applicable clinical trials. In addition, the approval of ACTR in combination with an antibody may require clinical trials to demonstrate the safety and efficacy of the therapeutic antibody on its own. If the antibodies we use in combination with ACTR087, ACTR707, or any other future ACTR construct we may develop are replaced as the standard of care for the indications we choose to target, the FDA or similar regulatory authorities outside of the United States may require us to conduct additional clinical trials. In addition, if manufacturing or other issues result in a shortage of supply of the antibodies with which we determine to combine with ACTR087, ACTR707, or any other future ACTR construct we may develop, we may not be able to complete clinical development of ACTR087, ACTR707, or any other future ACTR construct we may develop on our current timeline or at all.

Even if ACTR087, ACTR707, or any other future ACTR construct we may develop were to receive marketing approval or be commercialized for use in combination with other existing antibodies, we would continue to be subject to the risks that the FDA or similar regulatory authorities outside of the United States could revoke approval of an antibody used in combination with ACTR087, ACTR707, or any other future ACTR construct we may develop, or that safety, efficacy, manufacturing or supply issues could arise with these existing antibodies. Combination therapies are commonly used for the treatment of cancer, and we would be subject to similar risks, such as revocation of regulatory approval for one part of the combination therapy, if we develop any of our other product candidates for use in combination with other antibodies. This could result in our own products being removed from the market or being less successful commercially.

We also plan to consider ACTR087, ACTR707 or any other future product candidates based on our ACTR platform in combination with one or more other antibodies that have not yet been approved for marketing by the FDA or similar regulatory authorities outside of the United States, as planned with our product candidate ACTR087 used in combination with SEA-BCMA in adult patients with r/r multiple myeloma. We will not be able to market and sell ACTR087, ACTR707 or any other future product candidates based on our ACTR platform in combination with any such unapproved antibodies that do not ultimately obtain marketing approval, either as a standalone or used in combination with our ACTR T cells. If the FDA or similar regulatory authorities outside of the United States determines that we need to demonstrate the separate safety or efficacy of the applicable antibodies, or if safety, efficacy, manufacturing, or supply issues arise with the antibodies we choose to evaluate in combination with ACTR087, ACTR707 or any other future ACTR construct we may develop, we may be unable to obtain approval of or market ACTR087, ACTR707 or any other future ACTR construct we may develop.

If the FDA or similar regulatory authorities outside of the United States revoke their approval or do not approve these other antibodies, or if safety, efficacy, manufacturing, or supply issues arise with the antibodies we choose to evaluate in combination with ACTR087, ACTR707 or any other future ACTR construct we may develop, we may be unable to obtain approval of or market ACTR087, ACTR707 or any other future ACTR construct we may develop.

We currently have no marketing and sales organization and have no experience in marketing products. If we are unable to establish marketing and sales capabilities or enter into agreements with third parties to market and sell our product candidates, if approved, we may not be able to generate product revenue.

We currently have no sales, marketing or distribution capabilities and have no experience in marketing products. We intend to develop an in-house marketing organization and sales force, which will require significant capital expenditures, management resources and time. We will have to compete with other pharmaceutical and biotechnology companies to recruit, hire, train and retain marketing and sales personnel.

If we are unable or decide not to establish internal sales, marketing and distribution capabilities, we will pursue collaborative arrangements regarding the sales and marketing of our products, if approved. For instance, if any co-developed products under our collaboration with Seattle Genetics are approved, we plan to co-commercialize them with Seattle Genetics in the United States, and Seattle Genetics will commercialize them outside of the United States. However, there can be no assurance that we will be able to establish or maintain such collaborative arrangements, or if we are able to do so, that they will have effective sales forces. Any revenue we receive will depend upon the efforts of such third parties, which may not be successful. We may have little or no control over the marketing and sales efforts of such third parties and our revenue from product sales may be lower than if we had commercialized our product candidates ourselves. We also face competition in our search for third parties to assist us with the sales and marketing efforts of our product candidates.

There can be no assurance that we will be able to develop in-house sales and distribution capabilities or establish or maintain relationships with third-party collaborators to commercialize any product in the United States or overseas.

A variety of risks associated with marketing our product candidates internationally could materially adversely affect our business.

We plan to seek regulatory approval of our product candidates outside of the United States and, accordingly, we expect that we will be subject to additional risks related to operating in foreign countries if we obtain the necessary approvals, including:

- differing regulatory requirements in foreign countries;
- unexpected changes in tariffs, trade barriers, price and exchange controls and other regulatory requirements;
- economic weakness, including inflation, or political instability in particular foreign economies and markets;
- compliance with tax, employment, immigration and labor laws for employees living or traveling abroad;
- foreign taxes, including withholding of payroll taxes;
- foreign currency fluctuations, which could result in increased operating expenses and reduced revenue, and other obligations incident to doing business in another country;
- difficulties staffing and managing foreign operations;
- workforce uncertainty in countries where labor unrest is more common than in the United States;

- potential liability under the Foreign Corrupt Practices Act of 1977 or comparable foreign regulations;
- challenges enforcing our contractual and intellectual property rights, especially in those foreign countries that do not respect and protect intellectual property rights to the same extent as the United States;
- production shortages resulting from any events affecting raw material supply or manufacturing capabilities abroad; and
- business interruptions resulting from geo-political actions, including war and terrorism.

These and other risks associated with our international operations may materially adversely affect our ability to attain or maintain profitable operations.

We face significant competition from other biotechnology and pharmaceutical companies, and our operating results will suffer if we fail to compete effectively.

The biopharmaceutical industry is characterized by intense competition and rapid innovation. Our competitors may be able to develop other products or drugs that are able to achieve similar or better results. Our potential competitors include major multinational pharmaceutical companies, established biotechnology companies, specialty pharmaceutical companies and universities and other research institutions. Many of our competitors have substantially greater financial, technical and other resources, such as larger research and development staff and experienced marketing and manufacturing organizations and well-established sales forces. In addition, many of these competitors are active in seeking patent protection and licensing arrangements in anticipation of collecting royalties for use of technology that they have developed. Smaller or early-stage companies may also prove to be significant competitors, particularly through collaborative arrangements with large, established companies. 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. Our competitors, either alone or with collaborative partners, may succeed in developing, acquiring or licensing on an exclusive basis drug or biologic products that are more effective, safer, more easily commercialized or less costly than our product candidates or may develop proprietary technologies or secure patent protection that we may need for the development of our technologies and products. We believe the key competitive factors that will affect the development and commercial success of our product candidates are efficacy, safety, tolerability, reliability, convenience of use, price and reimbursement.

Specifically, by genetically engineering T cell products, we face significant competition in both the CAR technology and TCR space from multiple companies, including Kite Pharma, Inc. (a Gilead Sciences, Inc. company), Juno Therapeutics, Inc. (which was recently acquired by Celgene Corporation), Novartis AG, and bluebird bio, Inc. Even if we obtain regulatory approval of our product candidates, the availability and price of our competitors' products could limit the demand and the price we are able to charge for our product candidates. We may not be able to implement our business plan if the acceptance of our product candidates is inhibited by price competition or the reluctance of physicians to switch from existing methods of treatment to our product candidates, or if physicians switch to other new drug or biologic products or choose to reserve our product candidates for use in limited circumstances. For additional information regarding our competition, see "Business—Competition."

We are highly dependent on our key personnel, and if we are not successful in attracting and retaining highly qualified personnel, we may not be able to successfully implement our business strategy.

Our ability to compete in the highly competitive biotechnology and pharmaceutical industries depends upon our ability to attract and retain highly qualified managerial, scientific and medical personnel. We are highly dependent on our management, scientific and medical personnel, including our Chief Executive Officer, our

President and Chief Financial Officer, our Chief Scientific Officer, our Chief Medical Officer, and our Chief Technical Officer. The loss of the services of any of our executive officers, other key employees and other scientific and medical advisors, and an inability to find suitable replacements could result in delays in product development and harm our business.

We conduct our operations at our facility in Cambridge, Massachusetts. This region is headquarters to many other biopharmaceutical companies and many academic and research institutions. Competition for skilled personnel in our market is intense and may limit our ability to hire and retain highly qualified personnel on acceptable terms or at all.

To induce valuable employees to remain at our company, in addition to salary and cash incentives, we have provided stock options that vest over time. The value to employees of stock options that vest over time may be significantly affected by movements in our stock price that are beyond our control, and may at any time be insufficient to counteract more lucrative offers from other companies. Despite our efforts to retain valuable employees, members of our management, scientific and development teams may terminate their employment with us on short notice. Although we have employment agreements with our key employees, these employment agreements provide for at-will employment, which means that any of our employees could leave our employment at any time, with or without notice. We maintain a “key man” insurance policy on the life of our Chief Executive Officer, but do not maintain “key man” insurance on the lives of our other management personnel or the lives of any of our other employees. Our success also depends on our ability to continue to attract, retain and motivate highly skilled junior, mid-level and senior managers as well as junior, mid-level and senior scientific and medical personnel.

We will need to grow the size of our organization, and we may experience difficulties in managing this growth.

As of January 31, 2018, we had 53 employees. As our development and commercialization plans and strategies develop, and as we transition into operating as a public company, we expect to need additional managerial, operational, sales, marketing, financial and other personnel, as well as additional facilities to expand our operations. Future growth would impose 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 any future 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 currently rely, and for the foreseeable future will continue to rely, in substantial part on certain independent organizations, advisors and consultants to provide certain services, including substantially all aspects of regulatory approval, clinical trial management and manufacturing. 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 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, or we are not able to effectively build out new facilities to accommodate this expansion, 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.

We have entered into a strategic collaboration with Seattle Genetics and may form or seek collaborations or strategic alliances or enter into additional licensing arrangements in the future, and we may not realize the benefits of such alliances or licensing arrangements.

We may form or seek strategic alliances, create joint ventures or collaborations, or enter into additional licensing arrangements with third parties that we believe will complement or augment our development and commercialization efforts with respect to our product candidates and any future product candidates that we may develop. In particular, we may seek to enter into collaborations to give us access to antibodies to use in combination with our ACTR platform. Any of these relationships may require us to incur non-recurring and other charges, increase our near and long-term expenditures, issue securities that dilute our existing stockholders or disrupt our management and business. For example, we entered into a collaboration agreement with Seattle Genetics pursuant to which Seattle Genetics has agreed to generate antibodies against two target antigens and we are responsible for creating ACTR T cells to pair with these antibodies to create combination product candidates. However, there are ways in which Seattle Genetics may elect to opt-out from further development and commercialization of the resulting product candidates. If Seattle Genetics elects to exercise one of these options our timelines could be delayed and our business otherwise adversely affected, and we cannot be certain that we will achieve the revenue or specific net income that justifies this transaction.

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 partnership 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 and obtain marketing approval.

Further, collaborations involving our product candidates are subject to numerous risks, which may include the following:

- collaborators have significant discretion in determining the efforts and resources that they will apply to a collaboration;
- collaborators may not pursue development and commercialization of our product candidates or may elect not to continue or renew development or commercialization of our product candidates based on clinical trial results, changes in their strategic focus due to the acquisition of competitive products, availability of funding or other external factors, such as a business combination that diverts resources or creates competing priorities;
- collaborators may delay clinical trials, provide insufficient funding for a clinical trial, stop a clinical trial, abandon a product candidate, repeat or conduct new clinical trials or require a new formulation of a product candidate for clinical testing;
- collaborators could independently develop, or develop with third parties, products that compete directly or indirectly with our product candidates;
- a collaborator with marketing and distribution rights to one or more products may not commit sufficient resources to their marketing and distribution;
- collaborators may not properly maintain or defend our intellectual property rights or may use our intellectual property or proprietary information in a way that gives rise to actual or threatened litigation that could jeopardize or invalidate our intellectual property or proprietary information or expose us to potential liability;

- disputes may arise between us and a collaborator that cause the delay or termination of the research, development or commercialization of our product candidates, or that result in costly litigation or arbitration that diverts management attention and resources;
- collaborations may be terminated and, if terminated, may result in a need for additional capital to pursue further development or commercialization of the applicable product candidates; and
- collaborators may own or co-own intellectual property covering our products that results from our collaborating with them, and in such cases, we would not have the exclusive right to commercialize such intellectual property.

As a result, if we enter into additional collaboration agreements and strategic partnerships or license our product candidates, 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, which could delay our timelines or otherwise adversely affect our business. We also cannot be certain that, following a strategic transaction or license, we will achieve the revenue or specific net income that justifies such transaction. Any delays in entering into new collaborations or strategic partnership agreements 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.

If we fail to obtain additional financing, we may be unable to complete the development and commercialization of our product candidates.

Our operations have consumed substantial amounts of cash since inception. We expect to continue to spend substantial amounts to continue the clinical development of our product candidates, including our current and planned clinical trials for ACTR087 used in combination with rituximab and ACTR707 used in combination with rituximab. If approved, we will require significant additional amounts in order to launch and commercialize our product candidates.

We estimate that our net proceeds from this offering will be approximately $ million, based on an assumed initial public offering price of $ per share, which is the midpoint of the price range set forth on the cover page of this prospectus, after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us. We intend to use the net proceeds from this offering, together with our existing cash, cash equivalents, and marketable securities, to advance ACTR087 used in combination with rituximab for adult patients with r/r B cell non-Hodgkin lymphoma through the completion of our ongoing Phase I clinical trial; to fund a Phase II clinical trial of ACTR087 used in combination with rituximab for adult patients with r/r non-Hodgkin lymphoma who received prior CD19 CAR-T therapy; to advance ACTR707 used in combination with rituximab for adult patients with r/r B cell non-Hodgkin lymphoma through the completion of our Phase I clinical trial; to advance ACTR707 used in combination with trastuzumab through submission of an IND and to fund our Phase I clinical trial for this product candidate; and to develop any additional product candidates that we select, to expand headcount and internal capabilities, and for working capital and other general corporate purposes. We believe that such proceeds together with our existing cash, cash equivalents, and marketable securities, and available borrowings, will be sufficient to fund our operations for at least the next months. However, we know that our existing cash, cash equivalents, and marketable securities, and our available borrowings under our loan and security agreement, even with the proceeds of this offering, will not be sufficient to complete our planned Phase II clinical trial of ACTR087 used in combination with rituximab for adult patients with r/r non-Hodgkin lymphoma who received prior CD19 CAR-T therapy or our planned Phase I clinical trial of ACTR707 used in combination with trastuzumab for patients with HER2+ cancers, and we will need to raise additional funds to complete these trials. Additionally, changing circumstances may cause us to consume capital significantly faster than we currently anticipate, and we may need to spend more money than currently expected because of circumstances beyond our control. We may require additional capital for the further development and commercialization of our product candidates and may need to raise additional funds sooner if we choose to expand more rapidly than we presently anticipate.

We cannot be certain that additional funding will be available on acceptable terms, or at all. If we are unable to raise additional capital in sufficient amounts or on terms acceptable to us, we may have to significantly delay, scale back or discontinue the development or commercialization of our product candidates or other research and development initiatives. Our license agreements may also be terminated if we are unable to meet the payment obligations under the agreements. We could be required to seek collaborators for our product candidates at an earlier stage than otherwise would be desirable or on terms that are less favorable than might otherwise be available or relinquish or license on unfavorable terms our rights to our product candidates in markets where we otherwise would seek to pursue development or commercialization ourselves.

Any of the above events could significantly harm our business, prospects, financial condition and results of operations and cause the price of our common stock to decline.

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

We may seek additional capital through a combination of public and private equity offerings, debt financings, strategic partnerships and alliances and licensing arrangements. To the extent that we raise additional capital through the sale of equity or convertible debt securities, your ownership interest will be diluted, and the terms may include liquidation or other preferences that adversely affect your rights as a stockholder. The incurrence of indebtedness would result in increased fixed payment obligations and could involve certain restrictive covenants, such as limitations on our ability to incur additional debt, limitations on our ability to acquire or license intellectual property rights and other operating restrictions that could adversely impact our ability to conduct our business. If we raise additional funds through strategic partnerships and alliances and licensing arrangements with third parties, we may have to relinquish valuable rights to our technologies or product candidates, or grant licenses on terms unfavorable to us.

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

Despite the implementation of security measures, our internal computer systems and those of our current and future CROs and other contractors and consultants are vulnerable to damage from computer viruses, unauthorized access, natural disasters, and telecommunication and electrical failures. While we have not experienced any such material system failure or security breach to date, if such an event were to occur and cause interruptions in our operations, it could result in a material disruption of our development programs and our business operations. For example, the loss of clinical trial data from completed or future clinical trials could result in delays in our regulatory approval efforts and significantly increase our costs to recover or reproduce the data. Likewise, we rely on third parties for the manufacture of our product candidates and to conduct clinical trials, and similar events relating to their computer systems could also have a material adverse effect on our business. To the extent that any disruption or security breach were to result in a loss of, or damage to, our data or applications, or inappropriate disclosure of confidential or proprietary information, we could incur liability and the further development and commercialization of our product candidates could be delayed.

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

Our operations, and those of our CROs, commercial manufacturing organizations (CMOs), and other contractors and consultants, could be subject to earthquakes, power shortages, telecommunications failures, water shortages, floods, hurricanes, typhoons, fires, extreme weather conditions, medical epidemics and other natural or man-made disasters or business interruptions, for which we are predominantly self-insured. The occurrence of any of these business disruptions could seriously harm our operations and financial condition and increase our costs and expenses. We rely on third-party manufacturers to produce and process our product candidates on a

patient-by-patient basis. Our ability to obtain clinical supplies of our product candidates could be disrupted if the operations of these suppliers are affected by a man-made or natural disaster or other business interruption.

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

We are exposed to the risk of employee fraud or other illegal activity by our employees, independent contractors, consultants, commercial partners and vendors. Misconduct by these parties could include intentional, reckless and/or negligent conduct that fails to: comply with the regulations of the FDA and other similar foreign regulatory bodies, provide true, complete and accurate information to the FDA and other similar foreign regulatory bodies, comply with manufacturing standards we have established, comply with healthcare fraud and abuse laws in the United States and similar foreign fraudulent misconduct laws or report financial information or data accurately or to disclose unauthorized activities to us. If we obtain FDA approval of any of our product candidates and begin commercializing those products in the United States, our potential exposure under such laws and regulations will increase significantly, and our costs associated with compliance with such laws and regulations are also likely to increase. These laws may impact, among other things, our current activities with principal investigators and research patients, as well as proposed and future sales, marketing and education programs. In particular, the promotion, sales and marketing of healthcare items and services, as well as certain business arrangements in the healthcare industry, are subject to extensive laws designed 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, structuring and commission(s), certain customer incentive programs and other business arrangements generally. Activities subject to these laws also involve the improper use of information obtained in the course of patient recruitment for clinical trials. The laws that may affect our ability to operate include, but are not limited to:

- the federal Anti-Kickback Statute, which prohibits, among other things, knowingly and willfully soliciting, receiving, offering or paying any remuneration (including any kickback, bribe, or rebate), directly or indirectly, overtly or covertly, in cash or in kind, to induce, or in return for, either the referral of an individual, 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 a federal healthcare program, such as the Medicare and Medicaid programs;
- federal civil and criminal false claims laws and civil monetary penalty laws, which prohibit, among other things, individuals or entities from knowingly presenting, or causing to be presented, claims for payment or approval from Medicare, Medicaid, or other third-party payors that are false or fraudulent or knowingly making a false statement to improperly avoid, decrease or conceal an obligation to pay money to the federal government;
- the federal Health Insurance Portability and Accountability Act of 1996 (HIPAA), which created new federal criminal statutes that prohibit knowingly and willfully executing, or attempting to execute, a scheme to defraud any healthcare benefit program or obtain, by means of false or fraudulent pretenses, representations, or promises, any of the money or property owned by, or under the custody or control of, any healthcare benefit program, regardless of the payor (e.g., public or private) and knowingly and willfully falsifying, concealing or covering up by any trick or device a material fact or making any materially false statements in connection with the delivery of, or payment for, healthcare benefits, items or services relating to healthcare matters;
- HIPAA, as amended by the Health Information Technology for Economic and Clinical Health Act of 2009 (HITECH), and their respective implementing regulations, which impose requirements on certain covered healthcare providers, health plans, and healthcare clearinghouses as well as their respective business associates that perform services for them that involve the use, or disclosure of, individually identifiable health information, relating to the privacy, security and transmission of individually identifiable health information without appropriate authorization;

- the federal Physician Payment Sunshine Act, created under the Patient Protection and Affordable Care Act as amended by the Health Care and Education Reconciliation Act of 2010, collectively, the Affordable Care Act, and its implementing regulations, which require manufacturers of drugs, devices, biologicals and medical supplies for which payment is available under Medicare, Medicaid or the Children's Health Insurance Program (with certain exceptions) to report annually to the United States Department of Health and Human Services (HHS) 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; and
- federal consumer protection and unfair competition laws, which broadly regulate marketplace activities and activities that potentially harm consumers.

Additionally, we are subject to state and foreign equivalents of each of the healthcare laws described above, among others, some of which may be broader in scope and may apply regardless of the payor.

Effective upon the closing of this offering, we will adopt a code of business conduct and ethics, but it is not always possible to identify and deter employee misconduct, 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 laws may involve substantial costs. It is possible that governmental and enforcement authorities will conclude that our business practices may not comply with current or future statutes, regulations or case law interpreting applicable fraud and abuse or other healthcare laws and 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 significant impact on our business, including the imposition of civil, criminal and administrative penalties, damages, disgorgement, monetary fines, possible exclusion from participation in Medicare, Medicaid and other federal healthcare programs, contractual damages, reputational harm, diminished profits and future earnings and curtailment of our operations, any of which could adversely affect our ability to operate our business and our results of operations. In addition, the approval and commercialization of any of our product candidates outside the United States will also likely subject us to foreign equivalents of the healthcare laws mentioned above, among other foreign laws.

If product liability lawsuits are brought against us, we may incur substantial liabilities and may be required to limit commercialization of our product candidates.

We face an inherent risk of product liability as a result of the clinical testing of our product candidates and will face an even greater risk if we commercialize any products. For example, we may be sued if our product candidates cause or are perceived to cause injury or are found to be otherwise unsuitable during clinical testing, manufacturing, marketing or sale. Any such product liability claims may include allegations of defects in manufacturing, defects in design, a failure to warn of dangers inherent in the product, negligence, strict liability or a breach of warranties. Claims could also be asserted under state consumer protection acts. If we cannot successfully defend ourselves against product liability claims, we may incur substantial liabilities or be required to limit commercialization of our product candidates. Even successful defense 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 or products that we may develop;
- 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.

Failure to obtain or retain sufficient product liability insurance at an acceptable cost to protect against potential product liability claims could prevent or inhibit the commercialization of products we develop, alone or with corporate collaborators. Although we have clinical trial insurance, our insurance policies also have various exclusions, and we may be subject to a product liability claim for which we have no coverage. We may have to pay any amounts awarded by a court or negotiated in a settlement that exceed our coverage limitations or that are not covered by our insurance, and we may not have, or be able to obtain, sufficient capital to pay such amounts. Even if our agreements with any future corporate collaborators entitle us to indemnification against losses, such indemnification may not be available or adequate should any claim arise.

Comprehensive tax reform legislation could adversely affect our business and financial condition.

On December 22, 2017, President Trump signed into law the "Tax Cuts and Jobs Act" (TCJA) that significantly reforms the Internal Revenue Code of 1986, as amended. The TCJA, among other things, contains significant changes to corporate taxation, including reduction of the corporate tax rate from a top marginal rate of 35% to a flat rate of 21%; limitation of the tax deduction for interest expense; limitation of the deduction for net operating losses and elimination of net operating loss carrybacks, in each case, for losses arising in taxable years beginning after December 31, 2017 (though any such tax losses may be carried forward indefinitely); and modifying or repealing many business deductions and credits, including reducing the business tax credit for certain clinical testing expenses incurred in the testing of certain drugs for rare diseases or conditions generally referred to as "orphan drugs". We are currently evaluating the effect of the tax rate reduction on our deferred tax position, but expect that the tax rate change will result in (i) a reduction in the gross amount of our deferred tax assets, without an impact on the net amount of our deferred tax assets, which are recorded with a full valuation allowance, and (ii) no income tax expense or benefit being recognized as of the enactment date of the TCJA. We continue to examine the impact this tax reform legislation may have on our business. However, the effect of the TCJA on us and our affiliates, whether adverse or favorable, is uncertain and may not become evident for some period of time. You are urged to consult your tax adviser regarding the implications of the TCJA on an investment in our common stock.

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

Under Sections 382 and 383 of the Internal Revenue Code of 1986, as amended, if a corporation undergoes an "ownership change" (generally defined as a greater than 50% change (by value) in its equity ownership over a three-year period), the corporation's ability to use its pre-change net operating loss carryforwards and other pre-change tax attributes to offset its post-change taxable income may be limited. As a result of our most recent private placements and other transactions that have occurred over the past three years, we may have experienced, and, upon closing of this offering, may experience, an "ownership change." We may also experience ownership changes in the future as a result of subsequent shifts in our stock ownership. As of December 31, 2016, we had U.S. federal net operating loss carryforwards of $4.5 million and U.S. federal research and development tax credit carryforwards of $1.0 million, which could be limited if we experience an "ownership change." The

reduction of the corporate tax rate under the TCJA may cause a reduction in the economic benefit of our net operating loss carryforwards and other deferred tax assets available to the us. Under the TCJA, net operating losses generated after December 31, 2017 will not be subject to expiration.

The terms of our loan and security agreement may restrict our ability to engage in certain transactions and subject our assets to collateralization.

In January 2017, we entered into a loan and security agreement with Pacific Western Bank (PWB). Pursuant to the terms of the loan and security agreement, subject to certain exceptions, we cannot engage in certain transactions without PWB's prior written consent, which shall not be unreasonably withheld. Such transactions include:

- disposing of our business or certain assets;
- changing our business, management, ownership or business locations;
- incurring additional debt or liens or making payments on other debt;
- making certain investments and declaring dividends;
- acquiring or merging with another entity;
- engaging in transactions with affiliates; or
- encumbering intellectual property.

If PWB does not provide its consent to such actions, we could be prohibited from engaging in transactions that could be beneficial to our business and our stockholders unless we were to repay the loans, which may not be desirable or possible. The loan and security agreement is collateralized by a pledge of substantially all of our assets, except for our intellectual property. If we were to default under the loan and security agreement, including for an inability to repay amounts as they become due, and we were unable to obtain a waiver for such a default, PWB would have a right to accelerate our obligation to repay the entire loan and foreclose on these assets in order to satisfy our obligations under the loan and security agreement. In addition, PWB would also have the right to place a hold on our accounts maintained at PWB and refuse to fund any then unfunded commitments under the loan and security agreement. Any such action on the part of PWB against us could have a materially adverse impact on our business, financial condition and results of operations.

Unstable market and economic conditions may have serious adverse consequences on our business, financial condition and stock price.

As widely reported, global credit and financial markets have experienced extreme volatility and disruptions in the past several years, including severely diminished liquidity and credit availability, declines in consumer confidence, declines in economic growth, increases in unemployment rates and uncertainty about economic stability. There can be no assurance that further deterioration in credit and financial markets and confidence in economic conditions will not occur. Our general business strategy may be adversely affected by any such economic downturn, volatile business environment or continued unpredictable and unstable market conditions. If the current equity and credit markets deteriorate, or do not improve, it may make any necessary debt or equity financing more difficult, more costly, and more dilutive. Failure to secure any necessary financing in a timely manner and on favorable terms could have a material adverse effect on our growth strategy, financial performance and stock price and could require us to delay or abandon clinical development plans. In addition, there is a risk that one or more of our current service providers, manufacturers and other partners may not survive these difficult economic times, which could directly affect our ability to attain our operating goals on schedule and on budget.

As of September 30, 2017, we had cash, cash equivalents, and marketable securities of $48.4 million and available borrowings under our loan and security agreement of $15.0 million. While we are not aware of any downgrades, material losses, or other significant deterioration in the fair value of our cash equivalents and marketable securities since September 30, 2017, no assurance can be given that further deterioration of the global credit and financial markets would not negatively impact our current portfolio of cash equivalents or our ability to meet our financing objectives. Furthermore, our stock price may decline due in part to the volatility of the stock market and the general economic downturn.

Risks Related to Our Reliance On Third Parties

We rely and will rely on third parties to conduct our clinical trials. If these third parties do not properly and successfully carry out their contractual duties or meet expected deadlines, we may not be able to obtain regulatory approval of or commercialize our product candidates.

We depend and will depend upon independent investigators and collaborators, such as medical institutions, CROs, CMOs and strategic partners to conduct our preclinical studies and clinical trials under agreements with us. We expect to have to negotiate budgets and contracts with CROs, trial sites and CMOs which may result in delays to our development timelines and increased costs. We will rely heavily on these third parties over the course of our clinical trials, and we control only certain aspects of their activities. As a result, we have less direct control over the conduct, timing and completion of these clinical trials and the management of data developed through clinical trials than would be the case if we were relying entirely upon our own staff. Nevertheless, we are responsible for ensuring that each of our studies is conducted in accordance with applicable protocol, legal and regulatory requirements and scientific standards, and our reliance on third parties does not relieve us of our regulatory responsibilities. We and these third parties are required to comply with good clinical practices (GCPs), which are regulations and guidelines enforced by the FDA and comparable foreign regulatory authorities for product 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 these third parties fail to comply with applicable GCP regulations, 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, such regulatory authorities will determine that any of our clinical trials comply with the GCP regulations. In addition, our clinical trials must be conducted with biologic product produced under current good manufacturing practices (cGMP) regulations and will require a large number of test patients. Our failure or any failure by these third parties to comply with these regulations or to recruit a sufficient number of patients may require us to repeat clinical trials, which would delay the regulatory approval process. Moreover, our business may be implicated if any of these third parties violates federal or state fraud and abuse or false claims laws and regulations or healthcare privacy and security laws.

Any third parties conducting our clinical trials are not and will not be our employees and, except for remedies available to us under our agreements with such third parties, we cannot control whether or not they devote sufficient time and resources to our ongoing, clinical and non-clinical product candidates. These third parties may also have relationships with other commercial entities, including our competitors, for whom they may also be conducting clinical trials or other drug development activities, which could affect their performance on our behalf. If these third parties 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 or regulatory requirements or for other reasons, our clinical trials may be extended, delayed or terminated and we may not be able to complete development of, obtain regulatory approval of or successfully commercialize our product candidates. As a result, our financial results and the commercial prospects for our product candidates would be harmed, our costs could increase and our ability to generate revenue could be delayed.

Switching or adding third parties to conduct our clinical trials involves substantial cost and requires extensive management time and focus. In addition, there is a natural transition period when a new third party commences work. As a result, delays occur, which can materially impact our ability to meet our desired clinical development timelines.

We expect to rely on third parties to manufacture our clinical product supplies, and we may rely on third parties for at least a portion of the manufacturing process of our product candidates, if approved. Our business could be harmed if those third parties fail to provide us with sufficient quantities of clinical product supplies or product candidates or fail to do so at acceptable quality levels or prices.

We do not currently own any facility that may be used as our clinical-scale manufacturing and processing facility and must currently rely on outside vendors to manufacture supplies and process our product candidates, which is and will need to be done on a patient-by-patient basis. We have not yet caused our product candidates to be manufactured or processed on a commercial scale and may not be able to do so for any of our product candidates.

Although in the future we do intend to develop our own manufacturing facility, we also intend to use third parties as part of our manufacturing process and may, in any event, never be successful in developing our own manufacturing facility. Our anticipated reliance on a limited number of third-party manufacturers exposes us to the following risks:

- We may be unable to identify manufacturers on acceptable terms or at all because the number of potential manufacturers is limited and the FDA must inspect any manufacturers for current cGMP compliance as part of our marketing application. In addition, a new manufacturer would have to be educated in, or develop substantially equivalent processes for, the production of our product candidates.
- Our manufacturers may have little or no experience with autologous cell products, which are products made from a patient's own cells, and therefore may require a significant amount of support from us in order to implement and maintain the infrastructure and processes required to manufacture our product candidates.
- Our third-party manufacturers might be unable to timely manufacture our product candidates or produce the quantity and quality required to meet our clinical and commercial needs, if any.
- Our third-party suppliers or collaborators from whom we receive our antibodies used in combination with our ACTR T cells may be unable to timely manufacture or provide the applicable antibody or produce the quantity and quality required to meet our clinical and commercial needs.
- Contract manufacturers may not be able to execute our manufacturing procedures and other logistical support requirements appropriately.
- Our future contract manufacturers may not perform as agreed, may not devote sufficient resources to our product candidates or may not remain in the contract manufacturing business for the time required to supply our clinical trials or to successfully produce, store, and distribute our products, if any.
- Manufacturers are subject to ongoing periodic unannounced inspection by the FDA and corresponding state agencies to ensure strict compliance with cGMP and other government regulations and corresponding foreign standards. We do not have control over third-party manufacturers' compliance with these regulations and standards.
- We may not own, or may have to share, the intellectual property rights to any improvements made by our third-party manufacturers in the manufacturing process for our product candidates.
- Our third-party manufacturers could breach or terminate their agreements with us.

- Raw materials and components used in the manufacturing process, particularly those for which we have no other source or supplier, may not be available or may not be suitable or acceptable for use due to material or component defects.
- Our contract manufacturers and critical reagent suppliers may be subject to inclement weather, as well as natural or man-made disasters.
- Our contract manufacturers may have unacceptable or inconsistent product quality success rates and yields, and we have no direct control over our contract manufacturers' ability to maintain adequate quality control, quality assurance and qualified personnel.

Each of these risks could delay or prevent the completion of our clinical trials or the approval of any of our product candidates by the FDA, result in higher costs or adversely impact commercialization of our product candidates. In addition, we will rely on third parties to perform certain specification tests on our product candidates prior to delivery to patients. If these tests are not appropriately done and test data are not reliable, patients could be put at risk of serious harm and the FDA could place significant restrictions on our company until deficiencies are remedied.

The manufacture of biological drug products is complex and requires significant expertise and capital investment, including the development of advanced manufacturing techniques and process controls.

Manufacturers of biologic products often encounter difficulties in production, particularly in scaling up or out, validating the production process and assuring high reliability of the manufacturing process (including the absence of contamination). These problems include logistics and shipping, difficulties with production costs and yields, quality control, including stability of the product, product testing, operator error and availability of qualified personnel, as well as compliance with strictly enforced federal, state and foreign regulations. Furthermore, if contaminants are discovered in our supply of our product candidates or in the manufacturing facilities, such manufacturing facilities may need to be closed for an extended period of time to investigate and remedy the contamination. We cannot assure you that any stability failures or other issues relating to the manufacture of our product candidates will not occur in the future.

We may fail to manage the logistics of collecting and shipping patient material to the manufacturing site and shipping the product candidate back to the patient. Logistical and shipment delays and problems caused by us, our vendors or other factors not in our control, such as weather, could prevent or delay the delivery of product candidates to patients. Additionally, we have to maintain a complex chain of identity and chain of custody with respect to patient material as it moves to the manufacturing facility, through the manufacturing process and back to the patient. Failure to maintain chain of identity and chain of custody could result in patient death, loss of product or regulatory action.

In addition, because our product candidates are all based upon the ACTR construct, any problems we encounter with manufacturing the ACTR construct would likely affect all of our products, if approved, and product candidates, increasing the impact of any manufacturing issues we encounter and potentially adversely affecting our ability to attain or maintain profitable operations.

ACTR therapies rely on the availability of specialty raw materials, which may not be available to us on acceptable terms or at all.

ACTR requires many specialty raw materials, some of which are manufactured by small companies with limited resources and experience to support a commercial product. In addition, those suppliers normally support blood-based hospital businesses and generally do not have the capacity to support commercial products manufactured under cGMP by biopharmaceutical firms. The suppliers may be ill-equipped to support our needs, especially in non-routine circumstances like an FDA inspection or medical crisis, such as widespread contamination. We also do not have contracts with many of these suppliers, and may not be able to contract with

them on acceptable terms or at all. Accordingly, we may experience delays in receiving key raw materials to support clinical or commercial manufacturing.

In addition, some of our raw materials are currently available from a single supplier, or a small number of suppliers. The type of cell culture media and cryopreservation buffer that we currently use in our manufacturing process for ACTR087 and ACTR707 are each only available from a single supplier. In addition, the cell processing equipment and tubing that we use in our current manufacturing process is only available from a single supplier. We also use certain biologic materials, including certain activating antibodies, that are available from multiple suppliers, but each version may perform differently, requiring us to characterize them and potentially modify some of our protocols if we change suppliers. We cannot be sure that these suppliers will remain in business, or that they will not be purchased by one of our competitors or another company that is not interested in continuing to produce these materials for our intended purpose. Accordingly, if we no longer have access to these suppliers, we may experience delays in our clinical or commercial manufacturing which could harm our business or results of operations.

If our third-party manufacturers use hazardous and biological materials in a manner that causes injury or violates applicable law, we may be liable for damages.

Our research and development activities involve the controlled use of potentially hazardous substances, including chemical and biological materials, by our third-party manufacturers. Our manufacturers are subject to federal, state and local laws and regulations in the United States governing the use, manufacture, storage, handling and disposal of medical and hazardous materials. Although we believe that our manufacturers' 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 medical or hazardous 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. We do not have any insurance for liabilities arising from medical or hazardous materials. Compliance with applicable environmental laws and regulations is expensive, and current or future environmental regulations may impair our research, development and production efforts, which could harm our business, prospects, financial condition or results of operations.

Risks Related to Government Regulation

The FDA regulatory approval process is lengthy and time-consuming, and we may experience significant delays in the clinical development and regulatory approval of our product candidates.

We have not previously submitted a Biologics License Application (BLA) to the FDA or similar approval applications to comparable foreign authorities. A BLA must include extensive preclinical and clinical data and supporting information to establish the product candidate's safety, purity and potency for each desired indication. The BLA must also include significant information regarding the manufacturing controls for the product. We expect the novel nature of our product candidates to create further challenges in obtaining regulatory approval. For example, the FDA has no experience with commercial development of ACTR therapies for cancer. Accordingly, the regulatory approval pathway for our product candidates may be uncertain, complex, expensive and lengthy, and approval may not be obtained.

We may also experience delays in completing planned clinical trials for a variety of reasons, including delays related to:

- the availability of financial resources to commence and complete the planned trials;
- reaching 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;

- obtaining approval at each clinical trial site by an IRB or ethics committee;
- recruiting suitable patients to participate in a trial;
- having patients complete a trial or return for post-treatment follow-up;
- clinical trial sites deviating from trial protocol or dropping out of a trial;
- adding new clinical trial sites; or
- manufacturing sufficient quantities of qualified materials under cGMPs and applying them on a subject by subject basis for use in clinical trials.

We could also experience delays if physicians encounter unresolved ethical issues associated with enrolling patients in clinical trials of our product candidates in lieu of prescribing existing treatments that have established safety and efficacy profiles. Further, a clinical trial may be suspended or terminated by us, the IRBs for the institutions in which such trials are being conducted, the Data Monitoring Committee for such trial, or by the FDA or other regulatory authorities due to a number of factors, including failure to conduct the clinical trial in accordance with regulatory requirements or our clinical protocols, inspection of the clinical trial operations or trial 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 product candidate, changes in governmental regulations or administrative actions or lack of adequate funding to continue the clinical trial. If we experience termination of, or delays in the completion of, any clinical trial of our product candidates, the commercial prospects for our product candidates will be harmed, and our ability to generate product revenue will be delayed. In addition, any delays in completing our clinical trials will increase our costs, slow down our product development and approval process and jeopardize our ability to commence product sales and generate revenue.

Securing regulatory approval also requires the submission of information about the biologic manufacturing process and inspection of manufacturing facilities by the relevant regulatory authority. FDA or comparable foreign regulatory authorities may fail to approve our manufacturing processes or facilities, whether run by us or our CMOs. In addition, if we make manufacturing changes to our product candidates in the future, we may need to conduct additional preclinical studies to bridge our modified product candidates to earlier versions.

Many of the factors that cause, or lead to, a delay in the commencement or completion of clinical trials may ultimately lead to the denial of regulatory approval of our product candidates.

The FDA may disagree with our regulatory plan and we may fail to obtain regulatory approval of our product candidates.

We plan to continue to advance our lead product candidates, ACTR087 used in combination with rituximab and ACTR707 used in combination with rituximab, for the treatment of adult patients with r/r NHL through Phase I clinical trials. If we believe the Phase I data from either trial is compelling, we plan to discuss with the FDA the potential to move to a registration trial in r/r NHL upon completion of the current Phase I clinical trial. Additionally, we plan to initiate a Phase II clinical trial in to evaluate ACTR087 used in combination with rituximab in adult patients with r/r NHL who received prior CD19 CAR-T therapy. However, the general approach for FDA approval of a new biologic or drug is dispositive data from two well-controlled, Phase III clinical trials of the relevant biologic or drug in the relevant patient population. Phase III clinical trials typically involve hundreds of patients, have significant costs and take years to complete. The FDA may not believe our accelerated approval strategy to move directly to a registration trial for ACTR087 used in combination with rituximab in r/r NHL upon completion of the current Phase I clinical trial is warranted and may require a Phase III clinical trial or trials prior to approval.

Our clinical trial results may also not support approval. In addition, 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 number, 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 our product candidates are safe, pure and potent, or effective, for any of their proposed indications;
- 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 our product candidates' clinical and other benefits outweigh their 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 the satisfaction of the FDA or comparable foreign regulatory authorities to support the submission of a BLA or other comparable submission in foreign jurisdictions or to obtain regulatory approval in the United States or elsewhere;
- the FDA or comparable foreign regulatory authorities may find deficiencies with or fail to approve the manufacturing processes or facilities of third-party manufacturers with which we contract for clinical and commercial supplies; 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.

Any of these factors, many of which are beyond our control, 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.

Obtaining and maintaining regulatory approval of our product candidates in one jurisdiction does not mean that we will be successful in obtaining regulatory approval of our product candidates in other jurisdictions.

Obtaining and maintaining regulatory approval of our product candidates in one jurisdiction does not guarantee that we will be able to obtain or maintain regulatory approval in any other jurisdiction, while a failure or delay in obtaining regulatory approval in one jurisdiction may have a negative effect on the regulatory approval process in others. For example, even if the FDA grants marketing approval of a product candidate, comparable regulatory authorities in foreign jurisdictions must also approve the manufacturing, marketing and promotion of the product candidate in those countries. Approval procedures vary among jurisdictions and can involve requirements and administrative review periods different from, and greater than, those in the United States, including additional preclinical studies or clinical trials as clinical trials conducted in one jurisdiction may not be accepted by regulatory authorities in other jurisdictions. In many jurisdictions outside the United States, a product candidate must be approved for reimbursement before it can be approved for sale in that jurisdiction. In some cases, the price that we intend to charge for our products is also subject to approval.

We may also submit marketing applications in other countries. Regulatory authorities in jurisdictions outside of the United States have requirements for approval of product candidates with which we must comply prior to marketing in those jurisdictions. Obtaining foreign regulatory approvals and compliance with foreign regulatory requirements could result in significant delays, difficulties and costs for us and could delay or prevent the introduction of our products in certain countries. If we fail to comply with the regulatory requirements in international markets and/or receive applicable marketing approvals, our target market will be reduced and our ability to realize the full market potential of our product candidates will be harmed.

Even if we receive regulatory approval of our product candidates, we will be subject to ongoing regulatory obligations and continued regulatory review, which may result in significant additional expense and we may be subject to penalties if we fail to comply with regulatory requirements or experience unanticipated problems with our product candidates.

Any regulatory approvals that we receive for our product candidates will require surveillance to monitor the safety and efficacy of the product candidate. The FDA may also require a risk evaluation and mitigation strategy in order to approve our product candidates, which could entail requirements for a medication guide, physician communication plans or additional elements to ensure safe use, such as restricted distribution methods, patient registries and other risk minimization tools. In addition, if the FDA or a comparable foreign regulatory authority approves our product candidates, the manufacturing processes, labeling, packaging, distribution, adverse event reporting, storage, advertising, promotion, import, export and recordkeeping for our product candidates 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. Later discovery of previously unknown problems with our product candidates, including adverse events of unanticipated severity or frequency, or with our third-party manufacturers or manufacturing processes, or failure to comply with regulatory requirements, may result in, among other things:

- restrictions on the marketing or manufacturing of our product candidates, withdrawal of the product from the market or voluntary or mandatory product recalls;
- fines, warning letters or holds on clinical trials;
- refusal by the FDA to approve pending applications or supplements to approved applications filed by us or suspension or revocation of license approvals;
- product seizure or detention, or refusal to permit the import or export of our product candidates; and
- injunctions or the imposition of civil or criminal penalties.

The FDA's and other regulatory authorities' policies 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 action, either in the United States or abroad. 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.

In addition, if we were able to obtain accelerated approval of ACTR087 or ACTR707 used in combination with an antibody, the FDA would require us to conduct a confirmatory study to verify the predicted clinical benefit and additional safety studies. The results from the confirmatory study may not support the clinical benefit, which would result in the approval being withdrawn.

Even if we obtain regulatory approval of our product candidates, the products may not gain market acceptance among physicians, patients, hospitals, cancer treatment centers and others in the medical community.

The use of engineered T cells as a potential cancer treatment is a recent development and may not become broadly accepted by physicians, patients, hospitals, cancer treatment centers and others in the medical community. Various factors will influence whether our product candidates are accepted in the market, including:

- the clinical indications for which our product candidates are approved;
- physicians, hospitals, cancer treatment centers and patients considering our product candidates as a safe and effective treatment;
- the potential and perceived advantages of our product candidates over alternative treatments;

- our ability to demonstrate the advantages of our product candidates over other CAR-T therapies;
- the prevalence and severity of any side effects;
- the prevalence and severity of any side effects for other adoptive cell therapy and CAR-T products and public perception of other adoptive cell therapy and CAR-T products;
- product labeling or product insert requirements of the FDA or other regulatory authorities;
- limitations or warnings contained in the labeling approved by the FDA;
- the timing of market introduction of our product candidates as well as competitive products;
- the cost of treatment in relation to alternative treatments;
- the availability of adequate coverage, reimbursement and pricing by third-party payors and government authorities;
- the willingness of patients to pay out-of-pocket in the absence of coverage by third-party payors and government authorities;
- relative convenience and ease of administration, including as compared to alternative treatments and competitive therapies; and
- the effectiveness of our sales and marketing efforts.

In addition, although we are not utilizing embryonic stem cells or replication competent vectors, adverse publicity due to the ethical and social controversies surrounding the therapeutic use of such technologies, and reported side effects from any clinical trials using these technologies or the failure of such trials to demonstrate that these therapies are safe and effective may limit market acceptance of our product candidates. If our product candidates are approved but fail to achieve market acceptance among physicians, patients, hospitals, cancer treatment centers or others in the medical community, we will not be able to generate significant revenue.

In addition, although our ACTR platform differs in certain ways from the CAR-T approach, serious adverse events or deaths in other clinical trials involving CAR-T or other T cell products or with use of approved CAR-T products, even if not ultimately attributable to the relevant product or product candidates, could result in increased government regulation, unfavorable public perception and publicity, potential regulatory delays in the testing or approval of our product candidates, stricter labeling requirements for those product candidates that are approved, and a decrease in demand for any such product candidates.

Even if our products achieve market acceptance, we may not be able to maintain that market acceptance over time if new products or technologies are introduced that are more favorably received than our products, are more cost effective or render our products obsolete.

Coverage and reimbursement may be limited or unavailable in certain market segments for our product candidates, which could make it difficult for us to sell our product candidates, if approved, profitably.

In both domestic and foreign markets, successful sales of our product candidates, if approved, will depend on the availability of adequate coverage and reimbursement from third-party payors. In addition, because our product candidates represent new approaches to the treatment of cancer, we cannot accurately estimate the potential revenue from our product candidates.

Patients who are provided medical treatment for their conditions generally rely on third-party payors to reimburse all or part of the costs associated with their treatment. Adequate coverage and reimbursement from governmental healthcare programs, such as Medicare and Medicaid, and commercial payors is critical to new product acceptance.

Government authorities and third-party payors, such as private health insurers and health maintenance organizations, decide which drugs and treatments they will cover and the amount of reimbursement.

Reimbursement by a third-party payor may depend upon a number of factors, including, but not limited to, the third-party payor's determination that use of a product is:

- a covered benefit under its health plan;
- safe, effective and medically necessary;
- appropriate for the specific patient;
- cost-effective; and
- neither experimental nor investigational.

Obtaining coverage and reimbursement approval of a product from a government or other third-party payor is a time-consuming and costly process that could require us to provide to the payor supporting scientific, clinical and cost-effectiveness data for the use of our products. Even if we obtain coverage for a given product, the resulting reimbursement payment rates might not be adequate for us to achieve or sustain profitability or may require co-payments that patients find unacceptably high. Patients are unlikely to use our product candidates unless coverage is provided and reimbursement is adequate to cover a significant portion of the cost of our product candidates.

In the United States, no uniform policy of coverage and reimbursement for products exists among third-party payors. Therefore, coverage and reimbursement for products can differ significantly from payor to payor. 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 obtained.

We intend to seek approval to market our product candidates in both the United States and in selected foreign jurisdictions. If we obtain approval in one or more foreign jurisdictions for our product candidates, we will be subject to rules and regulations in those jurisdictions. In some foreign countries, particularly those in the European Union, the pricing of biologics is subject to governmental control. In these countries, pricing negotiations with governmental authorities can take considerable time after obtaining marketing approval of a product candidate. In addition, market acceptance and sales of our product candidates will depend significantly on the availability of adequate coverage and reimbursement from third-party payors for our product candidates and may be affected by existing and future healthcare reform measures.

Third-party payors, whether domestic or foreign, or governmental or commercial, are developing increasingly sophisticated methods of controlling healthcare costs. In both the United States and certain foreign jurisdictions, there have been a number of legislative and regulatory changes to the healthcare system that could impact our ability to sell our products profitably. In particular, in 2010, the Affordable Care Act was enacted. The Affordable Care Act and its implementing regulations, among other things, revised the methodology by which rebates owed by manufacturers to the state and federal government for covered outpatient drugs and certain biologics, including our product candidates, under the Medicaid Drug Rebate Program are calculated, increased the minimum Medicaid rebates owed by most manufacturers under the Medicaid Drug Rebate Program, extended the Medicaid Drug Rebate Program to utilization of prescriptions of individuals enrolled in Medicaid managed care organizations, subjected manufacturers to new annual fees and taxes for certain branded prescription drugs and provided incentives to programs that increase the federal government's comparative effectiveness research.

Members of the United States Congress and the Trump Administration have expressed an intent to pass legislation or adopt executive orders to fundamentally change or repeal parts of the Affordable Care Act. While Congress has not passed repeal legislation to date, the 2017 Tax Reform Act includes a provision repealing the individual insurance coverage mandate included in the Affordable Care Act, effective January 1, 2019. Further, on January 20, 2017, President Trump signed an Executive Order directing federal agencies with authorities and responsibilities under the Affordable Care Act to waive, defer, grant exemptions from, or delay the

implementation of any provision of the Affordable Care Act that would impose a fiscal burden on states or a cost, fee, tax, penalty or regulatory burden on individuals, healthcare providers, health insurers, or manufacturers of pharmaceuticals or medical devices. On October 13, 2017, President Trump signed an Executive Order terminating the cost-sharing subsidies that reimburse insurers under the Affordable Care Act. Several state Attorneys General filed suit to stop the administration from terminating the subsidies, but their request for a restraining order was denied by a federal judge in California on October 25, 2017. In addition, the Centers for Medicare & Medicaid Services (CMS) within the U.S. Department of Health and Human Services has recently proposed regulations that would give states greater flexibility in setting benchmarks for insurers in the individual and small group marketplaces, which may have the effect of relaxing the essential health benefits required under the Affordable Care Act for plans sold through such marketplaces. There may be further changes to the Affordable Care Act as a result of new legislation or further executive, administrative or judicial action.

Other legislative changes have been proposed and adopted in the United States since the Affordable Care Act was enacted. In August 2011, the Budget Control Act of 2011, among other things, created measures for spending reductions by Congress. A Joint Select Committee on Deficit Reduction, tasked with recommending a targeted deficit reduction of at least $1.2 trillion for the years 2013 through 2021, was unable to reach required goals, thereby triggering the legislation's automatic reduction to several government programs. This includes aggregate reductions of Medicare payments to providers up to 2% per fiscal year. In January 2013, President Obama signed into law the American Taxpayer Relief Act of 2012 (the ATRA), which delayed for another two months the budget cuts mandated by these sequestration provisions of the Budget Control Act of 2011. In March 2013, the President signed an executive order implementing sequestration, and in April 2013, the 2% Medicare payment reductions went into effect. The ATRA also, among other things, reduced Medicare payments to several 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.

The impact of recent healthcare reform legislation and other changes in the healthcare industry and in healthcare spending on us is currently unknown, and may adversely affect our business model.

Our revenue prospects could be affected by changes in healthcare spending and policy in the United States and abroad. We operate in a highly regulated industry and new laws, regulations or judicial decisions, or new interpretations of existing laws, regulations or decisions, related to healthcare availability, the method of delivery or payment for healthcare products and services could negatively impact our business, operations and financial condition.

There have been, and likely will continue to be, legislative and regulatory proposals at the foreign, federal and state levels directed at broadening the availability of healthcare and containing or lowering the cost of healthcare. We cannot predict the initiatives that may be adopted in the future, including repeal, replacement or significant revisions to the Affordable Care Act. The continuing efforts of the government, insurance companies, managed care organizations and other payors of healthcare services to contain or reduce costs of healthcare and/or impose price controls may adversely affect:

- the demand for our product candidates, if we obtain regulatory approval;
- our ability to set a price that we believe is fair for our products;
- our ability to obtain coverage and reimbursement approval for a product;
- our ability to generate revenue and achieve or maintain profitability;
- the level of taxes that we are required to pay; and
- the availability of capital.

Any reduction in reimbursement from Medicare or other government programs may result in a similar reduction in payments from private payors, which may adversely affect our future profitability.

Regulatory requirements in the United States and abroad governing gene therapy products have changed frequently and may continue to change in the future, which could negatively impact our ability to complete clinical trials and commercialize our product candidates in a timely manner, if at all.

Regulatory requirements in the United States and abroad governing gene therapy products have changed frequently and may continue to change in the future. FDA has established the Office of Tissues and Advanced Therapies within its Center for Biologics Evaluation and Research to consolidate the review of gene therapy and related products, and has established the Cellular, Tissue and Gene Therapies Advisory Committee, among others, to advise this review. Prior to submitting an IND, because of our use of a viral vector for our ACTR T cells, our clinical trials are subject to review by the NIH Office of Biotechnology Activities' (OBA's) Recombinant DNA Advisory Committee (RAC). As of April 2016, the updated NIH Guidelines for Research Involving Recombinant or Synthetic Nucleic Acid Molecules provide the opportunity for one or more oversight bodies, including Institutional Biosafety Committees, to request a public RAC review based on their own review of the protocol and NIH requirements. Regardless of the request for public review, the NIH makes its own assessment as to whether the protocol would significantly benefit from a public RAC review. The RAC's recommendations are shared with FDA and the oversight bodies. The RAC can delay the initiation of a clinical trial, even if FDA has reviewed the trial design and details and has not objected to its initiation or has notified the sponsor that the study may begin. Conversely, FDA can put an IND on a clinical hold even if the RAC has provided a favorable review or has recommended against an in-depth, public review. Moreover, under guidelines published by the NIH, patient enrollment in our gene therapy clinical trials cannot begin until, among other things, the investigator for that clinical trial has received a letter from the OBA indicating that the protocol registration process has been completed. Upon receipt of the letter from OBA confirming completion of protocol registration the investigator may obtain final approval from the oversight bodies and patient enrollment may begin if all other applicable regulatory authorizations have been obtained.

If there is a public RAC review, the receipt of the final recommendation letter concludes the protocol registration process and then oversight body, or bodies, approval can be issued. In addition, adverse developments in clinical trials of CAR-T products conducted by others may cause FDA or other oversight bodies to change the requirements for approval of any of our product candidates.

These regulatory review committees and advisory groups and the new guidelines they promulgate may lengthen the regulatory review process, require us to perform additional studies or trials, increase our development costs, lead to changes in regulatory positions and interpretations, delay or prevent approval and commercialization of our product candidates or lead to significant post-approval limitations or restrictions. As we advance our product candidates, we will be required to consult with these regulatory and advisory groups and comply with applicable guidelines. If we fail to do so, we may be required to delay or discontinue development of such product candidates. These additional processes may result in a review and approval process that is longer than we otherwise would have expected. Delays as a result of an increased or lengthier regulatory approval process or further restrictions on the development of our product candidates can be costly and could negatively impact our or our collaborators' ability to complete clinical trials and commercialize our current and future product candidates in a timely manner, if at all.

Risks Related to Our Intellectual Property

We depend on intellectual property licensed from third parties and termination of any of these licenses could result in the loss of significant rights, which would harm our business.

We are dependent on patents, know-how and proprietary technology, both our own and licensed from others.

Under our collaboration agreement with Seattle Genetics for the development and commercialization of novel therapies for cancer, we depend on a license from Seattle Genetics for use of their proprietary antibodies. Additionally, aspects of the ACTR technology are subject to a license from St. Jude Children's Research Hospital (St. Jude's) and the National University of Singapore (NUS).

We are currently, and expect in the future to be, party to material license or collaboration agreements. These agreements typically impose numerous obligations, such as diligence and payment obligations. Any termination of these licenses could result in the loss of significant rights and could harm our ability to commercialize our product candidates. See “Business—Licenses and Third-Party Research Collaborations” for additional information regarding our license agreements. These licenses do and future licenses may include provisions that impose obligations and restrictions on us. For example, our license agreement with St. Jude’s and NUS imposes some limitations on our ability to assign the license to a party other than an affiliate. This could delay or otherwise negatively impact a transaction that we may wish to enter into.

Disputes may also arise between us and our licensors regarding intellectual property subject to a license agreement, including:

- the scope of rights granted under the license agreement and other interpretation-related issues;
- whether and the extent to which our technology and processes infringe on intellectual property of the licensor that is not subject to the licensing agreement;
- our right to sublicense patent and other rights to third parties under collaborative development relationships;
- our diligence obligations with respect to the use of the licensed technology in relation to our development and commercialization of our product candidates, and what activities satisfy those diligence obligations; and
- the ownership of inventions and know-how resulting from the joint creation or use of intellectual property by our licensors and us and our partners.

If disputes over intellectual property that we have licensed prevent or impair our ability to maintain our current licensing arrangements on acceptable terms, we may be unable to successfully develop and commercialize the affected product candidates.

We are generally also subject to all of the same risks with respect to protection of intellectual property that we license, as we are for intellectual property that we own, which are described below. If we or our licensors fail to adequately protect this intellectual property, our ability to commercialize products could suffer.

If our efforts to protect the proprietary nature of the intellectual property related to our technologies are not adequate, we may not be able to compete effectively in our market.

We rely upon a combination of patents, confidentiality agreements, trade secret protection and license agreements to protect the intellectual property related to our technologies. Any disclosure to or misappropriation by third parties of our confidential proprietary information could enable competitors to quickly duplicate or surpass our technological achievements, thus eroding our competitive position in our market.

Currently, with the exception of one European patent obtained from our in-licensed patent portfolio, no other patents have issued from the patent applications that we own or in-license. We anticipate additional patent applications will be filed both in the United States and in other countries, as appropriate. However, we cannot predict:

- if and when patents will issue;
- the degree and range of protection any issued patents will afford us against competitors including whether third parties will find ways to invalidate or otherwise circumvent our patents;
- whether any of our intellectual property will provide any competitive advantage;
- 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 or defend litigation or administrative proceedings which may be costly whether we win or lose.

Composition of matter patents for biological and pharmaceutical products, such as ACTR-based 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 United States Patent and Trademark Office (USPTO), or by patent offices in foreign countries, or that the claims in any of our issued patents will be considered patentable 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 induce or contribute to the infringement of method of use patents, the practice is common and such infringement is difficult to prevent or prosecute.

The strength of patents in the biotechnology and pharmaceutical field involves complex legal and scientific questions and can be uncertain. The patent applications that we own or in-license may fail to result in issued patents with claims that cover our product candidates or uses thereof in the United States or in other foreign countries. Even if the patents do successfully issue, third parties may challenge the validity, enforceability or scope thereof, which may result in such patents being narrowed, invalidated or held unenforceable. Furthermore, even if they are unchallenged, our patents and patent applications may not adequately protect our intellectual property or prevent others from designing around our claims. If the breadth or strength of protection provided by the patent applications we hold with respect to our product candidates is threatened, it could dissuade companies from collaborating with us to develop, and threaten our ability to commercialize, our product candidates. Further, if we encounter delays in our clinical trials, the period of time during which we could market our product candidates under patent protection would be reduced. Since patent applications in the United States and most other countries are confidential for a period of time after filing, we cannot be certain that we were the first to file any patent application related to our product candidates. Furthermore, for United States applications in which all claims are entitled to a priority date before March 16, 2013, an interference proceeding can be provoked by a third-party or instituted by the USPTO, to determine who was the first to invent any of the subject matter covered by the patent claims of our applications. Various post grant review proceedings, such as inter partes review and post grant review, are available for any interested third party to challenge the patentability of claims issued in patents to us. While these post grant review proceedings have been used less frequently to invalidate biotech patents, they have been successful regarding other technologies, and these relatively new procedures are still changing, and those changes might affect future results.

In addition to the protection afforded by patents, we seek to rely on trade secret protection, confidentiality agreements, and license agreements to protect proprietary know-how that is not patentable, processes for which patents are difficult to enforce and any other elements of our product discovery and development processes that involve proprietary know-how, information, or technology that is not covered by patents. Although we require all of our employees to assign their inventions to us, and require all of our employees, consultants, advisors and any third parties who have access to our proprietary know-how, information, or technology to enter into confidentiality agreements, we cannot be certain that our trade secrets and other confidential proprietary information will not be disclosed or that competitors will not otherwise gain access to our trade secrets or independently develop substantially equivalent information and techniques. Furthermore, 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. If we are unable to prevent unauthorized material disclosure of our intellectual property to third parties, we will not be able to establish or maintain a competitive advantage in our market, which could materially adversely affect our business, operating results and financial condition.

Third-party claims of intellectual property infringement may prevent or delay our product discovery and development efforts.

Our commercial success depends in part on our avoiding infringement of the patents and proprietary rights of third parties. There is a substantial amount of litigation involving patents and other intellectual property rights in the biotechnology and pharmaceutical industries, as well as administrative proceedings for challenging patents, including interference, reexamination, and post grant review proceedings before the USPTO or oppositions and other comparable proceedings in foreign jurisdictions. Numerous U.S. and foreign issued patents and pending patent applications, which are owned by third parties, exist in the fields in which we are developing our product candidates. As the biotechnology and pharmaceutical industries expand and more patents are issued, the risk increases that our product candidates may give rise to claims of infringement of the patent rights of others.

Third parties may assert that we are employing their proprietary technology without authorization. Generally, conducting clinical trials and other development activities in the United States is not considered an act of infringement. If and when ACTR087 or another product candidate is approved by the FDA, a third party may then seek to enforce its patent by filing a patent infringement lawsuit against us. While we do not believe that any claims that could otherwise materially adversely affect commercialization of our product candidates, if approved, are valid and enforceable, we may be incorrect in this belief, or we may not be able to prove it in a litigation. In this regard, patents issued in the U.S. by law enjoy a presumption of validity that can be rebutted only with evidence that is "clear and convincing," a heightened standard of proof. There may be third-party patents of which we are currently unaware with claims to materials, formulations, methods of manufacture or methods for treatment related to the use or manufacture of our product candidates. Because patent applications can take many years to issue, there may be currently pending patent applications which may later result in issued patents that our product candidates may infringe. In addition, third parties may obtain patents in the future and claim that use of our technologies infringes upon these patents. Moreover, we may fail to identify relevant patents or incorrectly conclude that a patent is invalid, not enforceable, exhausted, or not infringed by our activities. If any third-party patents were held by a court of competent jurisdiction to cover the manufacturing process of our product candidates, constructs or molecules used in or formed during the manufacturing process, or any final product itself, the holders of any such patents may be able to block our ability to commercialize the product candidate unless we obtained a license under the applicable patents, or until such patents expire or they are finally determined to be held invalid or unenforceable. Similarly, if any third-party patent were held by a court of competent jurisdiction to cover aspects of our formulations, processes for manufacture or methods of use, including combination therapy or patient selection methods, the holders of any such patent may be able to block our ability to develop and commercialize the product candidate unless we obtained a license or until such patent expires or is finally determined to be held invalid or unenforceable. In either case, such a license may not be available on commercially reasonable terms or at all. If we are unable to obtain a necessary license to a third-party patent on commercially reasonable terms, or at all, our ability to commercialize our product candidates may be impaired or delayed, which could in turn significantly harm our business.

Parties making claims against us may seek and obtain injunctive or other equitable relief, which could effectively block our ability to further develop and commercialize our product candidates. Defense of these claims, regardless of their merit, could involve substantial litigation expense and would be a substantial diversion of employee resources from our business. In the event of a successful claim of infringement against us, we may have to pay substantial damages, including treble damages and attorneys' fees for willful infringement, obtain one or more licenses from third parties, pay royalties or redesign our infringing products, which may be impossible or require substantial time and monetary expenditure. We cannot predict whether any such license would be available at all or whether it would be available on commercially reasonable terms. Furthermore, even in the absence of litigation, we may need or may choose to obtain licenses from third parties to advance our research or allow commercialization of our product candidates. We may fail to obtain any of these licenses at a reasonable cost or on reasonable terms, if at all. In that event, we would be unable to further develop and commercialize our product candidates, which could harm our business significantly.

We may not be successful in obtaining or maintaining necessary rights to product components and processes for our development pipeline through acquisitions and in-licenses.

Presently we have rights to certain intellectual property, through licenses from third parties and under patent applications that we own or will own, related to ACTR087, ACTR707, and certain other product candidates. Because additional product candidates may require the use of proprietary rights held by third parties, the growth of our business will likely depend in part on our ability to acquire, in-license or use these proprietary rights. In addition, while we have patent rights directed to certain ACTR constructs we may not be able to obtain intellectual property to broad ACTR constructs.

Our product candidates may also require specific formulations to work effectively and efficiently and these rights may be held by others. Similarly, efficient production or delivery of our product candidates may also require specific compositions or methods, and the rights to these may be owned by third parties. 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. 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. In that event, we may be required to expend significant time and resources to develop or license replacement technology. Moreover, the specific antibodies that will be used with our product candidates may be covered by the intellectual property rights of others.

The licensing and acquisition of third-party intellectual property rights is a competitive area, and companies, which may be more established, or have greater resources than we do, may also be pursuing strategies to license or acquire third-party intellectual property rights that we may consider necessary or attractive in order to commercialize our product candidates. More established companies may have a competitive advantage over us due to their size, cash resources and greater clinical development and commercialization capabilities.

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

Competitors may infringe our patents or the patents of our licensors. To counter infringement or unauthorized use, we may be required to file infringement claims, which can be expensive and time-consuming. In addition, in an infringement proceeding, a court may decide that one or more of our patents is not valid or is unenforceable, or may refuse to stop the other party from using the technology at issue on the grounds that our patents do not cover the technology in question. An adverse result in any litigation or defense proceedings could put one or more of our patents at risk of being invalidated, held unenforceable, or interpreted narrowly and could put our patent applications at risk of not issuing. Defense of these claims, regardless of their merit, would involve substantial litigation expense and would be a substantial diversion of employee resources from our business. In the event of a successful claim of infringement against us, we may have to pay substantial damages, including treble damages and attorneys' fees for willful infringement, obtain one or more licenses from third parties, pay royalties or redesign our infringing products, which may be impossible or require substantial time and monetary expenditure.

Post-grant proceedings, including interference proceedings, provoked by third parties or brought by the USPTO may be necessary to determine the validity or priority of inventions with respect to our patents or those of our licensors. An unfavorable outcome could result in a loss of our current patent rights and could require us to cease using the related technology or to attempt to license rights to it from the prevailing party. Our business could be harmed if the prevailing party does not offer us a license on commercially reasonable terms. Litigation or post-grant proceedings may result in a decision adverse to our interests and, even if we are successful, may result in substantial costs and distract our management and other employees. We may not be able to prevent, alone or with our licensors, misappropriation of our trade secrets or confidential information, particularly in countries where the laws may not protect those rights as fully as in the United States.

Furthermore, because of the substantial amount of discovery required in connection with intellectual property litigation, there is a risk that some of our confidential information could be compromised by disclosure

during this type of litigation. In addition, there could be public announcements of the results of hearings, motions or other interim proceedings or developments. If securities analysts or investors perceive these results to be negative, it could have a substantial adverse effect on the price of our common stock.

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 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. Noncompliance events that could result in abandonment or lapse of a patent or patent application include, but are not limited to, failure to respond to official actions within prescribed time limits, non-payment of fees and failure to properly legalize and submit formal documents. In such an event, our competitors might be able to enter the market, which would have a material adverse effect on our business.

Issued patents covering our product candidates could be found invalid or unenforceable if challenged in court or the USPTO.

If we or one of our licensing partners initiate legal proceedings against a third party to enforce a patent covering one of our product candidates, the defendant could counterclaim that the patent covering our product candidate, as applicable, is invalid and/or unenforceable. In patent litigation in the United States, defendant counterclaims alleging invalidity and/or unenforceability are commonplace, and there are numerous grounds upon which a third party can assert invalidity or unenforceability of a patent. Third parties may also raise similar claims before administrative bodies in the United States or abroad, even outside the context of litigation. Such mechanisms include re-examination, *inter parties* review, post grant review, and equivalent proceedings in foreign jurisdictions (e.g., opposition proceedings). Such proceedings could result in revocation or amendment to our patents in such a way that they no longer cover our product candidates. The outcome following legal assertions of invalidity and unenforceability is unpredictable. With respect to the validity question, for example, we cannot be certain that there is no invalidating prior art, of which we, our patent counsel 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 our product candidates. Such a loss of patent protection could have a material adverse impact on our business.

Changes in U.S. patent law could diminish the value of patents in general, thereby impairing our ability to protect our products.

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 and legal complexity, and is therefore costly, time-consuming and inherently uncertain. In addition, the United States continues to adapt to wide-ranging patent reform legislation that became effective starting in 2012. Moreover, 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. In addition to increasing uncertainty with regard to our ability to obtain patents in the future, this combination of events has created uncertainty with respect to the value of patents, once obtained. 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 would weaken our ability to obtain new patents or to enforce our existing patents and patents that we might obtain in the future. Changes in the laws and regulations governing patents in other jurisdictions could similarly have an adverse effect on our ability to obtain and effectively enforce our patent rights.

We have less robust foreign intellectual property rights and may not be able to protect our intellectual property rights throughout the world.

Certain of our key patent families (covering the ACTR087 construct) have been filed in the United States, as well as in numerous jurisdictions outside the United States, and we plan to similarly pursue subgeneric claims prior to expiration of applicable deadlines (including a patent family covering the ACTR707 construct). However, we have less robust intellectual property rights outside the United States, and, in particular, we may not be able to pursue generic coverage of the ACTR platform outside of the United States. Filing, prosecuting and defending patents on 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, the laws of some foreign countries do not protect intellectual property rights to the same extent as federal and state laws in the United States. Consequently, we 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. Competitors may use our technologies in jurisdictions where we have not obtained patent protection to develop their own products and further, may export otherwise infringing products to territories where we have patent protection, but enforcement is not as strong as that in the United States. These products may compete with our products and our patents or other intellectual property rights may not be effective or sufficient to prevent them from competing. Most of our patent portfolio is at the very early stage. We will need to decide whether and in which jurisdictions to pursue protection for the various inventions in our portfolio prior to applicable deadlines.

Many companies have encountered significant problems in protecting and defending intellectual property rights in foreign jurisdictions. The legal systems of certain countries, particularly certain developing countries, do not favor the enforcement of patents, trade secrets and other intellectual property protection, particularly those relating to biopharmaceutical products, which could make it difficult for us to stop the infringement of our patents or marketing of competing products in violation of our proprietary rights generally. Proceedings to enforce our patent rights in foreign jurisdictions could result in substantial 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 a significant commercial advantage from the intellectual property that we develop or license.

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

We generally enter into confidentiality and intellectual property assignment agreements with our employees, consultants, and contractors. These agreements generally provide that inventions conceived by the party in the course of rendering services to us will be our exclusive property. However, those agreements may not be honored and may not effectively assign intellectual property rights to us. Moreover, there may be some circumstances, where we are unable to negotiate for such ownership rights. Disputes regarding ownership or inventorship of intellectual property can also arise in other contexts, such as collaborations and sponsored research. If we are subject to a dispute challenging our rights in or to patents or other intellectual property, such a dispute could be expensive and time consuming. If we were unsuccessful, we could lose valuable rights in intellectual property that we regard as our own.

We may be subject to claims that our employees, consultants or independent contractors have wrongfully used or disclosed confidential information of third parties.

We have received confidential and proprietary information from third parties. In addition, we employ individuals who were previously employed at other biotechnology or pharmaceutical companies. We may be subject to claims that we or our employees, consultants or independent contractors have inadvertently or

otherwise used or disclosed confidential information of these third parties or our employees' former employers or our consultants' or contractors' current or former clients or customers. Litigation may be necessary to defend against these claims. Even if we are successful in defending against these claims, litigation could result in substantial cost and be a distraction to our management and employees. If we are not successful, we could lose access or exclusive access to valuable intellectual property.

Numerous factors may limit any potential competitive advantage provided by our intellectual property rights.

The degree of future protection afforded by our intellectual property rights, whether owned or in-licensed, is uncertain because intellectual property rights have limitations, and may not adequately protect our business, provide a barrier to entry against our competitors or potential competitors, or permit us to maintain our competitive advantage. Moreover, if a third party has intellectual property rights that cover the practice of our technology, we may not be able to fully exercise or extract value from our intellectual property rights. The following examples are illustrative:

- pending patent applications that we own or license may not lead to issued patents;
- patents, should they issue, that we own or license, may not provide us with any competitive advantages, or may be challenged and held invalid or unenforceable;
- others may be able to develop and/or practice technology that is similar to our technology or aspects of our technology but that is not covered by the claims of any of our owned or in-licensed patents, should any such patents issue;
- third parties may compete with us in jurisdictions where we do not pursue and obtain patent protection;
- we (or our licensors) might not have been the first to make the inventions covered by a pending patent application that we own or license;
- we (or our licensors) might not have been the first to file patent applications covering a particular invention;
- others may independently develop similar or alternative technologies without infringing our intellectual property rights;
- we may not be able to obtain and/or maintain necessary licenses on reasonable terms or at all;
- third parties may assert an ownership interest in our intellectual property and, if successful, such disputes may preclude us from exercising exclusive rights, or any rights at all, over that intellectual property;
- we may not be able to maintain the confidentiality of our trade secrets or other proprietary information;
- we may not develop or in-license additional proprietary technologies that are patentable; and
- the patents of others may have an adverse effect on our business.

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

Risks Related to This Offering and Ownership of our Common Stock

We do not know whether an active, liquid, and orderly trading market will develop for our common stock or what the market price of our common stock will be and, as a result, it may be difficult for you to sell your shares of our common stock.

Prior to this offering, there was no public trading market for shares of our common stock. Although we intend to apply to list our common stock on The Nasdaq Global Market, an active trading market for our shares may never develop or be sustained following this offering. You may not be able to sell your shares quickly or at

the market price if trading in shares of our common stock is not active. The initial public offering price for our common stock will be determined through negotiations with the underwriters, and the negotiated price may not be indicative of the market price of the common stock after the offering. As a result of these and other factors, you may be unable to resell your shares of our common stock at or above the initial public offering price. Further, an inactive market may also impair our ability to raise capital by selling shares of our common stock and may impair our ability to enter into strategic partnerships or acquire companies or products by using our shares of common stock as consideration.

The price of our stock may be volatile, and you could lose all or part of your investment.

The trading price of our common stock following this offering is likely to be highly volatile and could be subject to wide fluctuations in response to various factors, some of which are beyond our control, including limited trading volume. In addition to the factors discussed in this "Risk Factors" section and elsewhere in this prospectus, these factors include:

- the commencement, enrollment, or results of the clinical trials of our product candidates or any future clinical 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 FDA's issuance of a "refusal to file" letter or a request for additional information;
- adverse results or delays in clinical trials;
- our decision to initiate a clinical trial, not to initiate a clinical trial, or to terminate an existing clinical trial;
- adverse regulatory decisions, including failure to receive regulatory approval of our product candidates;
- changes in laws or regulations applicable to our products, including but not limited to clinical trial requirements for approvals;
- adverse developments concerning our manufacturers;
- our inability to obtain adequate product supply for any approved product or inability to do so at acceptable prices;
- our inability to establish collaborations if needed;
- 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;
- introduction of new products or services offered by us or our competitors;
- announcements of significant acquisitions, strategic partnerships, joint ventures, or capital commitments by us or our competitors;
- our ability to effectively manage our growth;
- the size and growth of our initial cancer target markets;
- our ability to successfully treat additional types of cancers or at different stages;
- actual or anticipated variations in quarterly operating results;
- 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 immunotherapy in particular, or positive or negative recommendations or withdrawal of research coverage by securities analysts;
- changes in the market valuations of similar companies;
- overall performance of the equity markets;
- sales of our common stock by us or our stockholders in the future;
- trading volume of our common stock;
- changes in accounting practices;
- ineffectiveness of our internal controls;
- disputes or other developments relating to proprietary rights, including patents, litigation matters, and our ability to obtain patent protection for our technologies;
- significant lawsuits, including patent or stockholder litigation;
- general political and economic conditions; and
- other events or factors, many of which are beyond our control.

In addition, the stock market in general, and The Nasdaq Global Market and biopharmaceutical companies in particular, have experienced extreme price and volume fluctuations that have often been unrelated or disproportionate to the operating performance of these companies. Broad market and industry factors may negatively affect the market price of our common stock, regardless of our actual operating performance. If the market price of our common stock after this offering does not exceed the initial public offering price, you may not realize any return on your investment in us and may lose some or all of your investment. In the past, securities class action litigation has often been instituted against companies following periods of volatility in the market price of a company's securities. This type of litigation, if instituted, could result in substantial costs and a diversion of management's attention and resources, which would harm our business, operating results, or financial condition.

We do not intend to pay dividends on our common stock, so any returns will be limited to the value of our stock.

We currently anticipate that we will retain future earnings for the development, operation, and expansion of our business and do not anticipate declaring or paying any cash dividends for the foreseeable future. In addition, pursuant to our loan and security agreement with PWB, we are prohibited from paying cash dividends without PWB's prior written consent, and any future debt financing arrangement may contain terms prohibiting or limiting the amount of dividends that may be declared or paid on our common stock. Any return to stockholders will therefore be limited to the appreciation of their stock, which may never occur.

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

Prior to this offering, our executive officers, directors, and % stockholders beneficially owned approximately % of our voting stock as of January 31, 2018, and, upon the closing of this offering, that same group will hold approximately % of our outstanding voting stock (assuming no exercise of the underwriters' option to purchase additional shares). Therefore, even after this offering, 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.

If you purchase our common stock in this offering, you will incur immediate and substantial dilution in the book value of your shares.

The initial public offering price will be substantially higher than the net tangible book value per share of our common stock. Investors purchasing common stock in this offering will pay a price per share that substantially exceeds the book value of our tangible assets after subtracting our liabilities. As a result, investors purchasing common stock in this offering will incur immediate dilution of $ per share, based on the assumed initial public offering price of $ per share, which is the midpoint of the price range set forth on the cover page of this prospectus. Further, investors purchasing common stock in this offering will contribute approximately % of the total amount invested by stockholders since our inception, but will own only approximately % of the total number of shares of our common stock outstanding after this offering.

This dilution is due to our investors who purchased shares prior to this offering having paid substantially less when they purchased their shares than the price offered to the public in this offering and the exercise of stock options granted to our employees. To the extent that outstanding stock options are exercised, there will be further dilution to new investors. As a result of the dilution to investors purchasing common stock in this offering, investors may receive significantly less than the purchase price paid in this offering, if anything, in the event of our liquidation. For a further description of the dilution that you will experience immediately after this offering, see “Dilution.”

We are an emerging growth company, and we cannot be certain if the reduced reporting requirements applicable to emerging growth companies will make our common stock less attractive to investors.

We are an emerging growth company, as defined in the Jumpstart Our Business Startups Act (JOBS Act) enacted in April 2012. For as long as we continue to be an emerging growth company, we may take advantage of exemptions from various reporting requirements that are applicable to other public companies that are not emerging growth companies, including not being required to comply with the auditor attestation requirements of Section 404 of the Sarbanes-Oxley Act of 2002, as amended (Sarbanes-Oxley Act), reduced disclosure obligations regarding executive compensation in this prospectus and our periodic reports and proxy statements, and exemptions from the requirements of holding nonbinding 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 year in which we complete this offering, although circumstances could cause us to lose that status earlier. We will remain an emerging growth company until the earlier of (1) the last day of the fiscal year (a) following the fifth anniversary of the closing of this offering, (b) in which we have total annual gross revenue of at least $1.07 billion, or (c) in which we are deemed to be a large accelerated filer, which requires the market value of our common stock that is held by non-affiliates to exceed $700 million as of the prior June 30th, and (2) the date on which we have issued more than $1 billion in non-convertible debt during the prior three-year period.

Even after we no longer qualify as an emerging growth company, we may still qualify as a “smaller reporting company,” which would allow us to take advantage of many of the same exemptions from disclosure requirements, including not being required to comply with the auditor attestation requirements of Section 404 of the Sarbanes-Oxley Act and reduced disclosure obligations regarding executive compensation in this prospectus and our periodic reports and proxy statements. We cannot predict if investors will find our common stock less attractive because we may rely on these exemptions. If some investors find our common stock less attractive as a result, there may be a less active trading market for our common stock and our stock price 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 have irrevocably elected to “opt out” of this exemption from new or revised accounting standards and, therefore, will be subject to the same new or revised accounting standards as other public companies that are not emerging growth companies. As a result, changes in rules of U.S. generally accepted accounting principles or their interpretation, the adoption of new guidance, or the application of existing guidance to changes in our business could significantly affect our financial position and results of operations.

We will incur significant increased costs as a result of operating as a public company, and our management will be required to devote substantial time to new compliance initiatives.

As a public company, we will incur significant legal, accounting, and other expenses that we did not incur as a private company. We will be subject to the reporting requirements of the Securities Exchange Act of 1934, as amended, which will require, among other things, that we file with the Securities and Exchange Commission (the SEC), annual, quarterly, and current reports with respect to our business and financial condition. In addition, the Sarbanes-Oxley Act, as well as rules subsequently adopted by the SEC and The Nasdaq Global Market to implement provisions of the Sarbanes-Oxley Act, impose significant requirements on public companies, including requiring establishment and maintenance of effective disclosure and financial controls and changes in corporate governance practices. Further, in July 2010, the Dodd-Frank Wall Street Reform and Consumer Protection Act (the Dodd-Frank Act), was enacted. There are significant corporate governance and executive compensation related provisions in the Dodd-Frank Act that require the SEC to adopt additional rules and regulations in these areas, such as "say on pay" and proxy access. Recent legislation permits emerging growth companies to implement many of these requirements over a longer period and up to five years from the pricing of this offering. We intend to take advantage of this new legislation but cannot guarantee that we will not be required to implement these requirements sooner than budgeted or planned and thereby incur unexpected expenses. Stockholder activism, the current political environment, and the current high level of government intervention and regulatory reform may lead to substantial new regulations and disclosure obligations, which may lead to additional compliance costs and impact the manner in which we operate our business in ways we cannot currently anticipate.

We expect the rules and regulations applicable to public companies to substantially increase our legal and financial compliance costs and to make some activities more time-consuming and costly. If these requirements divert the attention of our management and personnel from other business concerns, they could have a material adverse effect on our business, financial condition, and results of operations. The increased costs will decrease our net income or increase our net loss and may require us to reduce costs in other areas of our business or increase the prices of our products or services. For example, we expect these rules and regulations to make it more difficult and more expensive for us to obtain director and officer liability insurance and we may be required to incur substantial costs to maintain the same or similar coverage. We cannot predict or estimate the amount or timing of additional costs we may incur to respond to these requirements. The impact of these requirements could also make it more difficult for us to attract and retain qualified persons to serve on our board of directors, our board committees, or as executive officers.

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

If our existing stockholders sell, or indicate an intention to sell, substantial amounts of our common stock in the public market after the lock-up and other legal restrictions on resale discussed in this prospectus lapse, the trading price of our common stock could decline. Based on the number of shares of common stock outstanding as of January 31, 2018, upon the closing of this offering, we will have outstanding a total of shares of common stock. Of these shares, only the shares of common stock sold in this offering by us, plus any shares sold upon exercise of the underwriters' option to purchase additional shares, will be freely tradable without restriction in the public market immediately following this offering. Morgan Stanley & Co. LLC and Cowen and Company, LLC, however, may, in their sole discretion, permit our officers, directors, and other stockholders who are subject to these lock-up agreements to sell shares prior to the expiration of the lock-up agreements.

We expect that the lock-up agreements pertaining to this offering will expire 180 days from the date of this prospectus. In addition, shares of common stock that are either subject to outstanding options or reserved for future issuance under our 2018 Stock Incentive Plan (2018 Plan) will become eligible for sale in the public market to the extent permitted by the provisions of various vesting schedules, the lock-up agreements and Rule 144 and Rule 701 under the Securities Act of 1933, as amended (the Securities Act). If these additional shares of

common stock are sold, or if it is perceived that they will be sold, in the public market, the trading price of our common stock could decline.

After this offering, the holders of 20,771,850 shares of our common stock as of January 31, 2018 will be entitled to rights with respect to the registration of their shares under the Securities Act, subject to the 180-day lock-up agreements described above. See "Description of Capital Stock—Registration Rights." Registration of these shares under the Securities Act would result in the shares becoming freely tradable without restriction under the Securities Act, except for shares held by affiliates, as defined in Rule 144 under the Securities Act. Any sales of securities by these stockholders could have a material adverse effect on the trading price of our common stock.

Future sales and issuances of our common stock or rights to purchase common stock, including pursuant to our 2018 Plan, could result in additional dilution of the percentage ownership of our stockholders and could cause our stock price to fall.

We expect that significant additional capital may be needed in the future to continue our planned operations, including conducting clinical trials, commercialization efforts, expanded research and development activities, and costs associated with operating as a public company. To raise capital, we may sell common stock, convertible securities, or other equity securities in one or more transactions at prices and in a manner we determine from time to time. If we sell common stock, convertible securities, or other equity securities, investors may be materially diluted by subsequent sales. Such sales may also result in material dilution to our existing stockholders, and new investors could gain rights, preferences, and privileges senior to the holders of our common stock, including shares of common stock sold in this offering.

Pursuant to the 2018 Plan, which will become effective upon the effectiveness of the registration statement of which this prospectus is a part, our management is authorized to grant stock options to our employees, directors, and consultants.

Initially, the aggregate number of shares of our common stock that may be issued pursuant to stock awards under the 2018 Plan will be shares. The number of shares of our common stock reserved for issuance under the 2018 Plan will automatically increase on January 1 of each year, beginning on January 1, 2019 and continuing through and including January 1, 2028, by % 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. Unless our board of directors elects not to increase the number of shares available for future grant each year, our stockholders may experience additional dilution, which could cause our stock price to fall.

We have broad discretion in the use of the net proceeds from this offering and may not use them effectively.

Our management will have broad discretion in the application of the net proceeds from this offering, including for any of the purposes described in the section entitled "Use of Proceeds," and you will not have the opportunity as part of your investment decision to assess whether the net proceeds are being used appropriately. Because of the number and variability of factors that will determine our use of the net proceeds from this offering, their ultimate use may vary substantially from their currently intended use. Our management might not apply our net proceeds in ways that ultimately increase or maintain the value of your investment. We intend to use the net proceeds from this offering, together with our existing cash, cash equivalents, and marketable securities, to advance ACTR087 used in combination with rituximab for adult patients with r/r B cell non-Hodgkin lymphoma through the completion of our ongoing Phase I clinical trial; to fund a Phase II clinical trial of ACTR087 used in combination with rituximab for adult patients with r/r non-Hodgkin lymphoma who received prior CD19 CAR-T therapy; to advance ACTR707 used in combination with rituximab for adult patients with r/r B cell non-Hodgkin lymphoma through the completion of our Phase I clinical trial; to advance ACTR707 used in combination with trastuzumab through submission of an IND and to fund our Phase I clinical trial for this product candidate; and to develop any additional product candidates that we select, to expand headcount and

internal capabilities, and for working capital and other general corporate purposes. The failure by our management to apply these funds effectively could harm our business. Pending their use, we may invest the net proceeds from this offering in short-term, investment-grade, interest-bearing instruments, and U.S. government securities. These investments may not yield a favorable return to our stockholders. If we do not invest or apply the net proceeds from this offering in ways that enhance stockholder value, we may fail to achieve expected financial results, which could cause our stock price to decline.

Anti-takeover provisions under our charter documents and Delaware law could delay or prevent a change of control, which could limit the market price of our common stock and may prevent or frustrate attempts by our stockholders to replace or remove our current management.

Our amended and restated certificate of incorporation and amended and restated bylaws, which are to become effective upon the closing of this offering and upon the effectiveness of the registration statement of which this prospectus is a part, respectively, will contain provisions that could delay or prevent a change of control of our company or changes in our board of directors that our stockholders might consider favorable. Some of these provisions include:

- a board of directors divided into three classes serving staggered three-year terms, such that not all members of the board will be elected at one time;
- a prohibition on stockholder action through written consent, which requires that all stockholder actions be taken at a meeting of our stockholders;
- a requirement that special meetings of stockholders be called only by the chairperson of the board of directors, the chief executive officer, or by a majority of the total number of authorized directors;
- advance notice requirements for stockholder proposals and nominations for election to our board of directors;
- a requirement that no member of our board of directors may be removed from office by our stockholders except for cause and, in addition to any other vote required by law, upon the approval of not less than two-thirds of all outstanding shares of our voting stock then entitled to vote in the election of directors;
- a requirement of approval of not less than two-thirds of all outstanding shares of our voting stock to amend any bylaws by stockholder action or to amend specific provisions of our certificate of incorporation; and
- the authority of the board of directors to issue preferred stock on terms determined by the board of directors without stockholder approval and which preferred stock may include rights superior to the rights of the holders of common stock.

In addition, because we are incorporated in Delaware, we are governed by the provisions of Section 203 of the Delaware General Corporate Law, which may prohibit certain business combinations with stockholders owning 15% or more of our outstanding voting stock. These anti-takeover provisions and other provisions in our amended and restated certificate of incorporation and amended and restated bylaws could make it more difficult for stockholders or potential acquirers to obtain control of our board of directors or initiate actions that are opposed by the then-current board of directors and could also delay or impede a merger, tender offer, or proxy contest involving our company. These provisions could also discourage proxy contests and make it more difficult for you and other stockholders to elect directors of your choosing or cause us to take other corporate actions you desire. Any delay or prevention of a change of control transaction or changes in our board of directors could cause the market price of our common stock to decline.

Our amended and restated certificate of incorporation will provide that the Court of Chancery of the State of Delaware will be the exclusive forum for substantially all 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 certificate of incorporation will provide that the Court of Chancery of the State of Delaware will be 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 pursuant to the Delaware General Corporation Law, our amended and restated certificate of incorporation or our amended and restated bylaws, any action to interpret, apply, enforce, or determine the validity of our certificate of incorporation or bylaws or any action asserting a claim against us that is governed by the internal affairs doctrine. The choice of 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 such lawsuits against us and our directors, officers, and other employees. Alternatively, if a court were to find the choice of forum provision contained in our certificate of incorporation to be inapplicable or unenforceable in an action, we may incur additional costs associated with resolving such action in other jurisdictions, which could adversely affect our business and financial condition.

If we fail to establish and maintain proper and effective internal control over financial reporting, our operating results and our ability to operate our business could be harmed.

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 generally accepted accounting principles. In connection with this offering, we intend to begin the process of documenting, reviewing, and improving our internal controls and procedures for compliance with Section 404 of the Sarbanes-Oxley Act, which will require annual management assessment of the effectiveness of our internal control over financial reporting. We have begun recruiting additional finance and accounting personnel with certain skill sets that we will need as a public company.

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 and make it more difficult for us to effectively market and sell our service to new and existing customers.

If securities or industry analysts do not publish research or publish inaccurate or unfavorable research about our business, our stock price and trading volume could decline.

The trading market for our common stock will depend in part on the research and reports that securities or industry analysts publish about us or our business. Securities and industry analysts do not currently, and may never, publish research on our company. If no securities or industry analysts commence coverage of our company, the trading price for our stock would likely be negatively impacted. In the event securities or industry analysts initiate coverage, if one or more of the analysts who covers us downgrades our stock or publishes inaccurate or unfavorable research about our business, our stock price may decline. If one or more of these analysts ceases coverage of our company or fails to publish reports on us regularly, demand for our stock could decrease, which might cause our stock price and trading volume to decline.

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus, including the sections entitled "Prospectus Summary," "Risk Factors," "Management's Discussion and Analysis of Financial Condition and Results of Operations," and "Business," contains express or implied forward-looking statements that are based on our management's belief and assumptions and on information currently available to our management. Although we believe that the expectations reflected in these forward-looking statements are reasonable, these statements relate to future events or our future operational or financial performance, and involve known and unknown risks, uncertainties, and other factors that may cause our actual results, performance, or achievements to be materially different from any future results, performance, or achievements expressed or implied by these forward-looking statements. Forward-looking statements in this prospectus include, but are not limited to, statements about:

- the success, cost, and timing of our product development activities and clinical trials;
- our ability to obtain and maintain regulatory approval for our ACTR087 and ACTR707 product candidates and any other product candidates we may develop, and any related restrictions, limitations, and/or warnings in the label of an approved product candidate;
- the potential for our identified research priorities to advance our ACTR platform;
- the ability to license additional intellectual property relating to our product candidates from third-parties and to comply with our existing license agreements and collaboration agreements;
- the ability and willingness of our third-party research institution collaborators to continue research and development activities relating to our product candidates;
- our ability to commercialize our products in light of the intellectual property rights of others;
- our ability to obtain funding for our operations, including funding necessary to complete further development and commercialization of our product candidates;
- the scalability and commercial viability of our manufacturing methods and processes;
- the commercialization of our product candidates, if approved;
- our plans to research, develop, and commercialize our product candidates;
- the potential benefits of our existing collaboration with Seattle Genetics and our ability to attract other collaborators with development, regulatory, and commercialization expertise;
- future agreements with third parties in connection with the commercialization of our product candidates and any other approved product;
- the size and growth potential of the markets for our product candidates, and our ability to serve those markets;
- the rate and degree of market acceptance of our product candidates;
- the pricing and reimbursement of our product candidates, if approved;
- regulatory developments in the United States and foreign countries;
- our ability to contract with third-party suppliers and manufacturers and their ability to perform adequately;
- the success of competing therapies that are or may become available;
- our ability to attract and retain key scientific or management personnel;
- the accuracy of our estimates regarding expenses, future revenue, capital requirements, and needs for additional financing;

- our expectations regarding the period during which we qualify as an emerging growth company under the JOBS Act;
- our use of the proceeds from this offering; and
- our expectations regarding our ability to obtain and maintain intellectual property protection for our product candidates.

In some cases, forward-looking statements can be identified by terminology, such as “may,” “should,” “expects,” “intends,” “plans,” “anticipates,” “believes,” “estimates,” “predicts,” “potential,” “continue,” or the negative of these terms or other comparable terminology. These statements are only predictions. You should not place undue reliance on forward-looking statements because they involve known and unknown risks, uncertainties, and other factors, which are, in some cases, beyond our control and which could materially affect results. Factors that may cause actual results to differ materially from current expectations include, among other things, those listed under “Risk Factors” and elsewhere in this prospectus. If one or more of these risks or uncertainties occur, or if our underlying assumptions prove to be incorrect, actual events or results may vary significantly from those implied or projected by the forward-looking statements. No forward-looking statement is a guarantee of future performance. You should read this prospectus and the documents that we reference in this prospectus and have filed with the Securities and Exchange Commission as exhibits to the registration statement, of which this prospectus is a part, completely and with the understanding that our actual future results may be materially different from any future results expressed or implied by these forward-looking statements.

The forward-looking statements in this prospectus represent our views as of the date of this prospectus. We anticipate that subsequent events and developments will cause our views to change. However, while we may elect to update these forward-looking statements at some point in the future, we have no current intention of doing so except to the extent required by applicable law. You should therefore not rely on these forward-looking statements as representing our views as of any date subsequent to the date of this prospectus.

USE OF PROCEEDS

We estimate that our net proceeds from the sale of shares of our common stock in this offering will be approximately $ million, or $ million if the underwriters exercise in full their option to purchase additional shares, assuming an initial public offering price of $ per share, which is the midpoint of the price range set forth on the cover page of this prospectus, and after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us.

A $1.00 increase (decrease) in the assumed initial public offering price of $ per share would increase (decrease) the net proceeds to us from this offering by $ million, assuming that the number of shares offered by us, as set forth on the cover page of this prospectus, remains the same and after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us. An increase (decrease) of 1,000,000 shares in the number of shares offered by us, as set forth on the cover page of this prospectus, would increase (decrease) the net proceeds to us from this offering by $ million, assuming no change in the assumed initial public offering price per share and after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us.

We currently estimate that we will use the net proceeds from this offering, together with our existing cash, cash equivalents, and marketable securities, as follows:

- approximately $ million to advance ACTR087 used in combination with rituximab for adult patients with r/r B cell non-Hodgkin lymphoma through the completion of our ongoing Phase I clinical trial;
- approximately $ million to fund a Phase II clinical trial of ACTR087 used in combination with rituximab for adult patients with r/r non-Hodgkin lymphoma who received prior CD19 CAR-T therapy;
- approximately $ million to advance ACTR707 used in combination with rituximab for adult patients with r/r B cell non-Hodgkin lymphoma through the completion of our Phase I clinical trial;
- approximately $ million to advance ACTR707 used in combination with trastuzumab through submission of an IND and to fund our Phase I clinical trial for this product candidate; and
- the remainder to develop any additional product candidates that we select, to expand headcount and internal capabilities, and for working capital and other general corporate purposes.

Based on our current plans, we believe that the net proceeds from this offering, together with our existing cash, cash equivalents, and marketable securities and available borrowings, will be sufficient to fund our operations for at least .

This expected use of the net proceeds from this offering represents our intentions based upon our current plans and business conditions. As of the date of this prospectus, we cannot predict with certainty all of the particular uses for the net proceeds to be received upon the closing of this offering or the amounts that we will actually spend on the uses set forth above. The amounts and timing of our actual expenditures and the extent of clinical development may vary significantly depending on numerous factors, including the progress of our development, the status of and results from preclinical studies or clinical trials we may commence in the future, as well as any collaborations that we may enter into with third parties for our product candidates, and any unforeseen cash needs. As a result, our management will retain broad discretion over the allocation of the net proceeds from this offering.

Pending our use of proceeds from this offering, we intend to invest the net proceeds in a variety of capital preservation instruments, including short-term, investment-grade, interest-bearing instruments and U.S. government securities.

DIVIDEND POLICY

We have never declared or paid cash dividends on our capital stock. We intend to retain all available funds and any future earnings to fund the growth and development of our business. We do not intend to pay cash dividends to our stockholders in the foreseeable future. In addition, pursuant to our loan and security agreement with Pacific West Bank (PWB), we are prohibited from paying cash dividends without the prior written consent of PWB. Moreover, any future indebtedness that we may incur could preclude us from paying dividends. Any future determination to pay dividends will be made at the discretion of our board of directors. Investors should not purchase our common stock with the expectation of receiving cash dividends.

CAPITALIZATION

The following table sets forth our cash, cash equivalents, and marketable securities and our capitalization as of September 30, 2017:

- on an actual basis;
- on a pro forma basis to give effect to the automatic conversion of all outstanding shares of our preferred stock into an aggregate of 20,771,850 shares of common stock upon the closing of this offering and the filing and effectiveness of our amended and restated certificate of incorporation; and
- on a pro forma as adjusted basis to give further effect to our issuance and sale of shares of our common stock in this offering at an assumed initial public offering price of $ per share, which is the midpoint of the price range set forth on the cover page of this prospectus, after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us.

The pro forma as adjusted information below is illustrative only, and our capitalization following the closing of this offering will be adjusted based on the actual initial public offering price and other terms of this offering determined at pricing. You should read this table together with our consolidated financial statements and the related notes appearing elsewhere in this prospectus and the "Selected Consolidated Financial Data" and "Management's Discussion and Analysis of Financial Condition and Results of Operations" sections of this prospectus.

	As of September 30, 2017		
	Actual	Pro Forma	Pro Forma As Adjusted
	(in thousands, except share and per share data)		
Cash, cash equivalents, and marketable securities	$ 48,360	$ 48,360	$
Redeemable convertible preferred stock (Series A and B), $0.001 par value; 20,791,407 shares authorized, 20,771,850 shares issued and outstanding, actual; no shares authorized, issued or outstanding, pro forma and pro forma as adjusted	$ 77,135	$ —	$
Stockholders' equity (deficit):			
Preferred stock, $0.001 par value; no shares authorized, issued or outstanding, actual; 10,000,000 shares authorized and no shares issued or outstanding, pro forma and pro forma as adjusted	—	—	
Common stock, $0.001 par value; 60,040,000 shares authorized, 16,004,580 shares issued and outstanding, actual; 150,000,000 shares authorized, 36,776,430 shares issued and outstanding, pro forma; 150,000,000 shares authorized, shares issued and outstanding, pro forma as adjusted	16	37	
Additional paid-in capital	2,004	79,118	
Accumulated other comprehensive loss	(24)	(24)	
Accumulated deficit	(44,649)	(44,649)	
Total stockholders' equity (deficit)	(42,653)	34,482	
Total capitalization	$ 34,482	$ 34,482	$

A $1.00 increase (decrease) in the assumed initial public offering price of $ per share, which is the midpoint of the price range set forth on the cover page of this prospectus, would increase (decrease) the pro forma as adjusted amount of each of cash, cash equivalents, and marketable securities, additional paid-in capital,

total stockholders' equity, and total capitalization by $ million, assuming that the number of shares offered by us, as set forth on the cover page of this prospectus, remains the same and after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us. An increase (decrease) of 1,000,000 shares in the number of shares offered by us, as set forth on the cover page of this prospectus, would increase (decrease) the pro forma as adjusted amount of each of cash, cash equivalents, and marketable securities, additional paid-in capital, total stockholders' equity, and total capitalization by $ million, assuming no change in the assumed initial public offering price per share and after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us.

The table above does not include:

- 4,222,979 shares of our common stock issuable upon the exercise of stock options outstanding as of September 30, 2017, at a weighted average exercise price of $1.82 per share;
- 2,280,441 shares of our common stock available for future issuance as of September 30, 2017 under our 2015 Stock Incentive Plan, as amended, which will become available for issuance under our 2018 Stock Option and Incentive Plan (2018 Plan) upon effectiveness of the 2018 Plan;
- shares of our common stock reserved for future issuance under our 2018 Plan, which will become effective upon the effectiveness of the registration statement of which this prospectus is a part; and
- shares of our common stock reserved for future issuance under our 2018 Employee Stock Purchase Plan, which will become effective upon the effectiveness of the registration statement of which this prospectus is a part.

DILUTION

If you invest in our common stock in this offering, your ownership interest will be diluted immediately to the extent of the difference between the initial public offering price per share of our common stock and the pro forma as adjusted net tangible book value per share of our common stock after this offering.

Our historical net tangible book value (deficit) as of September 30, 2017 was $(42.8) million, or $(2.67) per share of common stock. Our historical net tangible book value (deficit) is the amount of our total tangible assets less our total liabilities and the carrying value of our preferred stock, which is not included within stockholders' equity (deficit). Historical net tangible book value (deficit) per share represents historical net tangible book value (deficit) divided by the 16,004,580 shares of common stock outstanding as of September 30, 2017.

Our pro forma net tangible book value as of September 30, 2017 was $34.3 million, or $0.93 per share of common stock. Pro forma net tangible book value represents the amount of our total tangible assets less our total liabilities, after giving effect to the automatic conversion of all outstanding shares of our preferred stock into an aggregate of 20,771,850 shares of common stock upon the closing of this offering. Pro forma net tangible book value per share represents pro forma net tangible book value divided by the total number of shares outstanding as of September 30, 2017, after giving effect to the pro forma adjustment described above.

After giving further effect to our issuance and sale of shares of our common stock in this offering at an assumed initial public offering price of $ per share, which is the midpoint of the price range set forth on the cover page of this prospectus, and after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us, our pro forma as adjusted net tangible book value as of September 30, 2017 would have been $ million, or $ per share. This represents an immediate increase in pro forma as adjusted net tangible book value per share of $ to existing stockholders and immediate dilution of $ in pro forma as adjusted net tangible book value per share to new investors purchasing common stock in this offering. Dilution per share to new investors is determined by subtracting pro forma as adjusted net tangible book value per share after this offering from the assumed initial public offering price per share paid by new investors. The following table illustrates this dilution on a per share basis:

Assumed initial public offering price per share		$
Historical net tangible book value (deficit) per share as of September 30, 2017	$(2.67)	
Increase per share attributable to the pro forma adjustment described above	3.60	
Pro forma net tangible book value per share as of September 30, 2017	0.93	
Increase in pro forma as adjusted net tangible book value per share attributable to new investors purchasing common stock in this offering		
Pro forma as adjusted net tangible book value per share after this offering		
Dilution per share to new investors purchasing common stock in this offering		$

The dilution information discussed above is illustrative only and will change based on the actual initial public offering price and other terms of this offering determined at pricing. A $1.00 increase (decrease) in the assumed initial public offering price of $ per share, which is the midpoint of the price range set forth on the cover page of this prospectus, would increase (decrease) our pro forma as adjusted net tangible book value per share after this offering by $ and dilution per share to new investors purchasing common stock in this offering by $, assuming that the number of shares offered by us, as set forth on the cover page of this prospectus, remains the same and after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us. An increase of 1,000,000 shares in the number of shares offered by us, as set forth on the cover page of this prospectus, would increase our pro forma as adjusted net tangible book value per share after this offering by $ and decrease the dilution per share to new investors purchasing common stock in this offering by $, assuming no change in the assumed initial public offering price per

share and after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us. A decrease of 1,000,000 shares in the number of shares offered by us, as set forth on the cover page of this prospectus, would decrease our pro forma as adjusted net tangible book value per share after this offering by $ and increase the dilution per share to new investors purchasing common stock in this offering by $, assuming no change in the assumed initial public offering price and after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us.

If the underwriters exercise their option to purchase additional shares in full, our pro forma as adjusted net tangible book value per share after this offering would be $, representing an immediate increase in pro forma as adjusted net tangible book value per share of $ to existing stockholders and immediate dilution in pro forma as adjusted net tangible book value per share of $ to new investors purchasing common stock in this offering, assuming an initial public offering price of $ per share, which is the midpoint of the price range set forth on the cover page of this prospectus, and after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us.

The following table summarizes, as of September 30, 2017, on the pro forma as adjusted basis described above, the total number of shares of common stock purchased from us on an as converted to common stock basis, the total consideration paid or to be paid, and the average price per share paid or to be paid by existing stockholders and by new investors in this offering at an assumed initial public offering price of $ per share, which is the midpoint of the price range set forth on the cover page of this prospectus, before deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us. As the table shows, new investors purchasing common stock in this offering will pay an average price per share substantially higher than our existing stockholders paid.

	Shares Purchased		Total Consideration		Average Price Per Share
	Number	Percent	Amount	Percentage	
Existing stockholders	36,776,430	%	$77,312,515	%	$ 2.10
New investors					$
Total		100.0%	$	100.0%	

A $1.00 increase (decrease) in the assumed initial public offering price of $ per share, which is the midpoint of the price range set forth on the cover page of this prospectus, would increase (decrease) the total consideration paid by new investors by $ million and, in the case of an increase, would increase the percentage of total consideration paid by new investors by percentage points and, in the case of a decrease, would decrease the percentage of total consideration paid by new investors by percentage points, assuming that the number of shares offered by us, as set forth on the cover page of this prospectus, remains the same. An increase (decrease) of 1,000,000 shares in the number of shares offered by us, as set forth on the cover page of this prospectus, would increase (decrease) the total consideration paid by new investors by $ million and, in the case of an increase, would increase the percentage of total consideration paid by new investors by percentage points and, in the case of a decrease, would decrease the percentage of total consideration paid by new investors by percentage points, assuming no change in the assumed initial public offering price.

The table above assumes no exercise of the underwriters' option to purchase additional shares in this offering. If the underwriters' option to purchase additional shares is exercised in full, the number of shares of our common stock held by existing stockholders would be reduced to % of the total number of shares of our common stock outstanding after this offering, and the number of shares of common stock held by new investors purchasing common stock in this offering would be increased to % of the total number of shares of our common stock outstanding after this offering.

The number of shares purchased from us by existing stockholders is based on 36,776,430 shares of our common stock outstanding as of September 30, 2017, after giving effect to the automatic conversion of all

outstanding shares of our preferred stock into an aggregate of 20,771,850 shares of common stock upon the closing of this offering, and excludes:

- 4,222,979 shares of our common stock issuable upon the exercise of stock options outstanding as of September 30, 2017, at a weighted average exercise price of $1.82 per share;
- 2,280,441 shares of our common stock available for future issuance as of September 30, 2017 under our 2015 Stock Incentive Plan, as amended, which will become available for issuance under our 2018 Stock Option and Incentive Plan (2018 Plan) upon effectiveness of the 2018 Plan;
- shares of our common stock reserved for future issuance under our 2018 Plan, which will become effective upon the effectiveness of the registration statement of which this prospectus is a part; and
- shares of our common stock reserved for future issuance under our 2018 Employee Stock Purchase Plan, which will become effective upon the effectiveness of the registration statement of which this prospectus is a part.

To the extent that outstanding stock options are exercised, new stock options are issued, or we issue additional shares of common stock in the future, there will be further dilution to new investors. In addition, we may choose to raise additional capital because of market conditions or strategic considerations, even if we believe that we have sufficient funds for our current or future operating plans. If we raise additional capital through the sale of equity or convertible debt securities, the issuance of these securities could result in further dilution to our stockholders.

SELECTED CONSOLIDATED FINANCIAL DATA

You should read the following selected consolidated financial data together with our consolidated financial statements and the related notes appearing elsewhere in this prospectus and the "Management's Discussion and Analysis of Financial Condition and Results of Operations" section of this prospectus. We have derived the consolidated statement of operations data for the years ended December 31, 2015 and 2016 and the consolidated balance sheet data as of December 31, 2015 and 2016 from our audited consolidated financial statements appearing elsewhere in this prospectus. The consolidated statement of operations data for the nine months ended September 30, 2016 and 2017 and the consolidated balance sheet data as of September 30, 2017 have been derived from our unaudited consolidated financial statements appearing elsewhere in this prospectus and have been prepared on the same basis as the audited consolidated financial statements. In the opinion of management, the unaudited data reflects all adjustments, consisting only of normal recurring adjustments, necessary for a fair statement of the financial information in those statements. Our historical results are not necessarily indicative of the results that may be expected in the future, and our results for any interim period are not necessarily indicative of results that may be expected for any full year.

	Year Ended December 31,		Nine Months Ended September 30,	
	2015	2016	2016	2017
	(in thousands, except per share data)			
Consolidated Statement of Operations Data:				
Collaboration revenue	$ 2,986	$ 6,355	$ 4,608	$ 6,237
Operating expenses:				
Research and development	6,852	21,992	15,296	22,270
General and administrative	2,726	3,433	2,599	3,239
Total operating expenses	9,578	25,425	17,895	25,509
Loss from operations	(6,592)	(19,070)	(13,287)	(19,272)
Other income (expense):				
Interest income	—	265	179	287
Other income, net	—	681	681	183
Total other income, net	—	946	860	470
Net loss	(6,592)	(18,124)	(12,427)	(18,802)
Accretion of redeemable convertible preferred stock to redemption value	(43)	(64)	(49)	(49)
Net loss attributable to common stockholders	$ (6,635)	$ (18,188)	$ (12,476)	$ (18,851)
Net loss per share attributable to common stockholders, basic and diluted(1)	$ (0.41)	$ (1.14)	$ (0.78)	$ (1.18)
Weighted average common shares outstanding, basic and diluted(1)	16,000	16,000	16,000	16,001
Pro forma net loss per share attributable to common stockholders, basic and diluted (unaudited)(2)		$ (0.49)		$ (0.51)
Pro forma weighted average common shares outstanding, basic and diluted (unaudited)(2)		36,772		36,773

(1) See Note 13 to our consolidated financial statements appearing elsewhere in this prospectus for details on the calculation of basic and diluted net loss per share attributable to common stockholders.

(2) See Note 13 to our consolidated financial statements appearing elsewhere in this prospectus for details on the calculation of basic and diluted pro forma net loss per share attributable to common stockholders.

	As of December 31,		As of September 30,
	2015	2016	2017
	(in thousands)		
Consolidated Balance Sheet Data:			
Cash, cash equivalents, and marketable securities	$90,430	$ 68,508	$ 48,360
Working capital(1)	83,809	60,995	39,925
Total assets	94,771	75,550	56,393
Redeemable convertible preferred stock	77,022	77,086	77,135
Total stockholders' deficit	(7,502)	(24,698)	(42,653)

(1) We define working capital as current assets less current liabilities.

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 the "Selected Consolidated Financial Data" section of this prospectus and our consolidated financial statements and related notes appearing elsewhere in this prospectus. Some of the information contained in this discussion and analysis or set forth elsewhere in this prospectus, including information with respect to our plans and strategy for our business and related financing, includes forward-looking statements that involve risks and uncertainties. As a result of many factors, including those factors set forth in the "Risk Factors" section of this prospectus, our actual results could differ materially from the results described in or implied by the forward-looking statements contained in the following discussion and analysis.

Overview

We are a clinical-stage biopharmaceutical company focused on the development and commercialization of novel immunotherapy products designed to harness the power of a patient's immune system to cure cancer. Our proprietary technology, called antibody-coupled T cell receptor (ACTR), is a universal, engineered cell therapy that is intended to be used in combination with a wide range of tumor-specific antibodies to target different tumor types. Our product candidates are composed of ACTR T cells co-administered with approved and commercially available antibodies or antibodies in preclinical or clinical development. Our vision is to use our ACTR platform to transform cancer treatment and deliver patient cures in many different hematologic and solid tumor cancers, improving upon current cell therapies.

In our ongoing Phase I clinical trial using our lead ACTR construct, ACTR087, to treat adult patients with relapsed or refractory non-Hodgkin lymphoma (r/r NHL), we have demonstrated clinical proof of concept, as evidenced by ACTR T cell expansion and persistence, a favorable tolerability profile, and anti-tumor activity. We have recently completed patient enrollment into the dose escalation phase of this trial and are advancing towards testing in an expanded patient cohort using an optimized dose of ACTR087 to support potential registration trials.

Since our inception in 2014, we have focused significant efforts and financial resources on building our ACTR platform, establishing and protecting our intellectual property portfolio, conducting research and development of our product candidates, manufacturing drug product material for use in preclinical studies and clinical trials, staffing our company, and raising capital. We do not have any products approved for sale and have not generated any revenue from product sales. To date, we have funded our operations with proceeds from the sales of preferred stock and payments received under our collaboration agreement with Seattle Genetics, Inc. (Seattle Genetics). Through September 30, 2017, we had received gross proceeds of $77.3 million from the sales of our preferred stock and $31.0 million under our collaboration agreement with Seattle Genetics. Since our inception, we have incurred significant 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 product candidates. For the years ended December 31, 2015 and 2016, we reported a net loss of $6.6 million and $18.1 million, respectively, and for the nine months ended September 30, 2017, we reported a net loss of $18.8 million. As of September 30, 2017, we had an accumulated deficit of $44.6 million. We expect to continue to incur significant expenses and increasing operating losses for at least the next several years. We expect that our expenses and capital requirements will increase substantially in connection with our ongoing activities, particularly if and as we:

- conduct additional clinical trials for our product candidates;
- continue to discover and develop additional product candidates;
- acquire or in-license other product candidates and technologies;
- maintain, expand, and protect our intellectual property portfolio;

- hire additional clinical, scientific, and commercial personnel;
- establish manufacturing capabilities in-house;
- establish a commercial manufacturing source and secure supply chain capacity sufficient to provide commercial quantities of any product candidates for which we may obtain regulatory approval;
- seek regulatory approvals for any product candidates that successfully complete clinical trials;
- establish a sales, marketing, and distribution infrastructure to commercialize any products for which we may obtain regulatory approval; and
- add operational, financial, and management information systems and personnel, including personnel to support our product development and planned future commercialization efforts, as well as to support our transition to a public reporting company.

We will not generate revenue from product sales unless and until we successfully complete clinical development and obtain regulatory approval for our product candidates. If we obtain regulatory approval for any of our product candidates and do not enter into a commercialization partnership, we expect to incur significant expenses related to developing our internal commercialization capability to support product sales, marketing, and distribution. Further, upon the closing of this offering, we expect to incur additional costs associated with operating as a public company.

As a result, we will need substantial additional funding to support our continuing operations and pursue our growth strategy. Until such time as we can generate significant revenue from product sales, if ever, we expect to finance our operations through a combination of equity offerings, debt financings, collaborations, strategic alliances, and marketing, distribution, or licensing arrangements. We may be unable to raise additional funds or enter into such other agreements or arrangements when needed on favorable terms, or at all. If we fail to raise capital or enter into such agreements as, and when, needed, we may have to significantly delay, scale back, or discontinue the development and commercialization of one or more of our product candidates.

Because of the numerous risks and uncertainties associated with pharmaceutical product development, we are unable to accurately predict the timing or amount of increased expenses or when, or if, we will be able to achieve or maintain profitability. Even if we are able to generate product sales, we may not become profitable. If we fail to become profitable or are unable to sustain profitability on a continuing basis, then we may be unable to continue our operations at planned levels and be forced to reduce or terminate our operations.

As of September 30, 2017, we had cash, cash equivalents, and marketable securities of $48.4 million and available borrowings under our loan and security agreement of $15.0 million. We believe that the net proceeds from this offering, together with our existing cash, cash equivalents, and marketable securities and available borrowings under our loan and security agreement, will enable us to fund our operating expenses and capital expenditure requirements through . See "—Liquidity and Capital Resources."

Components of Our Results of Operations

Revenue

To date, we have not generated any revenue from product sales and do not expect to generate any revenue from the sale of products in the near future. If our development efforts for our product candidates are successful and result in regulatory approval or additional license or collaboration agreements with third parties, we may generate revenue in the future from a combination of product sales or payments from additional collaboration or license agreements that we may enter into with third parties. We expect that our revenue for the next several years will be derived primarily from a collaboration we entered into with Seattle Genetics in June 2015 as well as any additional collaborations that we may enter into in the future. We cannot provide assurance as to the timing of future milestone or royalty payments or that we will receive any of these payments at all.

Collaboration with Seattle Genetics, Inc.

Our revenue during the years ended December 31, 2015 and 2016 and the nine months ended September 30, 2016 and 2017 was derived from our collaboration agreement with Seattle Genetics.

In June 2015, we entered into a collaboration agreement with Seattle Genetics whereby we and Seattle Genetics agreed to jointly develop two product candidates incorporating our ACTR platform and Seattle Genetics' antibodies. We received an upfront payment of $25.0 million and an equity investment of $5.0 million in the form of Series B preferred stock, with terms consistent with those of other investors that purchased our Series B preferred stock in June 2015. The equity investment of $5.0 million was made at fair value and was considered to be distinct from the collaboration agreement. The agreement included an option, held by Seattle Genetics, to expand the collaboration to include a third product candidate upon payment of an additional fee. This option expired unexercised in June 2017.

Under the agreement, we will conduct preclinical research and clinical development activities related to the two specified product candidates through Phase I clinical development, and Seattle Genetics will provide all of the funding for those activities. Seattle Genetics will continue development activities of the two specified product candidates in collaboration with us unless it exercises one of its two options to opt-out from further development and commercialization activities for each of the two product candidates during specified periods subsequent to Phase I clinical development. In addition, we have an option to opt-out from further development and commercialization activities for each of the two product candidates, exercisable during a specified period subsequent to Phase II clinical development. If neither party exercises its options to opt-out from further development and commercialization activities for each product candidate, the parties will work together to co-develop and fund each product candidate after Phase I clinical development and Seattle Genetics will pay us specified collaboration and milestone payments upon the occurrence of specified events related to each product candidate. As of September 30, 2017, we were eligible to receive future collaboration and milestone payments under the collaboration agreement of up to an aggregate of $400.0 million across the two active product candidates, consisting of $100.0 million of aggregate collaboration payments, $100.0 million of aggregate regulatory milestone payments, and $200.0 million of aggregate commercial milestone payments. The individual collaboration payments are payable upon the occurrence of specified clinical development events and range up to $30.0 million per product candidate. The individual regulatory milestone payments are payable upon the first regulatory approval of each product in the United States and the first regulatory approval of each product in specified territories outside the United States and range up to $35.0 million per product. The individual commercial milestone payments are payable upon the achievement of specified aggregate annual net sales for each product and range up to $60.0 million per product.

In the event that a party exercises its option to opt-out from further development and commercialization of a product candidate, the parties will negotiate in good faith the payment obligations of the continuing party to the opt-out party for that product candidate. Unless either party exercises its right to opt-out from further development and commercialization activities, we and Seattle Genetics will co-commercialize and share profits and losses equally on any co-developed products in the United States. Seattle Genetics will retain exclusive commercial rights outside of the United States and is obligated to pay us tiered royalties ranging in the high single-digit to mid-teens percentages based on net sales outside of the United States. The royalties are payable on a product-by-product basis and may be reduced in specified circumstances. Seattle Genetics will purchase ACTR T cells from us on a cost-plus basis for its commercial supply outside of the United States. We are recognizing the $25.0 million upfront payment as revenue on a straight-line basis over the estimated period of performance, which is the term of our preclinical research and clinical development activities related to the two specified product candidates through Phase I clinical development. As payments from Seattle Genetics are earned related to our preclinical research and clinical development activities through Phase I clinical development, we recognize as revenue the portion of the payments equal to the percentage of the elapsed research and development term to the total estimated research and development term, with the remaining portion of consideration received being recognized over the remaining estimated period of performance on a straight-line

basis. Our initial estimate of the period of performance was approximately 58 months, which as of September 30, 2017 had not changed.

Under the collaboration agreement, we recognized revenue of $3.0 million and $6.4 million for the years ended December 31, 2015 and 2016, respectively, and $4.6 million and $6.2 million for the nine months ended September 30, 2016 and 2017, respectively.

Effective January 1, 2018, we will be required to adopt a new revenue recognition standard, which will change the manner in which we recognize revenue from our collaboration agreement with Seattle Genetics. See "—Critical Accounting Policies and Significant Judgments and Estimates—Revenue Recognition and Collaboration Agreements."

Operating Expenses

Research and Development Expenses

Research and development expenses consist primarily of costs incurred for our research activities, including our drug discovery efforts, and the development of our product candidates, which include:

- employee-related expenses, including salaries, related benefits, and stock-based compensation expense for employees engaged in research and development functions;
- expenses incurred in connection with the preclinical and clinical development of our product candidates, including under agreements with third parties, such as consultants and contractors and contract research organizations (CROs);
- the cost of manufacturing drug products for use in our preclinical studies and clinical trials, including under agreements with third parties, such as consultants and contractors and contract manufacturing organizations (CMOs);
- laboratory supplies and animal care;
- facilities, depreciation, and other expenses, which include direct and allocated expenses for rent and maintenance of facilities and insurance; and
- payments made under third-party licensing agreements.

We expense research and development costs as incurred. Any nonrefundable advance payments that we make for goods or services to be received in the future for use in research and development activities are recorded as prepaid expenses. The prepaid amounts are expensed as the related goods are delivered or the services are performed.

Our direct external research and development expenses are tracked on a program-by-program basis and consist of costs, such as fees paid to consultants, contractors, CMOs, and CROs in connection with our preclinical and clinical development activities. We do not allocate employee costs, costs associated with our research programs, laboratory supplies, or facility expenses, including depreciation or other indirect costs, to specific product development programs because these costs are deployed across multiple product development programs and, as such, are not separately classified. The table below summarizes our research and development expenses incurred by development program:

	Year Ended December 31,		Nine Months Ended September 30,	
	2015	2016	2016	2017
	(in thousands)			
ACTR087 used in combination with rituximab	$ 2,139	$ 5,699	$ 3,620	$ 5,711
ACTR707 used in combination with rituximab	—	—	—	1,365
ACTR087 used in combination with SEA-BCMA	—	—	—	1,385
Unallocated expenses	4,713	16,293	11,676	13,809
Total research and development expenses	$ 6,852	$ 21,992	$ 15,296	$ 22,270

Product candidates in later stages of clinical development generally have higher development costs than those in earlier stages of clinical development, primarily due to the increased size and duration of later-stage clinical trials. We expect that our research and development expenses will increase substantially in connection with our planned clinical and preclinical development activities in the near term and in the future. At this time, we cannot reasonably estimate or know the nature, timing, and costs of the efforts that will be necessary to complete the preclinical and clinical development of any of our product candidates. The successful development and commercialization of our product candidates is highly uncertain. This is due to the numerous risks and uncertainties associated with product development and commercialization, including the following:

- the timing and progress of preclinical and clinical development activities;
- the number and scope of preclinical and clinical programs we decide to pursue;
- the progress of the development efforts of parties with whom we have entered, or may enter, into collaboration arrangements;
- our ability to maintain our current research and development programs and to establish new ones;
- our ability to establish new licensing or collaboration arrangements;
- the successful completion of clinical trials with safety, tolerability, and efficacy profiles that are satisfactory to the U.S. Food and Drug Administration (FDA) or any comparable foreign regulatory authority;
- the receipt of regulatory approvals from applicable regulatory authorities;
- the success in establishing and operating a manufacturing facility, or securing manufacturing supply through relationships with third parties;
- our ability to obtain and maintain patents, trade secret protection, and regulatory exclusivity, both in the United States and internationally;
- our ability to protect our rights in our intellectual property portfolio;
- the commercialization of our product candidates, if and when approved;
- the acceptance of our product candidates, if approved, by patients, the medical community, and third-party payors;
- competition with other products; and
- a continued acceptable safety profile of our therapies following approval.

A change in the outcome of any of these variables with respect to the development of any of our product candidates could significantly change the costs and timing associated with the development of that product candidate. We may never succeed in obtaining regulatory approval for any of our product candidates.

General and Administrative Expenses

General and administrative expenses consist primarily of salaries and related costs, including stock-based compensation, for personnel in executive, finance, and administrative functions. General and administrative expenses also include direct and allocated facility-related costs as well as professional fees for legal, patent, consulting, investor and public relations, accounting, and audit services. We anticipate that our general and administrative expenses will increase in the future as we increase our headcount to support our continued research activities and development of our product candidates. We also anticipate that we will incur increased accounting, audit, legal, regulatory, compliance, and director and officer insurance costs as well as investor and public relations expenses associated with operating as a public company.

Other Income (Expense)

Interest Income

Interest income consists of interest earned on our cash equivalents and marketable securities balances. Our interest income has not been significant due to low interest earned on invested balances.

Other Income, Net

Other income, net consists of miscellaneous income and expense unrelated to our core operations, primarily income from subleasing a portion of our headquarters facilities. We expect this income to decrease as the current sublease of a portion of our facilities is for a smaller amount of space than in prior periods.

Income Taxes

Since our inception, we have not recorded any income tax benefits for the net losses we have incurred in each year or for our earned research and development tax credits, as we believe, based upon the weight of available evidence, that it is more likely than not that all of our net operating loss carryforwards and tax credits will not be realized. As of December 31, 2016, we had U.S. federal and state net operating loss carryforwards of $4.5 million and $4.2 million, respectively, which may be available to offset future income tax liabilities and begin to expire in 2034. As of December 31, 2016, we also had U.S. federal and state research and development tax credit carryforwards of $1.0 million and $0.5 million, respectively, which begin to expire in 2034 and 2029, respectively. We have recorded a full valuation allowance against our net deferred tax assets at each balance sheet date.

Results of Operations

Comparison of the Nine Months Ended September 30, 2016 and 2017

The following table summarizes our results of operations for the nine months ended September 30, 2016 and 2017:

	Nine Months Ended September 30,		
	2016	2017	Change
	(in thousands)		
Collaboration revenue	$ 4,608	$ 6,237	$ 1,629
Operating expenses:			
Research and development	15,296	22,270	6,974
General and administrative	2,599	3,239	640
Total operating expenses	17,895	25,509	7,614
Loss from operations	(13,287)	(19,272)	(5,985)
Other income (expense):			
Interest income	179	287	108
Other income, net	681	183	(498)
Total other income, net	860	470	(390)
Net loss	$ (12,427)	$ (18,802)	$(6,375)

Collaboration Revenue

Collaboration revenue recognized during the nine months ended September 30, 2016 and 2017 of $4.6 million and $6.2 million, respectively, was due to the recognition of a portion of the $25.0 million upfront payment received from Seattle Genetics under our collaboration agreement as well as reimbursements of research and development costs by Seattle Genetics, both of which are being recognized as revenue on a straight-line basis over the estimated period of performance of our research and development obligations.

Research and Development Expenses

	Nine Months Ended September 30,		
	2016	2017	Change
	(in thousands)		
Direct external research and development expenses by program:			
ACTR087 used in combination with rituximab	$ 3,620	$ 5,711	$2,091
ACTR707 used in combination with rituximab	—	1,365	1,365
ACTR087 used in combination with SEA-BCMA	—	1,385	1,385
Unallocated expenses:			
Personnel related (including stock-based compensation)	5,645	7,494	1,849
Laboratory supplies, facility related and other	6,031	6,315	284
Total research and development expenses	$ 15,296	$ 22,270	$6,974

Research and development expenses were $15.3 million for the nine months ended September 30, 2016, compared to $22.3 million for the nine months ended September 30, 2017. The increase in direct external costs related to our ACTR087 used in combination with rituximab program of $2.1 million was primarily due to an increase in clinical trial costs related to our Phase I clinical trial of ACTR087 used in combination with rituximab, which we refer to as ATTCK-20-2, which commenced in the fourth quarter of 2016. Direct external costs incurred for our ACTR707 used in combination with rituximab and ACTR087 used in combination with SEA-BCMA programs primarily related to costs incurred in connection with the preparation of our investigational new drug application (IND) filings for those product candidates with the FDA in April 2017 and July 2017, respectively, and costs related to preparation for planned clinical trials. We are developing our ACTR087 used in combination with SEA-BCMA product candidate in conjunction with Seattle Genetics.

The increase in personnel-related costs of $1.8 million included in unallocated expenses was due to an increase in headcount in our research and development function, including personnel engaged in our Seattle Genetics collaboration. Personnel-related costs for the nine months ended September 30, 2016 and 2017 included stock-based compensation expense of $0.6 million and $0.8 million, respectively. The increase in laboratory supplies, facility-related, and other costs of $0.3 million was primarily due to increased external consultant costs supporting all of our programs.

General and Administrative Expenses

General and administrative expenses for the nine months ended September 30, 2016 were $2.6 million, compared to $3.2 million for the nine months ended September 30, 2017. The increase in general and administrative expenses was primarily due to an increase in professional and consultant fees of $0.4 million related to increased patent costs, audit fees and a market research study and an increase in personnel-related costs of $0.2 million as a result of an increase in headcount in our general and administrative function.

Interest Income

Interest income for the nine months ended September 30, 2016 was $0.2 million, compared to $0.3 million for the nine months ended September 30, 2017. The increase in interest income was due to investing our cash for a longer duration in 2017 than in 2016.

Other Income, Net

Other income, net for the nine months ended September 30, 2016 was $0.7 million, compared to $0.2 million for the nine months ended September 30, 2017. The decrease in other income, net was primarily due to a decrease in sublease income as the sublease of a portion of our facilities was for a smaller amount of space compared to the prior period.

Comparison of the Years Ended December 31, 2015 and 2016

The following table summarizes our results of operations for the years ended December 31, 2015 and 2016:

	Year Ended December 31,		
	2015	2016	Change
	(in thousands)		
Collaboration revenue	$ 2,986	$ 6,355	$ 3,369
Operating expenses:			
Research and development	6,852	21,992	15,140
General and administrative	2,726	3,433	707
Total operating expenses	9,578	25,425	15,847
Loss from operations	(6,592)	(19,070)	(12,478)
Other income (expense):			
Interest income	—	265	265
Other income, net	—	681	681
Total other income, net	—	946	946
Net loss	$ (6,592)	$ (18,124)	$ (11,532)

Collaboration Revenue

Collaboration revenue recognized during the years ended December 31, 2015 and 2016 of $3.0 million and $6.4 million, respectively, was due to the recognition of a portion of the $25.0 million upfront payment received from Seattle Genetics under our collaboration agreement as well as reimbursements of research and development costs by Seattle Genetics, both of which are being recognized as revenue on a straight-line basis over the estimated period of performance of our research and development obligations.

Research and Development Expenses

	Year Ended December 31,		
	2015	2016	Change
	(in thousands)		
Direct external research and development expenses by program:			
ACTR087 used in combination with rituximab	$ 2,139	$ 5,699	$ 3,560
Unallocated expenses:			
Personnel related (including stock-based compensation)	2,399	7,831	5,432
Laboratory supplies, facility related and other	2,314	8,462	6,148
Total research and development expenses	$ 6,852	$ 21,992	$ 15,140

Research and development expenses were $6.9 million for the year ended December 31, 2015, compared to $22.0 million for the year ended December 31, 2016. The increase in direct external costs related to our

ACTR087 used in combination with rituximab program of $3.6 million was primarily due to costs incurred to support our IND filing for that product candidate with the FDA and initiation of our first dose level in Phase I of ATTCK-20-2, which commenced in the fourth quarter of 2016, including costs resulting from validation of the manufacturing process, further development of our formulation, and the manufacture of clinical supply.

The increase in personnel-related costs of $5.4 million included in unallocated expenses was due to an increase in headcount in our research and development function, including personnel engaged in our Seattle Genetics collaboration. Personnel-related costs for the years ended December 31, 2015 and 2016 included stock-based compensation expense of $0.1 million and $0.8 million, respectively. The increase in laboratory supplies, facility-related, and other costs of $6.1 million was primarily due to rent expense for our new laboratory space and the increased costs of supporting a larger group of research and development personnel and their research efforts.

General and Administrative Expenses

General and administrative expenses for the year ended December 31, 2015 were $2.7 million, compared to $3.4 million for the year ended December 31, 2016. The increase in general and administrative expenses of $0.7 million was primarily due to an increase in personnel-related costs of $0.6 million as a result of an increase in headcount in our general and administrative function and an increase in facility-related costs of $0.3 million due primarily to rent expense for our new headquarters facilities, partially offset by a decrease in professional fees of $0.2 million.

Interest Income

Interest income for the year ended December 31, 2016 was $0.3 million. Interest income was due to interest earned on our cash equivalents and marketable securities. We did not invest our cash during 2015.

Other Income, Net

Other income, net for year ended December 31, 2016 was $0.7 million. Other income, net consisted primarily of income from subleasing a portion of our headquarters facilities.

Liquidity and Capital Resources

Since our inception, we have incurred significant operating losses. We have generated limited revenue to date from funding arrangements with our collaboration partner. We have not yet commercialized any of our product candidates and we do not expect to generate revenue from sales of any product candidates for several years, if at all. To date, we have funded our operations with proceeds from the sales of preferred stock and payments received under a collaboration agreement. Through September 30, 2017, we had received gross proceeds of $77.3 million from our sales of preferred stock and $31.0 million under our collaboration agreement. As of September 30, 2017, we had cash, cash equivalents, and marketable securities of $48.4 million and available borrowings under our loan and security agreement of $15.0 million.

Cash Flows

The following table summarizes our sources and uses of cash for each of the periods presented:

	Year Ended December 31,		Nine Months Ended September 30,	
	2015	2016	2016	2017
	(in thousands)			
Cash provided by (used in) operating activities	$ 17,716	$ (18,640)	$ (13,982)	$ (19,319)
Cash provided by (used in) investing activities	(3,249)	(30,429)	(45,996)	8,663
Cash provided by (used in) financing activities	70,752	(40)	—	5
Net increase (decrease) in cash and cash equivalents	$ 85,219	$ (49,109)	$ (59,978)	$ (10,651)

Operating Activities

During the nine months ended September 30, 2017, operating activities used $19.3 million of cash, primarily resulting from our net loss of $18.8 million and net cash used by changes in our operating assets and liabilities of $2.3 million, partially offset by net non-cash charges of $1.8 million. Net cash used by changes in our operating assets and liabilities for the nine months ended September 30, 2017 consisted primarily of a $2.6 million decrease in deferred revenue and increases of $0.6 million in both accounts receivable and prepaid expenses and other current assets, all partially offset by a $1.5 million increase in accounts payable and accrued expenses and other current liabilities.

During the nine months ended September 30, 2016, operating activities used $14.0 million of cash, primarily resulting from our net loss of $12.4 million and net cash used by changes in our operating assets and liabilities of $2.9 million, partially offset by net non-cash charges of $1.3 million. Net cash used by changes in our operating assets and liabilities for the nine months ended September 30, 2016 consisted of a $2.3 million decrease in deferred revenue, a $0.5 million increase in accounts receivable, and a $0.4 million increase in prepaid expenses and other current assets, all partially offset by a $0.2 million increase in deferred rent and a $0.1 million increase in accounts payable and accrued expenses and other current liabilities.

During the year ended December 31, 2016, operating activities used $18.6 million of cash, primarily resulting from our net loss of $18.1 million and net cash used by changes in our operating assets and liabilities of $2.3 million, partially offset by net non-cash charges of $1.8 million. Net cash used by changes in our operating assets and liabilities for the year ended December 31, 2016 consisted primarily of a $3.1 million decrease in deferred revenue and a $0.6 million increase in accounts receivable, both partially offset by a $1.1 million increase in accounts payable and accrued expenses and other current liabilities and a $0.2 million increase in deferred rent.

During the year ended December 31, 2015, operating activities provided $17.7 million of cash, primarily resulting from net cash provided by changes in our operating assets and liabilities of $23.9 million and non-cash charges of $0.4 million, partially offset by our net loss of $6.6 million. Net cash provided by changes in our operating assets and liabilities for the year ended December 31, 2015 consisted of a $22.6 million increase in deferred revenue, a $1.2 million increase in accounts payable and accrued expenses and other current liabilities, and a $0.7 million increase in deferred rent, all partially offset by increases of $0.3 million in both accounts receivable and prepaid expenses and other current assets.

In June 2015, we received an upfront payment of $25.0 million from Seattle Genetics under our collaboration agreement. At that time, we recorded the $25.0 million as deferred revenue, to be subsequently recognized as revenue on a straight-line basis over our period of performance. Changes in deferred revenue in all periods were due to the initial recording of and increases to the amount of deferred revenue from payments from Seattle Genetics as well as the subsequent recognition as revenue of a portion of the deferred revenue.

Changes in accounts payable, accrued expenses, and prepaid expenses in all periods were generally due to growth in our business, the advancement of our product candidates, and the timing of vendor invoicing and payments.

Investing Activities

During the nine months ended September 30, 2017, net cash provided by investing activities was $8.7 million, consisting primarily of maturities and sales of marketable securities of $16.0 million, partially offset by purchases of marketable securities of $6.5 million and purchases of property and equipment of $0.8 million.

During the nine months ended September 30, 2016, net cash used by investing activities was $46.0 million, consisting primarily of purchases of marketable securities of $52.7 million and purchases of property and equipment of $2.8 million, partially offset by maturities and sales of marketable securities of $9.5 million.

During the year ended December 31, 2016, net cash used by investing activities was $30.4 million, consisting primarily of purchases of marketable securities of $55.2 million and purchases of property and equipment of $3.3 million, partially offset by maturities and sales of marketable securities of $28.0 million.

During the year ended December 31, 2015, net cash used by investing activities was $3.2 million, consisting of purchases of property and equipment of $2.0 million and changes in restricted cash of $1.3 million. The change in restricted cash was due to a letter of credit associated with the lease of our headquarters facility entered into in 2015.

Financing Activities

During the nine months ended September 30, 2017, net cash provided by financing activities was less than $0.1 million.

We did not use any cash for financing activities during the nine months ended September 30, 2016.

During the year ended December 31, 2016, net cash used by financing activities was less than $0.1 million, consisting of debt issuance costs related to our loan and security agreement.

During the year ended December 31, 2015, net cash provided by financing activities was $70.8 million, consisting of net proceeds from the sales of preferred stock.

Loan and Security Agreement

In January 2017, we entered into a loan and security agreement with Pacific West Bank, which provides for term loan borrowings of up to $15.0 million through January 19, 2019. Borrowings under the loan and security agreement bear interest at a variable annual rate equal to the greater of (i) the prime rate plus 0.25% or (ii) 3.75%, and are payable over an interest-only period until January 19, 2019, followed by a 24-month period of equal monthly payments of principal and interest. All amounts outstanding as of the maturity date of January 19, 2021 become immediately due and payable.

In connection with the loan and security agreement, we agreed to enter into warrant agreements with the lender pursuant to which warrants will be issued to purchase a number of shares of our capital stock equal to 1% of the amount of each term loan borrowing under the loan and security agreement, divided by the applicable exercise price.

No amounts had been borrowed as term loans under the loan and security agreement as of September 30, 2017 or January 31, 2018.

Borrowings under the loan and security agreement are collateralized by substantially all of our assets, except for our intellectual property. Under the loan and security agreement, we have agreed to affirmative and negative covenants to which we will remain subject until maturity. These covenants include limitations on our ability to incur additional indebtedness and engage in certain fundamental business transactions, such as mergers or acquisitions of other businesses. There are no financial covenants associated with the loan and security agreement. Events of default under the loan and security agreement include failure to make payments when due, insolvency events, failure to comply with covenants, and material adverse effects with respect to us.

Funding Requirements

We expect our expenses to increase substantially in connection with our ongoing activities, particularly as we advance the preclinical activities and clinical trials for our product candidates in development. In addition, upon the closing of this offering, we expect to incur additional costs associated with operating as a public company. The timing and amount of our operating expenditures will depend largely on:

- the commencement, enrollment, or results of the planned clinical trials of our product candidates or any future clinical 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 FDA's issuance of a "refusal to file" letter or a request for additional information;
- adverse results or delays in clinical trials;
- our decision to initiate a clinical trial, not to initiate a clinical trial, or to terminate an existing clinical trial;
- adverse regulatory decisions, including failure to receive regulatory approval of our product candidates;
- changes in laws or regulations applicable to our products, including but not limited to clinical trial requirements for approvals;
- adverse developments concerning our manufacturers;
- our inability to obtain adequate product supply for any approved product or inability to do so at acceptable prices;
- our inability to establish collaborations if needed;
- our failure to commercialize our product candidates;
- additions or departures of key scientific or management personnel; and
- unanticipated serious safety concerns related to the use of our product candidates.

As of September 30, 2017, we had cash, cash equivalents, and marketable securities of $48.4 million and available borrowings under our loan and security agreement of $15.0 million. We believe that the net proceeds from this offering, together with our existing cash, cash equivalents, and marketable securities and available borrowings under our loan and security agreement, will enable us to fund our operating expenses and capital expenditure requirements through . We have based this estimate on assumptions that may prove to be wrong, and we could utilize our available capital resources sooner than we expect.

Until such time, if ever, as we can generate substantial product revenue, we expect to finance our operations through a combination of equity offerings, debt financings, collaborations, strategic alliances, and marketing, distribution, or licensing arrangements. To the extent that 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 common stockholder. Debt financing and preferred equity financing, if available, may involve agreements that include covenants limiting or restricting our ability to take specific actions, such as incurring additional debt, making acquisitions or capital expenditures, or declaring dividends. 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 technologies, future revenue streams, research programs or drug candidates, or grant licenses on terms that may not be favorable to us. If we are unable to raise additional funds through equity or debt financings or other arrangements when needed, we may be required to delay, limit, reduce, or terminate our research, product development, or future commercialization efforts, or grant rights to develop and market drug candidates that we would otherwise prefer to develop and market ourselves.

Contractual Obligations and Commitments

The following table summarizes our contractual obligations as of December 31, 2016 and the effects that such obligations are expected to have on our liquidity and cash flows in future periods:

	Payments Due by Period				
	Total	Less Than 1 Year	1 to 3 Years	4 to 5 Years	More Than 5 Years
	(in thousands)				
Operating lease commitments[1]	$12,135	$ 1,774	$ 3,704	$ 3,922	$ 2,735
Manufacturing commitment[2]	496	496	—	—	—
Total	$12,631	$ 2,270	$ 3,704	$ 3,922	$ 2,735

(1) Reflects payments due for our lease of office and laboratory space in Cambridge, Massachusetts under an operating lease agreement that expires in 2023.

(2) Reflects commitment for costs associated with our external CMO, which we engaged to manufacture drug product materials. Our manufacturing commitment includes non-cancelable minimum quantities to be purchased as of December 31, 2016. As of September 30, 2017, our non-cancelable commitment to purchase minimum quantities was $0.8 million.

Under our licensing agreement with National University of Singapore and St. Jude Children's Research Hospital, Inc., we have agreed to make milestone payments and pay royalties and annual license maintenance fees. We have not included any contingent payment obligations, such as milestones or royalties, in the table above as the amount, timing, and likelihood of such payments are not known. We have not included license maintenance fees in the table above because, although the amounts and timing are known, we cannot currently determine the final termination dates of the agreement and, as a result, we cannot determine the total amounts of such payments we will be required to make under the agreement. Under the agreement, we are obligated to make aggregate milestone payments of up to 5.5 million Singapore dollars (equivalent to approximately $4.0 million as of September 30, 2017) upon the achievement of specified clinical and regulatory milestones and to pay tiered royalties ranging in the low single-digit percentages on annual net sales of licensed products sold by us or our sublicensees. Additionally, under certain circumstances, we are obligated to pay a percentage of amounts received from sublicensees to the licensors. License maintenance fees are payable on each anniversary of the effective date of the agreement and escalate from less than $0.1 million for each of the first seven years to $0.1 million on the eighth anniversary and each year thereafter.

We enter into contracts in the normal course of business with CROs and other third parties for clinical trials and preclinical research studies and testing. These contracts provide for termination upon notice. Payments due upon cancellation consist only of payments for services provided and expenses incurred, including non-cancelable obligations of our service providers, up to the date of cancellation. These payments are not included in the table of contractual obligations and commitments above.

Critical Accounting Policies and Significant Judgments and Estimates

Our consolidated financial statements are prepared in accordance with generally accepted accounting principles in the United States (GAAP). The preparation of our consolidated financial statements and related disclosures requires us to make estimates and judgments that affect the reported amounts of assets, liabilities, revenue, costs and expenses, and the disclosure of contingent assets and liabilities in our financial statements. We base our estimates on historical experience, known trends and events, and various other factors that we believe are reasonable under the circumstances, the results of which form the basis for making judgments about the carrying values of assets and liabilities that are not readily apparent from other sources. We evaluate our estimates and assumptions on an ongoing basis. Our actual results may differ from these estimates under different assumptions or conditions.

While our significant accounting policies are described in more detail in Note 2 to our consolidated financial statements appearing elsewhere in this prospectus, we believe that the following accounting policies are those most critical to the judgments and estimates used in the preparation of our financial statements.

Collaboration Agreements

We follow the accounting guidance for collaboration agreements, which requires that certain transactions between us and collaborators be recorded in our consolidated statements of operations and comprehensive loss on either a gross basis or net basis, depending on the characteristics of the collaborative relationship, and requires enhanced disclosure of collaborative relationships. We evaluate our collaboration agreements for proper classification in our consolidated statements of operations and comprehensive loss based on the nature of the underlying activity. If payments to and from collaborative partners are not within the scope of other authoritative accounting literature, the consolidated statements of operations classification for the payments is based on a reasonable, rational analogy to authoritative accounting literature that is applied in a consistent manner. When we have concluded that we have a customer relationship with one of our collaborators, such as that with Seattle Genetics, we follow the guidance in Accounting Standards Codification (ASC) Topic 605, *Revenue Recognition* (ASC 605). When we have concluded that we have a vendor relationship with one of our collaborators, we recognize any reimbursements received from these vendors as a reduction of the related expense incurred, in accordance with ASC 605-50, *Revenue Recognition—Customer Payments and Incentives*.

Revenue Recognition of Collaboration Agreements

We recognize revenue from license and collaboration agreements in accordance with ASC 605. Accordingly, revenue is recognized when all of the following criteria are met: persuasive evidence of an arrangement exists, delivery has occurred, or services have been rendered, the seller’s price to the buyer is fixed or determinable, and collectibility is reasonably assured.

When evaluating multiple-element arrangements, we consider whether the deliverables under the arrangement represent separate units of accounting. This evaluation requires subjective determinations and requires us to make judgments about the individual deliverables and whether such deliverables are separable from the other aspects of the contractual relationship. In determining the units of accounting, we evaluate certain criteria, including whether the deliverables have standalone value, based on the consideration of the relevant facts and circumstances for each arrangement. The consideration to be received under each arrangement is allocated to the separate units of accounting using the relative selling price method, and the applicable revenue recognition criteria are applied to each of the separate units. Deliverables are considered separate units of accounting provided that (i) the delivered item has value to the customer on a standalone basis and (ii) if the arrangement includes a general right of return with respect to the delivered item, delivery or performance of the undelivered items is considered probable and substantially in our control. In assessing whether an item has standalone value, we consider factors such as the research, development, manufacturing, and commercialization capabilities of the collaboration partner and the availability of the associated expertise in the general marketplace.

In addition, we consider whether the collaboration partner can use any other deliverable for its intended purpose without the receipt of the remaining deliverables, whether the value of the deliverable is dependent on the undelivered items, and whether there are other vendors that can provide the undelivered items.

The consideration received under the arrangement that is fixed or determinable is then allocated among the separate units of accounting based on the relative selling prices of the separate units of accounting. We determine the selling price of a unit of accounting within each arrangement following the hierarchy of evidence prescribed by ASC 605-25. Accordingly, we determine the estimated selling price for units of accounting within each arrangement using vendor-specific objective evidence (VSOE) of selling price, if available; third-party evidence (TPE) of selling price, if VSOE is not available; or best estimate of selling price (BESP), if neither VSOE nor TPE is available. We typically use BESP to estimate the selling price as we generally do not have VSOE or TPE of selling price for our units of accounting. Determining the BESP for a unit of accounting requires significant judgment. In developing the BESP for a unit of accounting, we consider applicable market conditions and relevant entity-specific factors, including factors that were contemplated in negotiating the agreement with the customer and estimated costs. We validate the BESP for units of accounting by evaluating whether changes in the key assumptions used to determine the BESP will have a significant effect on the allocation of arrangement consideration between multiple units of accounting.

We recognize arrangement consideration allocated to each unit of accounting when all of the revenue recognition criteria in ASC 605 are met for that particular unit of accounting. In the event that a deliverable does not represent a separate unit of accounting, we recognize revenue from the combined unit of accounting over the contractual or estimated period of performance for the undelivered items, which is typically the term of our research and development obligations. If there is no discernible pattern of performance or objectively measurable performance measures do not exist, then we recognize revenue under the arrangement on a straight-line basis over the period we are expected to complete our performance obligations. Conversely, if the pattern of performance over which the service is provided to the customer can be determined at the inception of the arrangement and if objectively measurable performance measures exist, then we recognize revenue under the arrangement using the proportional performance method. Revenue recognized is limited to the lesser of the cumulative amount of payments received or the cumulative amount of revenue earned, as determined using the straight-line method or proportional performance method, as applicable, as of the end of each reporting period.

Significant management judgment is required in determining the level of effort required under an arrangement and the period over which we expect to complete our performance obligations under an arrangement. Steering committee services that are not inconsequential or perfunctory and that are determined to be performance obligations are combined with other research services or performance obligations required under an arrangement, if any, in determining the level of effort required in an arrangement and the period over which we expect to complete our aggregate performance obligations.

At the inception of an arrangement that includes options for a customer to purchase additional services or products at agreed upon prices in the future, we evaluate whether each option is substantive. Factors that we consider in evaluating whether an option is substantive include the overall objective of the arrangement, if the exercise of that option represents a separate buying decision, and if the services or products subject to the option are essential to the functionality of the current deliverables. When an option is considered substantive, we do not consider the option or item underlying the option to be a deliverable at the inception of the arrangement, and the associated option fees are not included in the allocable arrangement consideration, assuming the option is not priced at a significant and incremental discount. When an option is not considered substantive, we would consider the option, including other deliverables contingent upon the exercise of the option, to be a deliverable at the inception of the arrangement and a corresponding amount would be included in the allocable arrangement consideration. In addition, if the price of the option includes a significant incremental discount, the discount inherent in the option price would be included as a deliverable at the inception of the arrangement.

At the inception of an arrangement that includes potential milestone payments, we evaluate whether each milestone is substantive and at risk to both parties on the basis of the contingent nature of the milestone. This

evaluation includes an assessment of whether: (i) the consideration is commensurate with either our performance to achieve the milestone or the enhancement of the value of the delivered item as a result of a specific outcome resulting from our performance to achieve the milestone, (ii) the consideration relates solely to past performance, and (iii) the consideration is reasonable relative to all of the deliverables and payment terms within the arrangement. We evaluate factors such as the scientific, clinical, regulatory, commercial and other risks that must be overcome to achieve the particular milestone and the level of effort and investment required to achieve the particular milestone in making this assessment. There is considerable judgment involved in determining whether a milestone satisfies all of the criteria required to conclude that a milestone is substantive. We will recognize revenue in its entirety upon successful accomplishment of any substantive milestones, assuming all other revenue recognition criteria are met. Milestones that are not considered substantive are recognized as earned if there are no remaining performance obligations or over the remaining period of performance, with a cumulative catch-up being recognized for the elapsed portion of the period of performance, assuming all other revenue recognition criteria are met.

To date, we have not recorded any substantive milestones because no milestones that meet the required criteria listed above have been identified. Payments for achievement of non-substantive milestones are deferred and recognized as revenue over the estimated period of performance applicable to the collaboration agreement. As these milestones are achieved, we will recognize as revenue a portion of the milestone payment that is equal to the percentage of the period of performance completed when the milestone is achieved, multiplied by the amount of the milestone payment, upon achievement of such milestone. We will recognize the remaining portion of the milestone payment over the remaining period of performance under either the proportional performance method or on a straight-line basis.

Royalty revenue, if any, is recognized based on contractual terms when reported sales are reliably measurable and collectibility is reasonably assured, provided that there are no performance obligations then remaining. To date, none of our product candidates have been approved and, therefore, we have not earned any royalty revenue from product sales.

Amounts received prior to satisfying the revenue recognition criteria listed above are recorded as deferred revenue in the accompanying consolidated balance sheets. Amounts expected to be recognized as revenue within 12 months of the balance sheet date are classified as current deferred revenue. Amounts not expected to be recognized as revenue within the following 12 months of the balance sheet date are classified as non-current deferred revenue.

In the event that a collaboration agreement were to be terminated and we had no further performance obligations, we would recognize as revenue any portion of the upfront payment and other payments that had not previously been recorded as revenue and were classified as deferred revenue at the date of such termination.

Effective January 1, 2018, we will be required to adopt Accounting Standard Codification Topic 606, *Revenue from Contracts with Customers* (ASC 606). We are currently evaluating the impact of the adoption of ASC 606 on our consolidated financial statements. While our assessment is preliminary, we expect the adoption will have a material impact on our consolidated financial statements, in particular, related to the pattern and timing of our revenue recognition of amounts from our collaboration agreement with Seattle Genetics. We plan to adopt ASC 606 using the modified retrospective transition method, which will result in an adjustment to accumulated deficit in our consolidated balance sheet as of the January 1, 2018 effective date for the cumulative effect of applying the standard and will not result in a recast of our prior year consolidated financial statements. We currently expect that the cumulative effect adjustment to be recorded as of January 1, 2018 will include a material decrease in accumulated deficit and a material increase in deferred revenue recorded on our consolidated balance sheet. Refer to Note 2 to our consolidated financial statements appearing elsewhere in this prospectus for additional information.

Accrued Research and Development Expenses

As part of the process of preparing our consolidated financial statements, we are required to estimate our accrued research and development expenses. This process involves reviewing open contracts and purchase orders, communicating with our applicable personnel to identify services that have been performed on our behalf, and estimating the level of service performed and the associated cost incurred for the service when we have not yet been invoiced or otherwise notified of actual costs. The majority of our service providers invoice us in arrears for services performed, on a pre-determined schedule or when contractual milestones are met; however, some require advance payments. We make estimates of our accrued expenses as of each balance sheet date in the consolidated financial statements based on facts and circumstances known to us at that time. We periodically confirm the accuracy of the estimates with the service providers and make adjustments if necessary. Examples of estimated accrued research and development expenses include fees paid to:

- vendors in connection with the preclinical development activities;
- CMOs in connection with the production of preclinical and clinical trial materials;
- CROs in connection with preclinical studies and clinical trials; and
- investigative sites in connection with clinical trials.

We base our expenses related to preclinical studies and clinical trials on our estimates of the services received and efforts expended pursuant to quotes and contracts with multiple CMOs and CROs that supply, conduct, and manage preclinical studies and clinical trials on our behalf. The financial terms of these agreements are subject to negotiation, vary from contract to contract, and may result in uneven payment flows. There may be instances in which payments made to our vendors will exceed the level of services provided and result in a prepayment of the expense. In accruing service fees, we estimate the time period over which services will be performed and the level of effort to be expended in each period. If the actual timing of the performance of services or the level of effort varies from the estimate, we adjust the accrual or prepaid expense accordingly. Although we do not expect our estimates to be materially different from amounts actually incurred, our understanding of the status and timing of services performed relative to the actual status and timing of services performed may vary and may result in reporting amounts that are too high or too low in any particular period. To date, there have not been any material adjustments to our prior estimates of accrued research and development expenses.

Stock-Based Compensation

We measure stock options and other stock-based awards granted to employees and directors based on their fair value on the date of the grant and recognize compensation expense of those awards over the requisite service period, which is generally the vesting period of the respective award. We apply the straight-line method of expense recognition to all awards with only service-based vesting conditions and would apply the graded-vesting method to all awards with performance-based vesting conditions or to awards with both service-based and performance-based vesting conditions.

For stock-based awards granted to non-employees, compensation expense is recognized over the period during which services are rendered by such non-employees until completed. At the end of each financial reporting period prior to the completion of the service, the fair value of these awards is remeasured using the then-current fair value of our common stock and updated assumption inputs in the Black-Scholes option-pricing model.

We estimate the fair value of each stock-based award using the Black-Scholes option-pricing model, which uses as inputs the fair value of our common stock and assumptions we make for the volatility of our common stock, the expected term of our common stock options, the risk-free interest rate for a period that approximates the expected term of our common stock options, and our expected dividend yield.

Determination of Fair Value of Common Stock

As there has been no public market for our common stock to date, the estimated fair value of our common stock has been determined by our board of directors as of the date of each option grant, with input from management, considering our most recently available third-party valuations of common stock, and our board of directors' assessment of additional objective and subjective factors that it believed were relevant and which may have changed from the date of the most recent valuation through the date of the grant. These third-party valuations were performed in accordance with the guidance outlined in the American Institute of Certified Public Accountants' Accounting and Valuation Guide, *Valuation of Privately-Held-Company Equity Securities Issued as Compensation*. Our common stock valuations were prepared using either an option pricing method (OPM) or a hybrid method, both of which used market approaches to estimate our enterprise value. The OPM treats common stock and preferred stock as call options on the total equity value of a company, with exercise prices based on the value thresholds at which the allocation among the various holders of a company's securities changes. Under this method, the common stock have value only if the funds available for distribution to stockholders exceeded the value of the preferred stock liquidation preferences at the time of the liquidity event, such as a strategic sale or a merger. A discount for lack of marketability of the common stock is then applied to arrive at an indication of value for the common stock. The hybrid method is a probability-weighted expected return method (PWERM) where the equity value in one or more scenarios is calculated using an OPM. The PWERM is a scenario-based methodology that estimates the fair value of common stock based upon an analysis of future values for the company, assuming various outcomes. The common stock value is based on the probability-weighted present value of expected future investment returns considering each of the possible outcomes available as well as the rights of each class of stock. The future value of the common stock under each outcome is discounted back to the valuation date at an appropriate risk-adjusted discount rate and probability weighted to arrive at an indication of value for the common stock. These third-party valuations were performed at various dates, which resulted in valuations of our common stock of $2.79 per share as of June 30, 2016, $6.22 per share as of August 31, 2017, and $6.73 per share as of November 30, 2017. In addition to considering the results of these third-party valuations, our board of directors considered various objective and subjective factors to determine the fair value of our common stock as of each grant date, including:

- the prices at which we sold shares of preferred stock and the superior rights and preferences of the preferred stock relative to our common stock at the time of each grant;
- the progress of our research and development programs, including the status and results of preclinical studies and clinical trials for our product candidates;
- our stage of development and commercialization and our business strategy;
- external market conditions affecting the biopharmaceutical industry and trends within the biopharmaceutical industry;
- our financial position, including cash on hand, and our historical and forecasted performance and operating results;
- the lack of an active public market for our common stock and our preferred stock;
- the likelihood of achieving a liquidity event, such as an initial public offering (IPO) or sale of our company in light of prevailing market conditions; and
- the analysis of IPOs and the market performance of similar companies in the biopharmaceutical industry.

The assumptions underlying these valuations represented management's best estimate, which involved inherent uncertainties and the application of management's judgment. As a result, if we had used significantly different assumptions or estimates, the fair value of our common stock and our stock-based compensation expense could have been materially different.

Once a public trading market for our common stock has been established in connection with the closing of this offering, it will no longer be necessary for our board of directors to estimate the fair value of our common stock in connection with our accounting for granted stock options and other such awards we may grant, as the fair value of our common stock will be determined based on the quoted market price of our common stock.

Options Granted

The following table summarizes by grant date the number of shares subject to options granted between July 1, 2016 and January 31, 2018, the per share exercise price of the options, the fair value of common stock underlying the options on each grant date, and the per share estimated fair value of the options:

Grant Date	Number of Shares Subject to Options Granted	Per Share Exercise Price of Options	Per Share Fair Value of Common Stock on Grant Date	Per Share Estimated Fair Value of Options
October 27, 2016	215,000	$ 2.79	$ 2.79	$ 1.74
February 15, 2017	20,000	$ 2.79	$ 2.79	$ 1.75
May 18, 2017	205,000	$ 2.79	$ 2.79	$ 1.72
September 6, 2017	150,635	$ 6.22	$ 6.22	$ 3.81
October 27, 2017	765,000	$ 6.22	$ 6.22	$ 3.79
November 27, 2017	81,500	$ 6.73	$ 6.73	$ 4.11

Off-Balance Sheet Arrangements

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

Recently Issued and Adopted Accounting Pronouncements

A description of recently issued accounting pronouncements that may potentially impact our financial position and results of operations is disclosed in Note 2 to our consolidated financial statements appearing elsewhere in this prospectus.

Quantitative and Qualitative Disclosures about Market Risks

Interest Rate Sensitivity

As of September 30, 2017, we had cash, cash equivalents, and marketable securities of $48.4 million, which consisted of cash, money market funds, U.S. Treasury notes, and U.S. government agency bonds. Interest income is sensitive to changes in the general level of interest rates; however, due to the nature of these investments, an immediate 10% change in interest rates would not have a material effect on the fair market value of our investment portfolio.

As of September 30, 2017, we had no debt outstanding and are therefore not subject to interest rate risk related to debt.

Emerging Growth Company Status

The Jumpstart Our Business Startups Act of 2012 (JOBS Act) permits an “emerging growth company” such as us to take advantage of an extended transition period to comply with new or revised accounting standards applicable to public companies until those standards would otherwise apply to private companies. We have irrevocably elected to “opt out” of this provision and, as a result, we will comply with new or revised accounting standards when they are required to be adopted by public companies that are not emerging growth companies.

BUSINESS

Overview

We are a clinical-stage biopharmaceutical company focused on the development and commercialization of novel immunotherapy products designed to harness the power of a patient's immune system to cure cancer. Our proprietary technology, called antibody-coupled T cell receptor (ACTR), is a universal, engineered cell therapy that is intended to be used in combination with a wide range of tumor-specific antibodies to target different tumor types. Our product candidates are composed of ACTR T cells co-administered with approved and commercially available antibodies or antibodies in preclinical or clinical development. Our vision is to use our ACTR platform to transform cancer treatment and deliver patient cures in many different hematologic and solid tumor cancers, improving upon current cell therapies.

In our ongoing Phase I clinical trial using our lead ACTR construct, ACTR087, to treat adult patients with relapsed or refractory non-Hodgkin lymphoma (r/r NHL), we have demonstrated clinical proof of concept, as evidenced by ACTR T cell expansion and persistence, a favorable tolerability profile, and anti-tumor activity. We have recently completed patient enrollment into the dose escalation phase of this trial and are advancing towards testing in an expanded patient cohort using an optimized dose of ACTR087 to support potential registration trials.

Our pipeline also includes two additional product candidates in clinical testing. We have commenced a Phase I clinical trial of ACTR707, a modified ACTR construct, used in combination with rituximab in adult patients with r/r NHL and a Phase I clinical trial of ACTR087 used in combination with the novel antibody SEA-BCMA in adult patients with r/r multiple myeloma. We expect to file an investigational new drug application (IND) in 2018 for ACTR707 used in combination with trastuzumab, an FDA-approved antibody, to treat patients with solid tumor cancers that overexpress the human epidermal growth factor receptor 2 (HER2+ cancers). In the longer term, we aim to leverage our ACTR platform to develop a broad range of product candidates to address many different hematologic and solid tumor cancers.

Immuno-oncology, the use of a patient's immune system to treat cancer, is one of the most actively pursued areas of research in drug discovery and development. Adoptive cell therapies are one immuno-oncology approach for cancer treatment. Adoptive cell therapy starts with the isolation of immune cells from a patient, followed by genetic modification of these cells outside the patient's body. Modified cells are then re-introduced into the patient to treat disease. Chimeric antigen receptor (CAR)-T cells are one type of adoptive cell therapy. While CAR-T's efficacy in hematologic cancers has been impressive, limited clinical data have been reported on the use of CAR-Ts in solid tumor cancers and the results have been much less encouraging than in the hematologic cancer setting. Severe side effects, such as cytokine release syndrome (CRS) and neurotoxicity, have been observed in some patients. For certain CARs, on-target, off-tumor effects have led to patient deaths. These toxicities and specific solid tumor challenges create a need to better control the activity of these therapies.

Our product candidates use patient-derived T cells, which are genetically modified to express the ACTR protein and co-administered with a tumor-specific antibody. ACTR is a chimeric protein which combines components from proteins normally found on both T cells and natural killer cells, two types of human immune cells. The natural killer cell component enables binding to tumor cell-bound antibodies and the T cell component enables potent cytotoxicity, proliferation, and persistence. Tumor-targeting antibodies administered with ACTR T cells bind to the surface of the tumor cell and, in effect, label it for ACTR T cell attack. When an ACTR T cell encounters a tumor cell bound with antibodies, it binds to those antibodies and kills the tumor cell through a process known as antibody-dependent cellular cytotoxicity (ADCC), a function not normally observed with T cells. No special modification of the tumor-specific antibody is required in order for ADCC to take place.

ACTR T cells can be directed to a wide range of different cancer cell antigens through the co-administration of antigen-specific antibodies. Thus, we believe an ACTR T cell can be used in many different cancer types. Preclinical data from in vivo testing show that ACTR T cell-mediated tumor killing activity may be adjusted by modulating the dose of the targeting antibodies. This ability to adjust ACTR T cell activity could make it possible to define an optimal dose through clinical testing to maximize tumor-killing activity and minimize toxicity. In contrast, other cell therapy approaches, such as CAR-Ts and T cell receptors (TCRs), are built to target a specific cancer cell surface antigen and are therefore limited to treating only the particular tumor expressing that antigen. Further, conventionally their activity cannot be readily tuned up or down and, as a result, current CAR-T therapies lack the ability to control cell killing.

We have a broad product pipeline that includes three clinical stage product candidates:

- Our most advanced product candidate, ACTR087 used in combination with rituximab, is being tested in adult patients with r/r NHL in an ongoing Phase I clinical trial called ATTCK-20-2. Two dose levels were explored in the dose escalation phase of this trial. Expansion and persistence of ACTR T cells was observed in all patients evaluable for response in both tested dose levels for as long as monitoring continued, consistent with what has been observed in CAR-T trials. At the first dose level of this trial, patients were targeted to receive a dose of up to 0.5 x 10^6 ACTR T cells/kg (Dose Level One). No adverse events commonly associated with T cell activation (e.g., CRS or neurotoxicity) of any grade were observed at this dose level. Of the seven patients treated at Dose Level One with ACTR087 used in combination with rituximab, objective responses were observed in the six patients evaluable for response, including two complete responses and one partial response (with duration of responses of 371+[ongoing], 85, and 43 days, respectively). While no conclusions regarding the efficacy of ACTR087 can yet be drawn and no head-to-head trials have been conducted that would enable us to make a direct safety and efficacy comparison, the responses observed at Dose Level One are in line with those reported for Yescarta (axicabtagene ciloleucel) and tisagenlecleucel (39% and 32% complete response rates at three months for Yescarta and tisagenlecleucel, respectively, as presented at the 2017 American Society of Hematology Annual Meeting & Exposition). Yescarta was tested in a single arm, open-label, multi-center Phase I/II clinical trial in relapsed, refractory adult patients with diffuse large B cell lymphoma (DLBCL), primary mediastinal large B cell lymphoma (PMBCL), or transformed follicular lymphoma (TFL). Tisagenlecleucel was tested in a single arm, multi-center Phase II clinical trial in relapsed, refractory adult patients with DLBCL.

  At the second dose level of this trial, patients were targeted to receive a dose of up to 1.5 x 10^6 ACTR T cells/kg (Dose Level Two). Nine patients were treated at Dose Level Two (a tenth patient was treated at Dose Level One due to cell product limitations) and six of these patients have been evaluated for response at the 42-day follow-up as of January 15, 2018. Of these six patients evaluated for response, three patients demonstrated partial responses (8, 43, 70+[ongoing] days). In Dose Level Two, two patients experienced ACTR087-related severe CRS and one patient experienced ACTR087-related neurotoxicity, which was fatal. Of the two events of CRS, one patient subsequently experienced a fatal case of enterococcal sepsis considered related to ACTR087 and one patient subsequently experienced a fatal case of sepsis considered not related to ACTR087. After review of the observed safety events, we concluded that Dose Level Two exceeds the maximum tolerated dose under the standard rituximab dosing regimen and do not intend to further escalate the cell dose in this regimen. The severe CRS and fatal neurotoxicity adverse events observed in Dose Level Two have been associated with T cell activation and are frequently observed in patients receiving CAR-T cell treatment. For example, NHL adult patients treated with Yescarta experienced severe CRS and neurotoxicity (13% and 31%, respectively, per U.S. prescribing information).

  Based on the results to date, we intend to expand the dataset, building upon the results observed in the clinical trial to date. In our expansion cohort, we will administer a flat dose (i.e., not adjusted by patient weight) of 60 x 10^6 ACTR T cells, which is approximately midway between Dose Level One and Dose Level Two assuming an 80 kilogram patient, and we will continue to treat patients with the standard

rituximab schedule (375 mg/m2 every three weeks). We expect to complete enrollment of the cohort expansion of ATTCK-20-2 in . In parallel with this ongoing Phase I clinical trial, we plan to initiate a Phase II clinical trial exploring ACTR087 used in combination with rituximab in adult patients with r/r NHL who received prior CD19 CAR-T therapy.

- Our second clinical stage product candidate, ACTR707 used in combination with rituximab, is being tested in adult patients with r/r NHL in a Phase I, multi-center, open-label clinical trial called ATTCK-20-03. ACTR707 is a modified ACTR construct designed to generate a more potent and sustained immune response to overcome immunosuppressive tumor microenvironments commonly found in solid tumor cancers. ACTR707 demonstrated activity against both hematologic and solid tumor cancers in preclinical studies. For initial testing, we are leveraging our clinical experience with ACTR087 in r/r NHL by exploring ACTR707 used in combination with rituximab in the same patient population. We believe this will enable rapid execution of the study and facilitate a meaningful comparison between ACTR087 and ACTR707. We expect to report initial data from the clinical trial in , and we plan to continue enrolling patients in this trial into . We expect to leverage data from the Phase I clinical trial in future studies by combining ACTR707 with a variety of antibodies targeting different cancers.
- Our third clinical stage product candidate, ACTR087 used in combination with SEA-BCMA, is the first product candidate resulting from our strategic collaboration with Seattle Genetics, Inc. (Seattle Genetics). The SEA-BCMA antibody is designed to target BCMA, an antigen with high and selective expression on the surface of malignant plasma cells in multiple myeloma. We are currently enrolling and dosing adult patients with r/r multiple myeloma in a Phase I multi-center trial and expect to report safety and response data from this trial in .
- ACTR707 used in combination with trastuzumab is currently in late preclinical development as a potential treatment for HER2+ solid tumor cancers. Antigen-specific killing of HER2-overexpressing tumor cells has been demonstrated with this combination in preclinical studies. In addition, ACTR707 used in combination with trastuzumab has shown high selectivity, discriminating killing activity between HER2-expressing tumor cells and non-tumor cells with low levels of HER2 expression in preclinical studies. This is especially important, because certain normal tissues, including heart and lung tissues, are known to also express HER2 but at lower levels. CAR-T cells are often unable to distinguish high, on-tumor expression from low, off-tumor expression of antigens, and kill cells with any level of antigen indiscriminately. HER2 CAR-T cells previously tested in the clinic have demonstrated potent on-target, off-tumor activity, which is believed to have resulted in toxicity and death when administered to a patient. We plan to file an IND and initiate clinical testing of ACTR707 used in combination with trastuzumab in .
- In the longer term, we plan to leverage the investment we have already made in ACTR and the clinical validation and de-risking of ACTR that we aim to achieve through the current clinical trials, to rapidly expand our pipeline of ACTR-based product candidates to address a range of hematologic and solid tumor cancers.

Our Pipeline

The following table summarizes our product candidate pipeline:

Product Candidates	Indication	Clinical Phase	Last Event	Next Expected Event
ACTR087+rituximab	r/r B cell non-Hodgkin lymphoma	Phase I	Completion of dose escalation	Initiation of cohort expansion
	r/r B cell non-Hodgkin lymphoma, patients who received prior CD19 CAR-T therapy			Initiation of Phase II trial
ACTR707+rituximab	r/r B cell non-Hodgkin lymphoma	Phase I	Initiated Phase I dose escalation	Interim safety and efficacy data
ACTR087+SEA-BCMA *(collaboration with Seattle Genetics)*	r/r multiple myeloma	Phase I	Initiated Phase I dose escalation	Interim safety and efficacy data
ACTR707+trastuzumab	HER2+ cancers	Preclinical	Initiated non-clinical studies to support IND filing	IND filing

We aim to continue to improve the functionality of the ACTR T cell in solid tumor cancers through (i) additional genetic modifications to exploit new supporting biology in the tumor microenvironment and (ii) introducing new manufacturing process modifications.

We have obtained and retained worldwide commercial rights to the majority of our product candidates, including our lead product candidate, ACTR087 used in combination with rituximab. We intend to establish our own commercial organization in the United States where we believe we can address physicians with a direct specialty sales force. Our commercial strategy for markets outside the United States may include the use of strategic partners or the establishment of our own commercial infrastructure. We plan to further evaluate these alternatives as we approach potential approval of our product candidates.

In June 2015, we announced a global strategic collaboration with Seattle Genetics to identify, research, develop, and commercialize two novel antibody-coupled ACTR therapies incorporating Seattle Genetics' proprietary antibodies. Under the terms of the collaboration, we will conduct preclinical research and clinical development activities through Phase I clinical trials and Seattle Genetics will provide all of the funding for those activities. We plan to work together to co-develop and fund product candidates after Phase I clinical trials unless either company opts-out from further development and commercial activities. Seattle Genetics has the option to opt-out from further development and commercialization activities for each of the two product candidates under the collaboration during two specified periods subsequent to Phase I clinical development. We have an option to opt-out from further development and commercialization activities for each of the two product candidates under the collaboration during a specified period subsequent to Phase II clinical development. If neither party elects to opt-out of further development and commercialization activities, we will co-commercialize any successfully developed product candidates and share equally any profits and losses on any co-developed product candidates in the United States. Seattle Genetics retains exclusive commercial rights outside of the United States. The first product candidate under our collaboration is ACTR087 used in combination with Seattle Genetics' SEA-BCMA antibody for r/r multiple myeloma.

Clinical development and commercialization of ACTR products are supported by our efforts to optimize manufacturing from the initial collection of a patient's white blood cells through the re-infusion of a formulated ACTR T cell product (i.e., from "vein-to-vein"). To this end, we have developed a largely automated ACTR manufacturing process with quality, scalability, cost, and consistency in mind. We plan to continuously enhance this process using a toolkit of individually optimized process components in order to be able to rapidly customize manufacturing to our specific needs, relying as much as possible upon non-proprietary equipment and processes. We are currently addressing clinical manufacturing needs for both viral vector and ACTR T cells with contract manufacturing

organizations (CMOs) to increase flexibility and mitigate risks. In the future, we plan to establish our own good manufacturing practices (GMP) manufacturing facility to increase our control of product quality, scheduling, and process knowledge. As our product candidates advance through clinical trials, we expect to secure commercial manufacturing capacity using one or more CMOs or by establishing our own commercial manufacturing GMP facility.

Intellectual property is an important component of our assets. We are working to establish strong patent protection and trade secrets to position us as a leader in the practice of ACTR technology. We are developing proprietary technology and are licensing patent rights from third parties. In doing so, we have focused on ensuring our ability to operate freely within the complex patent landscape of cell therapy. We have filed a series of patent applications that aim to cover the ACTR platform, as well as specific product candidates.

We believe that the quality of our people has a strong and positive impact on our ability to develop and capitalize on our ACTR platform. We have assembled a team of highly skilled and experienced employees, directors, scientific advisors, and consultants with broad capabilities in oncology drug discovery and development. In addition, our scientific founder and an inventor of our key patents relating to ACTR087, Dario Campana, M.D., Ph.D., is considered a world leader in cancer cell therapy. Dr. Campana continues to support our efforts as Chair of our Scientific Advisory Board.

Since our inception in March 2014, we have raised $77.3 million from sales of our preferred stock to our venture capital investors, major mutual funds, healthcare-dedicated funds, and others. In addition, through September 30, 2017, we had received $25.0 million in an upfront payment and $6.0 million in research and development funding from Seattle Genetics as part of the strategic collaboration. Collectively, these stakeholders share our commitment to bringing our product candidates to market and our vision of revolutionizing medicine through developing a broadly applicable cell-based platform.

Our Strategy

Our goal is to transform cancer treatment through the application of our universal ACTR platform in a wide range of hematologic and solid tumor cancers. Key elements of our strategy include the following objectives:

- ***Expedite clinical development, regulatory approval, and commercialization of our product candidate ACTR087 used in combination with rituximab.*** We plan to continue to advance our lead product candidate, ACTR087 used in combination with rituximab, for the treatment of adult patients with r/r NHL. If we believe the Phase I data are compelling, we plan to discuss with the FDA the potential to move to a registration trial in adult patients with r/r NHL upon completion of the current Phase I clinical trial. Additionally, we plan to initiate a Phase II clinical trial in to evaluate ACTR087 used in combination with rituximab in adult patients with r/r NHL who received prior CD19 CAR-T therapy.
- ***Leverage our universal ACTR platform to broaden our product portfolio rapidly and cost effectively.*** ACTR is an investigational engineered cell therapy that we believe can be used in combination with a wide range of tumor-targeting antibodies to pursue different antigens and cancer indications. Our product candidates are composed of ACTR T cells co-administered with approved and commercially available antibodies or antibodies in preclinical or clinical development. ACTR does not need to be modified for use with different antibodies, and antibodies do not need to be modified for use with ACTR. This allows us to leverage our investment in ACTR and the investment by third parties in existing antibodies across different ACTR–antibody combinations, tumor types, and indications. We expect the universality of our ACTR platform will allow us to prosecute four product candidates in Phase I clinical trials within the next months.
- ***Expand our pipeline with increased focus on solid tumor product candidates***. We will leverage the potential of the ACTR platform by combining ACTR with a wide range of de-risked commercial-stage and development-stage tumor-targeting antibodies to treat hematologic and solid tumor cancers with

significant unmet medical needs. With a particular aim at creating an ACTR that addresses the specific challenges associated with attacking solid tumor cancers, we have developed a modified ACTR construct called ACTR707. We believe that the changes in ACTR707 will allow ACTR T cells to behave more favorably in immunosuppressive tumor microenvironments commonly found in solid tumor cancers. We plan to use ACTR707 to rapidly progress ACTR product candidates targeting solid tumor cancers into clinical development, starting with ACTR707 used in combination with trastuzumab for HER2+ cancers. We aim to continue to improve the functionality of the ACTR T cell in solid tumor cancers through (i) additional genetic modifications to exploit new supporting biology in the tumor microenvironment and (ii) introducing new manufacturing process modifications.

- ***Establish manufacturing capacity and leverage our process development capabilities to create a competitive advantage in T cell manufacturing.*** We designed a process using a closed automated system to support our clinical development plans and have devoted significant resources to optimizing process development. We currently engage CMOs to use our process for production of GMP material. In the future, we intend to establish our own GMP manufacturing facility.
- ***Establish commercialization and marketing capabilities to support current and future product candidates.*** We plan to establish a U.S.-focused specialty sales and marketing organization in advance of receipt of regulatory approval of the first ACTR product candidate. We intend to leverage the infrastructure developed for our first approved ACTR product to facilitate commercialization of any additional product candidates for which we gain approval. In addition, we will build upon physician familiarity and experience with the first approved ACTR product to accelerate adoption of subsequent products. Our commercial strategy for markets outside the United States may include the use of strategic partners or the establishment of our own commercial infrastructure.

Background

Immune System and T cells

Our immune system has evolved to respond to injury and attacks to the body. It provides continuous surveillance and defense against attacks both by foreign pathogens and by mutated cells that lead to cancer. Cells and proteins produced by the immune system are found in all the tissues of the body and in the blood.

The immune system triggers two different types of response. The *innate response* is an unspecific, unspecialized response, composed of immune components capable of reacting against a broad range of stimuli. Innate immune components, including proteins (e.g., complement factors) and cells (e.g., natural killer cells, macrophages), are ever present, always ready for immediate activation. In contrast, the *adaptive response* allows for a slower but tailored response to specific insult. It evolves following an initial assault and strengthens with each subsequent infection or mutational event, thereby allowing for long-term protection. As a result of this increased specificity, adaptive responses can be more potent: they selectively target the pathogen or mutated cell while sparing normal, healthy tissues.

Adaptive responses include a humoral component, comprised of antibodies, and a cellular component, comprised of T cells. Antibodies are secreted proteins capable of binding to specific toxins or foreign substances generated during infection or mutation, referred to as antigens. Once bound to an antigen, an antibody can work *directly* to block the biological function of the antigen or *indirectly* by recruiting components of the innate immune system like natural killer cells to drive attack. T cells recognize infected or mutated cells when their TCR recognizes and binds to a foreign or mutated peptide presented through a set of proteins on the surface of the targeted cell called the major histocompatibility complex (MHC). The binding of a TCR to an infected or mutated cell, such as a tumor cell, can trigger T cell activation, resulting in direct killing of the cell through release of toxins, as well as the stimulation of cytokines and other molecules that recruit and activate additional immune cells.

Immunotherapies in Oncology

Historically, cancer treatment has relied upon a combination of surgery, radiation, and chemotherapy. More recently, targeted therapies that modulate specific signaling pathways in cancer cells have been the focus of many drug discovery efforts. Unfortunately, targeted pathways are often also functional in normal cells, leading to significant toxicities. More selective small molecules are better tolerated by patients and can have dramatic initial effects. In many cases, however, these benefits are short lived as persisting cancer cells acquire drug resistance. Most metastatic cancers remain incurable despite the enormous investment in novel therapies.

Immunotherapy seeks to harness a patient's immune system to fight cancer. The high specificity of the adaptive immune system translates into a reduced risk of toxicity by distinguishing between normal tissue cells and cancer cells. The ability to adaptively respond enables the immune system to overcome some of the mechanisms by which cancer cells acquire drug resistance, translating into more durable responses. There are several current approaches that use the immune system to treat cancer.

Immune checkpoint inhibitors are therapeutic antibodies that activate a patient's own T cells by blocking inhibitory signals released by the tumor to suppress the immune system's natural T cell activity. Antibodies targeting the antigens CTLA4, PD-1, and PD-L1 have yielded significant responses in patients with a range of indications including melanoma, non-small cell lung cancer, and renal cancer.

Additionally, monoclonal antibodies can be used to exert cancer cell cytotoxicity through specialized mechanisms, including ADCC, which is the primary mechanism of action of many cancer therapeutic antibodies. ADCC occurs when the tail region of an antibody, referred to as the Fc domain, binds to Fc receptors on the surface of certain immune cells, especially natural killer cells. A naturally occurring variant of CD16, one type of Fc receptor expressed on natural killer cells and macrophages, has been shown to bind more tightly to the Fc domain and patients expressing this variant demonstrate better responses to ADCC-inducing therapeutic antibodies. These results have inspired efforts to enhance ADCC activity in engineered monoclonal antibodies to improve efficacy across a broader patient population.

Finally, therapies have been developed based upon adoptive cell transfer, the process of isolating immune cells, modifying them outside the patient's body, and then introducing them into a patient to treat disease. The current wave of adoptive cell therapy efforts is largely focused on the use of T cells engineered to express either TCRs or CARs. In order to be effective as a therapy, an engineered T cell must (i) selectively target tumor cells, (ii) activate cytotoxic tumor cell killing, and (iii) simultaneously activate pathways to ensure the T cell's proliferation and survival. The matrix below shows the mechanisms of action for many current TCRs and CARs, and for ACTR:

Activity	Tumor Targeting	Cytotoxic Killing Trigger	Proliferation and Survival
TCR	TCR-alpha/beta on T cell bind peptide+MHC on tumor	CD3zeta	None
CAR	scFv (antibody fragment) of CAR-T cell binds tumor antigen	CD3zeta	Costimulatory domain (for example, 4-1BB or CD28)
ACTR	CD16 domain of ACTR T cell binds to co-administered antibody, antibody binds tumor antigen	CD3zeta	Costimulatory domain (for example, 4-1BB or CD28)

T cell Receptors (TCRs) are naturally occurring protein complexes expressed on the surface of T cells. They are the primary mechanism by which T cells normally distinguish "foreign" cells from "self" and trigger

immune attack. In most T cells, a TCR contains a pair of proteins, TCR-alpha and TCR-beta, which directly recognize processed peptides of the MHC presented on the surface of cells and exert cytotoxicity when engaged. In some cases, these TCRs can be used "as is" with no further modifications. In other cases, activity can be improved by engineering the TCR to recognize the tumor peptide with higher affinity. TCR-based cellular therapies have shown promising clinical activity in treating certain cancers.

Several challenges have been encountered with TCR-based approaches. Some tumor cells acquire mutations that change the MHC molecule or reduce the level of MHC expressed on their surface. This prevents or limits recognition by TCRs and thus makes tumor cells resistant to T cell attack. In addition, engineering TCRs to improve their affinity can also change their specificity and cause them to direct T cell attack towards normal tissues. This change in specificity has in some cases led directly to patient deaths. Lastly, there are many naturally occurring variants of MHC in the human population. A TCR recognizes only certain MHC variants, meaning that a given TCR construct can only potentially work with a fraction of patients.

Chimeric Antigen Receptors (CARs) are synthetic proteins, assembled by linking together individual protein domains from different genes (in this context, a *chimera* is a molecule with sequences derived from two or more different starting molecules). All CARs contain an extracellular recognition domain responsible for recognizing and binding an antigen specifically presented on a target cell (hence the name, "chimeric *antigen* receptor"). Most often, this recognition domain is a small single chain variable fragment (scFv) isolated from a larger, full-length antibody. The scFv is tethered to the surface of the T cell by a "hinge" or "spacer" domain. This domain provides positional flexibility, allowing the scFv to orient properly to engage the antigen. Passing through the plasma membrane of the cell, a transmembrane domain effectively connects the extracellular domains involved in target cell recognition to the intracellular domains that cause the T cell to respond.

In the earliest CAR examples (known as first generation CARs), a single intracellular signaling domain was used, isolated from the CD3-zeta chain of the T cell receptor complex. CARs built with this domain were shown to be capable of driving the killing of target cells in laboratory experiments but results in patients were generally unimpressive. With few exceptions, first generation CAR-T cells failed to persist in patients long enough to exert significant anti-tumor activity and provide therapeutic benefit.

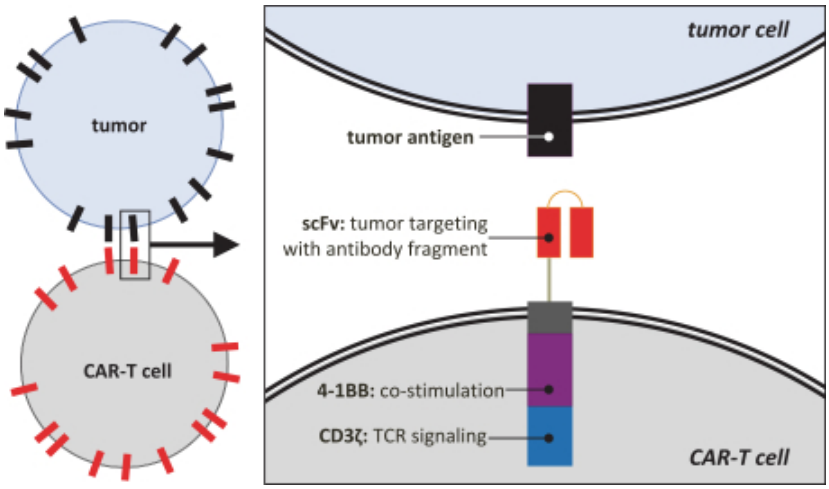
Second generation CARs include additional signaling domains from certain proteins (known as co-stimulatory molecules) in order to improve activation of the CAR-T cells. These signaling domains turn on additional pathways in the T cell that promote cytokine secretion, survival, and proliferation, all of which strengthen the anti-tumor response. Second generation CARs have yielded more positive results in clinical testing. Promising results have been observed in therapy-resistant patient populations with ALL and B cell NHL, leading to recent approvals in both indications.

Notwithstanding the observed effectiveness and favorable response rates, severe side effects have also been observed with these therapies, in some cases leading to patient deaths. Toxicities include CRS, neurotoxicity, and on-target, off-tumor effects. These have spurred the desire to develop better-controlled therapies. Additionally, the vast majority of programs with demonstrated responses have been limited to hematologic cancers, such as ALL, NHL, and multiple myeloma. The cellular environment in which solid tumor cancers exist (known as the tumor microenvironment) is inimical to T cells due to several factors including: (1) immunosuppressive cells (e.g., regulatory T cells (Tregs), myeloid derived suppressor cells (MDSCs)), (2) immunosuppressive enzymes and signaling molecules (e.g., IDO1, TGF-beta), (3) limited nutrients (e.g., oxygen, glucose), and (4) toxic metabolites (e.g., reactive oxygen species, lactic acid). Together, these factors can limit the ability of CAR-T cells both to penetrate into the solid tumor and to function properly once there. While the number of clinical trials focused on solid tumor cancers is growing, limited clinical data have been reported and results to date have been less encouraging.

CARs target tumor cells using an scFv prepared from a tumor-specific antibody. Given that tumors express indication-specific tumor antigens, creating a CAR-T therapy for a new cancer indication typically requires the

construction of a new CAR made from a newly engineered scFv. scFvs typically show reduced affinity and a higher likelihood of misfolding than antibodies. scFv misfolding drives receptor aggregation which triggers signaling and activation of the CAR-T cell in the absence of a tumor cell. This signaling in the absence of a tumor antigen, known as tonic signaling, promotes premature T cell differentiation and exhaustion, reducing CAR-T anti-tumor activity.

The graphic below illustrates the structure of a CAR, including the engineered scFv, and the interaction between the scFv and the applicable antigen on the tumor cell:



Our Solution

Antibody-Coupled T cell Receptor (ACTR) is a different kind of chimeric receptor, initially invented in the laboratories of our scientific founder, Dr. Dario Campana, at St. Jude's Children's Research Hospital and the National University of Singapore, and later expanded and improved by our scientists. ACTR is a single construct that we believe can be used in combination with a wide variety of separately administered tumor-targeting antibodies to pursue different antigens and tumor types. Antibodies have been developed to target many different cancers. Our approach leverages existing antibodies to mobilize a cytotoxic cellular response to attack antibody-labeled cancer cells.

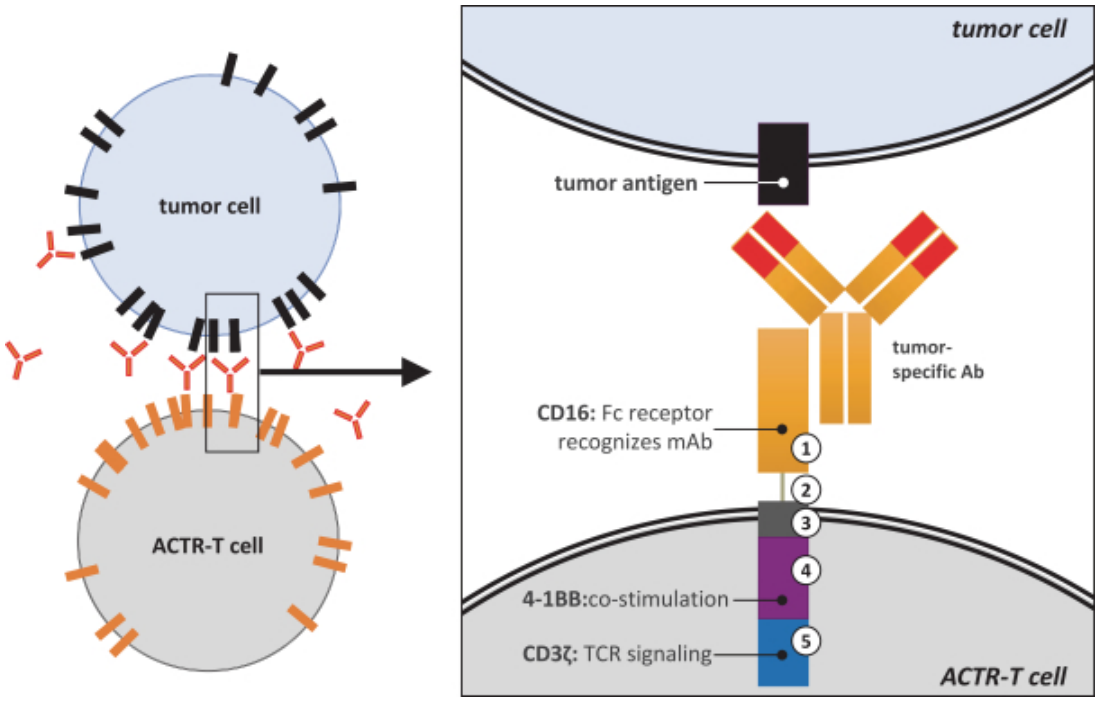
ACTR's design differs from CAR in its extracellular domain. In lieu of the scFv found in a CAR, the extracellular domain of ACTR consists of the Fc-binding domain of CD16. As previously noted, CD16 is normally expressed on natural killer cells and macrophages, where it recognizes the Fc domain of cell-bound antibodies. Without an scFv attached to its surface, the ACTR T cell is unable to recognize tumor cells directly. However, when a tumor-targeting antibody is provided, the ACTR T cell is able to recognize tumor cells through antibodies bound to the surface of the tumor cells. Once it is bound to an antibody on the tumor cell, an ACTR T cell exerts ADCC, a function not normally observed with T cells, to kill the tumor cell. No special engineering of either the therapeutic antibody or of the ACTR receptor is required in order for a functional interaction to take place.

Once an ACTR T cell engages a tumor cell bound with the therapeutic antibody, it works in several different ways to drive an anti-tumor response:

- The ACTR T cell injects protein toxins (known as granzymes and perforins) which quickly kill the tumor cell.
- After attacking and killing one tumor cell, it serially disengages and moves on to attack others.

- It secretes cytokines that recruit other immune cells such as natural killer cells and macrophages with a broader range of activities.
- It undergoes cell division to produce daughter cells with the same Fc extracellular domain to perpetuate the response.

The graphic below illustrates the structure of an ACTR T cell, showing how the Fc receptor recognizes and binds to the tumor-bound antibody.



The five domains of the ACTR T cell, shown in the above graphic, function to facilitate the T cell attack of the tumor cell in the following ways:

1. An *extracellular* domain (e.g., CD16) serves as an Fc receptor, binding to a tumor-bound therapeutic antibody through its constant Fc domain.
2. A *hinge* domain (e.g., CD8) provides flexibility to allow the extracellular domain to effectively orient and engage antibody bound to a target cell.
3. A *transmembrane* domain (e.g., CD8) anchors ACTR within the proper location in the cell and functionally couples antigen engagement by the extracellular domain with signaling activities in the intracellular domain.
4. A *co-stimulatory* domain (e.g., 4-1BB or CD28) provides added cytokine and survival signals essential for prolonged anti-tumor activity.
5. A TCR *signaling* domain (e.g., CD3zeta) initiates a signaling cascade to trigger cytotoxic attack.

Preclinical studies have demonstrated robust anti-tumor activity of ACTR-expressing T cells when combined with several different tumor-specific antibodies, including rituximab (an anti-CD20 antibody marketed as Rituxan), trastuzumab (an anti-HER2 antibody marked as Herceptin), and hu14.18K322A (an anti-GD2 antibody).

Our initial efforts were directed at testing our original ACTR construct, ACTR087, with different antibodies to identify combinations for clinical testing in new indications. In addition, we systematically explored modifications to the ACTR design. With a particular aim at creating an ACTR optimized for solid tumor cancers, we evaluated 100+ constructs through a series of high throughput screening assays. From these efforts, we identified a modified ACTR construct called ACTR707 which is now in clinical testing. Based on preclinical data, we expect ACTR707 may function particularly well in solid tumor cancers, given its propensity to proliferate, secrete cytokines and persist following a repeated exposure to target tumor cells. We aim to continue to improve the functionality of the ACTR T cell in solid tumor cancers through (i) additional genetic modifications to exploit new supporting biology in the tumor microenvironment and (ii) introducing new manufacturing process modifications.

Key Differentiating Characteristics of ACTR

We believe ACTR offers distinct advantages over alternative immunotherapies:

- **A Universal Approach.** ACTR is a single construct that we believe can be used in combination with a wide variety of tumor-targeting antibodies to pursue different antigens and cancer indications. ACTR leverages CD16, a receptor normally found on natural killer cells, to recognize a wide range of tumor cell-bound antibodies and drive cytotoxic attack. Unlike CAR-T, in which a new synthetic receptor has to be created, manufactured, and tested for each new antigen, ACTR relies upon the same CD16 binding irrespective of tumor antigen or co-administered antibody. As a result, our ACTR construct needs to be engineered, manufactured, and preclinically validated only once, and the clinical de-risking of ACTR can be leveraged across many ACTR-antibody combinations. This enables us to rapidly and efficiently expand our product candidate pipeline.
- **Therapy with Potential for Superior Activity.** Preclinical testing of ACTR in combination with a wide range of tumor-targeting antibodies has demonstrated tumor killing potential. Initial data from our ongoing Phase I clinical trial evaluating ACTR087 used in combination with rituximab in adult patients with r/r NHL suggest that ACTR can achieve tumor reduction. Several factors may contribute to potency:
    - ACTR shows minimal signaling in the absence of tumor antigen (i.e., tonic signaling). CAR-T tonic signaling drives accelerated T cell differentiation and ultimately exhaustion, compromising anti-tumor activity.
    - ACTR is composed of fragments of naturally occurring human proteins and, as such, has a reduced likelihood of generating an immune response directed at the ACTR T cell, potentially translating into better persistence. CAR-T, especially those with mouse-derived scFvs, are synthetic constructs that can and have triggered immune responses which can cause rapid clearance of CAR-T cells from patients.
    - The use of a complete, co-administered antibody with ACTR, instead of an antibody fragment in the scFv format used in CAR-T, typically maintains better functional activity, including improved folding, affinity for the antigen, and improved strength of the antibody–antigen target complex through bivalency.
    - Therapeutic activity of the co-administered antibody used to direct the ACTR T cell can supplement the ACTR T cell-mediated cytotoxicity (e.g., signal blockade, Fc effector functions). Antibodies are not part of the treatment for CAR-T therapy.
    - The CD16 domain of ACTR has evolved to efficiently engage a wide range of tumor cell-bound antibodies to drive cytotoxic attack. The scFv domains of CARs are synthetic constructs and must be empirically engineered to optimize function.
- **Increased Control and Tunability.** In preclinical experiments, ACTR activity scales with the amount of the co-administered antibody. As such, we believe ACTR activity can be tuned up or down by

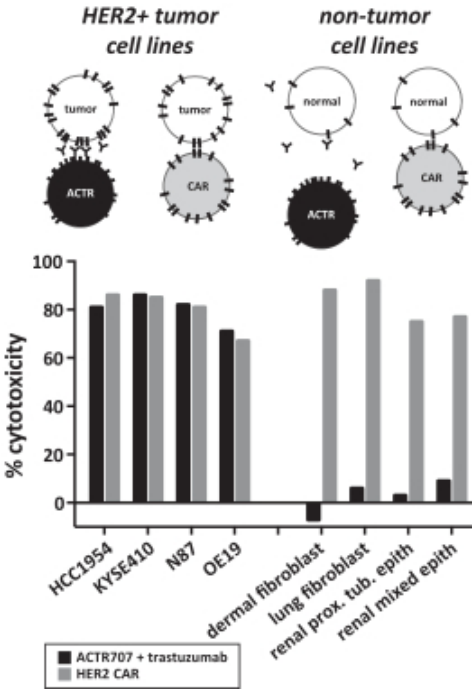
modulating antibody dosing. This ability to adjust ACTR T cell activity could make it possible to define an optimal dose through clinical testing to maximize tumor-killing activity and minimize toxicity.

- We believe that optimized dosing of our ACTR product could reduce class toxicities associated with T cell therapies, including CRS and neurotoxicity. These toxicities may be a function of both the overall level and the speed of tumor cell killing by T cells. Once CAR-T cells have been administered to a patient, they are effectively armed to attack all cells expressing the CAR-specific antigen and proliferate indefinitely. This means that there is currently no straightforward way to control the intensity of the immune response they trigger. In contrast, preclinical studies suggest that by dosing less antibody, ACTR T cell activity may be capped and slowed. Once appropriate dosing is determined through clinical testing, it may be possible to avoid the life-threatening toxicities seen with CAR-Ts.
- The ability to turn off ACTR T cell activity by withdrawing antibody may provide a simple means for minimizing or eliminating toxicity that is not feasible with CAR-T therapies. This may have effects on long term toxicity as well. For example, several lineage antigens targeted by CAR-T for hematologic indications (e.g., CD19, CD33, CD123) are expressed on normal tissues that serve important functions. Eliminating these normal tissues through an on-target, off-tumor effect may be tolerated in the short-term but they may create long-term toxicity risk to patients. For instance, CD19 CAR-mediated B cell aplasia may increase infection risk. CARs specific for CD123 have the potential to target hematopoietic progenitor cells and risk bone marrow failure.

- **Breadth of Targeting Allows Many Accessible Antibody Combinations.** We believe that the ACTR mechanism of action allows for a number of antigen/indication opportunities that may be difficult or impossible to pursue with alternative T cell therapies.
  - Antibodies have been generated, manufactured as GMP material, and clinically tested against dozens of tumor antigens. Some have demonstrated therapeutic benefit and we believe ACTR may enhance this benefit. Many others have demonstrated tumor specificity but have failed to provide therapeutic benefit, most likely because of the inability to translate tumor cell binding into tumor cell killing, referred to as effector function. We believe many of these non-efficacious antibodies may demonstrate therapeutic benefit when armed with ACTR T cells. Because these antibodies do not need to be modified for use with ACTR, we can leverage all prior investment in their development, including by using the same GMP supply of antibody and leveraging available safety data.
  - Several therapeutically relevant antigens (e.g., CD38, CD7) are expressed on activated T cells, making it challenging or impossible to manufacture T cells that are targeted to these antigens. CARs specific for such antigens undergo cell suicide and fratricide. In contrast, ACTR T cells are made in the absence of targeting antibodies, meaning that they can be manufactured for these antigens without these complications. Once combined with targeting antibodies after manufacturing, ACTR T cells have shown cancer cell killing without apparent suicide or fratricide.
  - Preclinical studies indicate that ACTR T cells can be targeted to multiple antigens using a combination of multiple tumor-specific antibodies. Such combinations may be useful to limit or reduce the development of tumor resistance to therapy, and increase the sensitivity by simultaneously targeting two different parts of a single target antigen.

- **ACTR's Potential for Solid Tumor Cancers.**
  - Many solid tumor antigens (e.g., HER2) are expressed at low levels on certain normal tissues. The ability to discriminate between tumor and normal tissues is critical to ensure the safety of a targeted T cell therapy.
    - CARs have limited ability to distinguish between cancer cells displaying high amounts of an antigen and certain normal tissues that present low levels of the same antigen. As a result, toxicities, including patient deaths, have occurred when CAR-T cells attack normal tissues.
    - We believe ACTR is able to discriminate its killing activity based on the amount of antigen expressed on a target cell. This is likely a result of the fact that recognition of the tumor cell is based upon many weak interactions between ACTR's extracellular domain and the targeting antibodies bound to the tumor cell, which work cooperatively to drive tight but specific binding. A normal cell with low antigen levels will have few bound antibodies and is not expected to activate the ACTR T cell. As shown in the figure below, in a comparison of ACTR707 used in combination with trastuzumab and a HER2 CAR, ACTR exhibited lower levels of cytotoxicity in non-tumor cell lines.
    - In addition, ACTR T cell activity can be adjusted by modulating antibody dosing. This ability to adjust ACTR T cell activity should make it possible to define an optimal dose through clinical testing to maximize tumor-killing activity and minimize toxicity. CAR-T cells currently have no similar means of adjusting their relative activity.
  - Tumor cells have evolved to evade immune system attack, and the tumor microenvironment surrounding solid tumor cancers is hostile to T cell function. To be effective in treating solid tumor cancers, it is important that therapeutic T cells sustain activity under adverse conditions.
    - CAR-T cells often exhibit tonic signaling as a result of receptor misfolding and aggregation, leading to chronic low-level activation. CAR-T cells thus tend towards premature differentiation and exhaustion, compromising their anti-tumor activity.
    - ACTR T cells exhibit very little tonic signaling, due to the well-folded nature of the CD16 extracellular domain. As such, ACTR T cells retain a 'younger' phenotype than CAR-T and are enriched with cell types known to drive potent anti-tumor responses.

We have tested ACTR's on-target, off-tumor effect *in vitro*. The figure below shows the results of an *in vitro* study in which ACTR707 used in combination with trastuzumab and a HER2-targeting CAR were exposed to HER2+ tumor cells and non-tumor cells expressing low levels of HER2, and the relative amounts of cytotoxicity observed with each treatment. While cytotoxicity against tumor cells was comparable for CAR and ACTR, CAR treatment resulted in much higher levels of cytotoxicity against non-tumor cells than ACTR treatment.



Our Product Candidates

We are leveraging our universal ACTR platform to rapidly and efficiently develop ACTR-based therapies for a wide range of hematologic and solid tumor cancer indications. ACTR does not need to be modified for use with different antibodies, and antibodies do not need to be modified for use with ACTR. As a result, we believe we can leverage our investment in ACTR, as well as the investment made by third parties in available antibodies, across different ACTR-antibody combinations, tumor types, and indications.

Our objective is to use the same ACTR construct in a wide range of ACTR-based therapies for both hematologic and solid tumor cancers. We aim to continue to improve the functionality of the ACTR T cell in solid tumor cancers through (i) additional genetic modifications to exploit new supporting biology in the tumor microenvironment, and (ii) introducing new manufacturing process modifications.

We currently have three clinical stage ACTR product candidates. Our most advanced product candidate, ACTR087 used in combination with rituximab, leverages our ACTR platform to target CD20, an antigen expressed on the surface of B cell NHL. Our second clinical stage product candidate, ACTR707 used in combination with rituximab, uses a modified ACTR construct designed to generate a more potent and sustained immune response to overcome immunosuppressive tumor microenvironments commonly found in solid tumor cancers. Our third clinical stage product candidate, ACTR087 used in combination with SEA-BCMA, leverages our ACTR platform to target BCMA, an antigen with high and selective expression on the surface of malignant

plasma cells in multiple myeloma. In , we expect to initiate Phase I clinical trial for ACTR707 used in combination with trastuzumab for HER2+ solid tumor cancers.

Any anti-tumor activity, or efficacy, we observe in each of these Phase I clinical trials will be reported in our regulatory submissions to the FDA and any other health authorities as required during development, and we will use these data to inform the emerging benefit/risk profile of each combination and to determine whether to move forward into a registration trial. We believe the data from these Phase I clinical trials will be supportive, if positive, but the primary purpose of our Phase I clinical trial is to evaluate safety and we do not expect the data from these trials to be registration-enabling clinical trial data sets sufficient for marketing authorization. We would only expect to receive marketing authorization for a combination if the combination demonstrated safety and efficacy in at least one subsequent registration trial.

ACTR087 Used in Combination with Rituximab for B Cell Non-Hodgkin Lymphoma

Our most advanced product candidate is ACTR087 used in combination with rituximab. ACTR087 uses a 4-1BB co-stimulatory domain. Rituximab is a chimeric monoclonal antibody that is FDA-approved in the United States (and elsewhere) to treat the blood cancers NHL and chronic lymphocytic leukemia that also affect the body's B cells. Rituximab binds to CD20, a molecule found on the surface of all B cells and is not known to be expressed on any other tissue. While targeting CD20 has the potential to deplete B cells, experience has shown that humans can live without B cells for a prolonged period of time and that the level of B cells recovers upon cessation of therapy. We believe CD20 is an attractive immunotherapeutic target for the treatment of B cell malignancies.

B Cell Non-Hodgkin Lymphoma

NHL is the most common cancer of the lymphatic system, with over 70,000 cases diagnosed each year in the United States, and approximately 85% of NHL cases are of B cell origin. Though B cell NHLs represent a heterogeneous set of lymphomas, many cell surface antigens are shared among them, including CD20.

Most subtypes of B cell NHL may be categorized as either indolent or aggressive. Indolent lymphomas are characterized by a prolonged median survival but are generally considered incurable. Aggressive lymphomas, in contrast, are characterized by more rapid growth but are potentially cured through either initial therapy or hematopoietic stem cell transplantation (HSCT). First-line therapy for patients diagnosed with B cell NHL usually consists of a combination of rituximab and multi-agent chemotherapy, which results in long term remissions or cures of approximately 50-60% of newly diagnosed patients. However, if initial therapy fails (i.e., remission is not achieved or the patient's lymphoma returns), sequential therapeutic interventions typically provide increasingly short-lived remissions. Second-line therapy usually includes other multi-agent chemotherapy regimens, often including platinum chemotherapeutics, with or without rituximab, and in some cases, HSCT. However, HSCT is only curative in a minority of cases and most patients advance to a drug resistant disease with limited treatment options.

CD20 is expressed on cancers of the lymphatic system of B cell lineage, such as CD20 positive (CD20+) B cell ALL in adults. In each of these B cell malignancies, available therapies for newly diagnosed patients include single or multi-agent chemotherapy with or without rituximab, which results in long term remission or cure in variable proportions of patients. However, absent an initial remission, or at the time of progression or relapse of the patient's underlying disease, curative treatment options remain extremely limited.

Clinical Development Plan

We are currently evaluating the safety, tolerability, and anti-lymphoma activity of ACTR087 used in combination with rituximab in adult patients with CD20+ B cell r/r NHL in an ongoing Phase I, multi-center, open-label clinical trial called ATTCK-20-2. The purpose of this trial is to evaluate safety, and the primary

endpoints of this trial are dose-limiting toxicities (DLTs), maximum tolerated dose, recommended Phase II dose, and safety as manifested by adverse events. Secondary endpoints are overall response rate (ORR), duration of response (DOR), progression free survival (PFS), and overall survival (OS). A standard "3+3" dose escalation design will define the optimal dose of ACTR087 when used in combination with rituximab. In a "3+3" dose escalation design, at least three patients are treated within each pre-specified dose level of ACTR087 with the FDA-approved dose level of rituximab. Each dose level is expanded to at least six patients if a single DLT is observed within the first three treated patients of that dose level. Prior to further clinical investigation beyond the dose-finding levels of ACTR087 used in combination with rituximab, the protocol requires that we assess at least six patients treated at the maximum tolerated dose of ACTR087, defined in the protocol primarily by DLTs. The maximum tolerated dose is the dose at which a DLT is observed in no more than one of these patients. Once the optimal dose has been determined, an expansion phase at this dose in multiple indications is planned.

Following signing of informed consent, screening to confirm eligibility, and trial enrollment, patients undergo leukapheresis. The leukapheresis cell collection is shipped to a GMP manufacturing facility, and following ACTR087 manufacturing and release, the drug product is returned to the appropriate clinical site. At that point, patients initiate their lymphodepleting chemotherapy with fludarabine and cyclophosphamide, followed by administration of rituximab and ACTR087. Rituximab is dosed every three weeks. Safety assessments, such as DLTs, determination of the maximum tolerated dose, determination of the recommended Phase II dose, adverse events, laboratory assessments, physical examinations and mini-mental state examination, and efficacy assessments, such as ORR, DOR, PFS, and OS, are delineated within the study protocol. The product candidate has cleared review by the Recombinant DNA Advisory Committee (RAC), of the National Institutes of Health and has an IND in effect with the FDA. Patient enrollment commenced in August 2016 and is ongoing.

Twenty-three patients have been enrolled, and 17 patients have been treated with ACTR087. Of those patients not treated with ACTR087, four discontinued the trial early due to progression of their NHL, receiving no study treatment, and two discontinued the trial due to serious adverse events (SAEs) that occurred prior to ACTR087 dosing. Dose Level One and Dose Level Two enrollment has been completed. Based on DLT events observed in Dose Level Two, we are not planning any further dose escalation with ACTR087 in this regimen, although the trial is ongoing and patient follow-up on study continues. The data cutoff is November 6, 2017, except for SAEs and response assessments, where the data cutoff is January 15, 2018.

Seven patients were dosed with ACTR087 in Dose Level One, receiving a target dose of up to 0.5×10^6 ACTR T cells/kg, following lymphodepleting chemotherapy comprised of fludarabine and cyclophosphamide, a conditioning regimen widely used in T cell therapy, including CAR T cell therapy. We had a 100% success rate at manufacturing ACTR087 for all enrolled patients in Dose Level One. One patient experienced rapid disease progression and did not remain on study through DLT assessment and response assessment. Of the six patients who could be evaluated for response (i.e., remained on study until the first disease response assessment), two of these patients demonstrated a complete response, and a third patient demonstrated a partial response following ACTR087 and rituximab treatment, according to standard lymphoma response criteria (known as the Lugano criteria). The remaining three patients had progressive disease. Due to differences in patient weights and how closely we reached the target cell threshold (0.5×10^6 ACTR T cells/kg), the total cell dose that each patient received varied significantly. Within the Dose Level One dataset, we observed a correlation between total ACTR T cell dose and patient response. Of note, the two patients who received the two highest total doses of ACTR087 demonstrated complete response. The patient who received the lowest total dose exhibited progressive disease. The patient with a partial response received the second lowest total dose of ACTR T cells of those patients evaluable for response. As of January 15, 2018, our most recent data cutoff date for response assessment, one of the patients reaching complete response had an ongoing complete response extending over 370 days.

No severe ACTR087-related SAEs (i.e., Grade 3 or greater) or ACTR087-related deaths have been observed in Dose Level One patients. One DLT of Grade 4 thrombocytopenia persisting more than 14 days was observed, without associated bleeding complications. This patient's platelet count recovered, and subsequent modifications

to the assessment of hematologic toxicities have been instituted, with no additional hematologic DLT observed in Dose Level One. Other ACTR087-related SAEs include one event of Grade 2 shortness of breath and one event of Grade 2 painful swallowing. All patients who received any trial drug (i.e., fludarabine, cyclophosphamide, rituximab or ACTR087) experienced at least one treatment-emergent adverse event. Of the treatment-emergent adverse events that were severe, the majority were hematologic adverse events, including thrombocytopenia, neutropenia, leukopenia/decreased white blood cell count, lymphopenia, and one event of subdural hematoma. There were no other reported Grade 3 or higher adverse events in patients treated with ACTR087 at Dose Level One. All other treatment-emergent adverse effects, except for those summarized above, were mild or moderate in severity.

Ten patients were dosed with ACTR087 in Dose Level Two. Nine patients in Dose Level Two were treated with ACTR087 at a target dose of up to 1.5 x 10^6 ACTR T cells/kg, whereas one patient was treated with ACTR087 at an ACTR087 dose consistent with Dose Level One. We had a 100% success rate manufacturing ACTR087 for all enrolled patients in Dose Level Two. Of the six patients treated at Dose Level Two who had been evaluated for response as of January 15, 2018, our most recent data cutoff date for response, three patients demonstrated a partial response following ACTR087 used in combination with rituximab treatment according to the Lugano criteria. Three patients had progressive disease.

In Dose Level Two, two patients experienced ACTR087-related severe CRS and one patient experienced ACTR087-related neurotoxicity, which was fatal. Of the two events of CRS, one patient subsequently experienced a fatal case of enterococcal sepsis considered related to ACTR087 and one patient subsequently experienced a fatal case of sepsis considered not related to ACTR087. There were three protocol-defined DLTs in Dose Level Two, including one of the events of severe CRS, the neurotoxicity event, and a hematologic DLT of prolonged (lasting greater than 28 days) Grade 4 thrombocytopenia. Based on this review of the observed safety events, we concluded that Dose Level Two exceeds the maximum tolerated dose under the standard rituximab dosing regimen and do not intend to further escalate the cell dose in this regimen. Other ACTR087-related SAEs in Dose Level Two include Grade 1 CRS and Grade 2 CRS. All patients who received any trial drug experienced at least one treatment-emergent adverse event. Of the treatment-emergent adverse events that were severe and not otherwise reported as serious events, the majority were hematologic adverse events, including thrombocytopenia, neutropenia, and anemia. Other reported Grade 3 or higher adverse events in patients treated with ACTR087 in Dose Level Two included sepsis, bacteremia, and transaminase increase. All other treatment-emergent adverse effects, except for those summarized above, were mild or moderate in severity.

The severe ACTR087-related SAEs we observed in Dose Level Two resulted in the FDA placing this trial on clinical hold in December 2017 pending submission of certain information relating to the ATTCK-20-2 clinical trial. The clinical hold was removed in February 2018, following review of this information by the FDA. Several protocol and dosing changes were made in early 2018, which we expect to reduce the incidence of adverse events and better manage those events that do occur.

Available safety and response data for Dose Level One and Dose Level Two of ATTCK-20-2 were reported at the American Society of Hematology meeting in Atlanta, Georgia, in December 2017. These data have informed the ongoing development of ACTR087 used in combination with rituximab in CD20+ B cell NHL, most immediately in defining the preliminary recommended phase 2 dose (RP2D) for the expansion cohort in this clinical trial. These data will also inform a multi-center Phase II clinical trial exploring ACTR087 used in combination with rituximab in adult patients with r/r NHL who received prior CD19 CAR therapy.

ACTR707 Used in Combination with Rituximab for B Cell Non-Hodgkin Lymphoma

ACTR707 represents an important construct not only for adult patients with CD20+ B cell r/r NHL, when used in combination with rituximab, but also for patients with other cancer types when used in combination with other antibodies. We believe important structural modifications to the ACTR707 construct, including changes to the hinge, transmembrane, and co-stimulatory domain, will translate into meaningful clinical differences when used in combination with antibody therapeutics. ACTR707 was identified through a comprehensive high-throughput screening effort aimed at identifying constructs with properties that would function particularly well in a solid tumor setting (including increased proliferation, cytokine secretion, and persistence in a repeat stimulation test). In particular, we believe that the modifications in ACTR707 will allow the ACTR T cells to behave more favorably in immunosuppressive tumor microenvironments commonly found in solid tumor cancers. As a first-step, we are testing ACTR707 as a proof of concept in a Phase I multi-center open label clinical trial, ATTCK-20-03, in combination with rituximab, to enable rapid assessment of this alternative construct.

Clinical Development Plan

We are currently evaluating the safety, tolerability, and anti-lymphoma activity of ACTR707 used in combination with rituximab in adult patients with CD20+ B cell r/r NHL in a Phase I, multi-center, open-label clinical trial called ATTCK-20-03. The primary endpoints of this trial are DLTs, maximum tolerated dose, and incidence and severity of adverse events. Secondary endpoints are efficacy (as measured by ORR, DOR, PFS, OS), ACTR T cell persistence, level of inflammatory markers and cytokines, and rituximab pharmacokinetics (as measured by plasma concentration of rituximab and anti-drug antibody titers). An adaptive design is being used to identify a dose of ACTR707 when administered in combination with rituximab to be used in future trials. In the United States, an IND was submitted in April 2017, and the protocol was recommended by local Institutional Biosafety Committees (IBCs) for NIH waivers of RAC review, which NIH granted. We are currently enrolling and dosing patients in ATTCK-20-03. One severe ACTR707-related SAE of febrile neutropenia has been reported in the clinical trial as of January 15, 2018.

ATTCK-20-03 design is similar to ATTCK-20-2 in that the primary objective is safety, although anti-lymphoma activity will also be assessed. The key differences are that ATTCK-20-03 is designed to investigate three ‘flat’ dose levels of ACTR707, meaning that the doses do not vary by patient weight. For the first cohort, we are administering a flat dose of 40 x 10^6 ACTR T cells. Dose escalation will be followed by up to two expansion levels of the combination at the recommended Phase II dose of ACTR707. The decision to escalate dose and the number of patients in each level are defined by statistical testing drawing from the cumulative safety observations across all previous levels. This design, in comparison to the more traditional “3+3” design, is anticipated to provide greater flexibility in identifying the dose of ACTR707 used in combination with rituximab to be used in future studies.

We anticipate reporting preliminary safety and response data from ATTCK-20-03 in and continuing enrolling patients in this trial through . We expect to leverage data from the Phase I clinical trial to inform future studies combining ACTR707 with a variety of antibodies targeting different cancers, including one combination, ACTR707 used in combination with trastuzumab, that we plan to evaluate for treatment of HER2+ cancers.

ACTR087 Used in Combination with SEA-BCMA for Multiple Myeloma

Our third clinical product candidate is ACTR087 used in combination with SEA-BCMA, which we are currently testing in adult patients with r/r multiple myeloma. SEA-BCMA is a novel humanized antibody that targets the antigen BCMA, developed by Seattle Genetics using their sugar-engineered antibody (SEA) technology. BCMA is expressed on normal plasma cells, some mature B cells, and at comparatively elevated levels on malignant multiple myeloma cells, but is absent from other normal tissues. We believe BCMA presents an attractive immunotherapeutic target for our platform.

Multiple Myeloma

Multiple myeloma, a cancer arising from normal plasma cells, which are of B cell lineage, is diagnosed in approximately 30,000 patients in the United States every year, making it the second most common hematologic malignancy. First-line treatment increasingly involves a three-drug regimen that includes a proteasome inhibitor such as bortezomib or carfilzomib, an immunomodulatory drug such as lenalidomide, and a corticosteroid such as dexamethasone, though if a patient is fit enough they may proceed to autologous HSCT in their first complete remission. First-line therapy typically leads to complete remission, but invariably the disease relapses or progresses, even following HSCT, necessitating subsequent therapy. Several therapeutic options exist for patients with progressive or relapsed multiple myeloma, including recently approved new classes of agents such as monoclonal antibodies. Retreatment with drugs used in first-line therapy, or other drugs within their class, is also feasible, but in most cases subsequent remissions are of shorter duration or cumulative toxicities preclude continuation of existing therapies.

We are developing ACTR087 used in combination with SEA-BCMA, a novel proprietary first-in-human monoclonal antibody that targets the antigen BCMA, which is widely expressed in multiple myeloma. The ACTR087 used in combination with SEA-BCMA product candidate represents the first clinical product candidate arising from our strategic collaboration with Seattle Genetics, as well as our first clinical product candidate incorporating a novel antibody. SEA-BCMA is engineered to enhance its binding to ACTR087, providing additional rationale for this novel-novel combination.

Clinical Development Plan

We are currently testing the safety, tolerability, and anti-myeloma activity of ACTR087 used in combination with SEA-BCMA in adult patients with r/r multiple myeloma in a Phase I, multi-center, open-label clinical trial called ATTCK-17-01. The primary endpoints of this trial are recommended Phase II dose, DLTs, and incidence and severity of adverse events. Secondary endpoints are efficacy (as measured by ORR, DOR, PFS, OS), ACTR T cell persistence, level of inflammatory markers and cytokines, pre-treatment BCMA expression on multiple myeloma cells, and SEA-BCMA pharmacokinetics (as measured by plasma concentration of SEA-BCMA and anti-drug antibody titers). The trial is designed as a dose escalation trial, increasing levels of both ACTR087 and SEA-BCMA. A safe and effective dose of SEA-BCMA has not been previously defined in humans. ATTCK-17-01 is designed to identify both a dose of ACTR087 and SEA-BCMA in combination for use in subsequent clinical trials. Similar to ATTCK-20-03, an adaptive dose escalation study design is being used. Two ACTR087 and up to six SEA-BCMA dose levels may be studied in this trial. We submitted an IND in July 2017. The protocol was recommended by local IBCs for NIH waivers of RAC review, which NIH granted. We are currently enrolling and dosing patients in this trial and we expect to report preliminary safety and response data from ATTCK-17-01 in .

Data from ATTCK-17-01 will inform the ongoing development of the ACTR087 used in combination with SEA-BCMA product candidate for treatment of multiple myeloma. In ATTCK-17-01, we are testing ACTR087 used in combination with SEA-BCMA in patients that have relapsed, progressed, or are no longer responding to treatment after at least three or more lines of therapy for their multiple myeloma, or are double refractory to a proteasome inhibitor and an immunomodulatory agent, regardless of the number of prior therapies. Patients must have received adequate available therapies, including HSCT for those who are eligible to receive HSCT. We also anticipate that in the future we may study patients with other BCMA-expressing malignancies with ACTR087 used in combination with SEA-BCMA. Initiation of new clinical trials with ACTR087 used in combination with SEA-BCMA will depend upon the tolerability and anti-myeloma activity observed in ATTCK-17-01.

ACTR707 Used in Combination with Trastuzumab for HER2+ Cancers

We are currently in late-stage preclinical development of ACTR707 used in combination with trastuzumab for the treatment of patients with cancers that overexpress HER2. Trastuzumab is a humanized monoclonal

antibody that targets the HER2 cell surface receptor, and is currently approved to treat HER2+ breast cancers and HER2+ gastric cancers alone and in combination with chemotherapy. While HER2 is overexpressed in a subset of breast and gastric cancers, it is found at very low levels on certain tissues within the body. In preclinical studies, we have shown antigen-specific killing of HER2-overexpressing cell lines with ACTR707 used in combination with trastuzumab, without observing cytotoxic effects in normal cells expressing low amounts of HER2. ACTR707 used in combination with trastuzumab also induces remissions in relevant mouse models of HER2+ cancers.

HER2+ Cancers

Amplification of the ERBB2 gene leads to the overexpression of HER2, a major driver of cell proliferation for a subset of patients with breast and gastric cancers. As many as 37,500 women in the United States, or approximately 15% of all women diagnosed annually with breast cancer, overexpress the HER2 antigen. At least 4,000 patients with gastric cancer in the United States are HER2 positive as well. The development of HER2-directed therapies, including monoclonal antibodies such as trastuzumab and pertuzumab, have substantially improved outcomes for women with HER2+ breast cancer and demonstrated clinical benefit for women in the neo-adjuvant and adjuvant setting (preceding or following definitive local therapy). Women with advanced or metastatic breast cancer may constitute as many as 8,000 patients per year in the United States, and while HER2-directed therapies, such as trastuzumab and pertuzumab, trastuzumab-DM1, and HER2-directed small molecule inhibitors such as lapatinib are available, no curative options exist. Likewise, while trastuzumab has improved outcomes for the subset of patients with HER2+ advanced or metastatic gastric/gastroesophageal junction cancers, relapse or progression is almost inevitable.

Clinical Development Plan

We plan to file an IND of ACTR707 used in combination with trastuzumab in HER2+ cancers in . Subsequent clinical development of this product candidate will depend upon the safety and efficacy data observed in the Phase I clinical trial.

Additional Product Candidates

We are exploring the potential of our universal ACTR platform in combination with a wide range of tumor-targeting antibodies to pursue hematologic and solid tumor cancers with significant unmet medical needs. We are working on a number of product candidates in early clinical or late-stage preclinical development. We plan to leverage the investment we have already made in ACTR, and the clinical validation and de-risking of ACTR that we are looking to achieve through the current clinical trials, to rapidly expand our pipeline of ACTR-based therapies using both commercially available and de-risked antibodies, as well as antibodies in clinical and preclinical development.

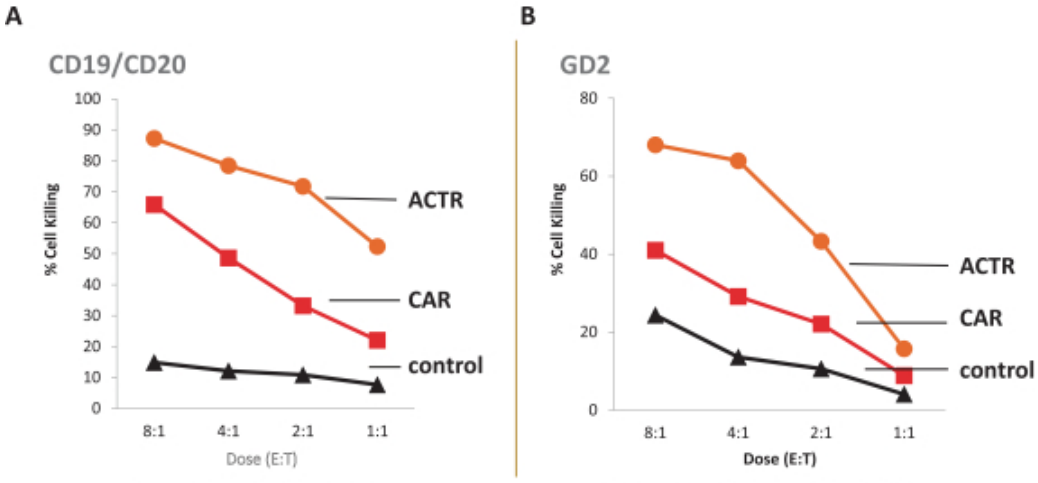
Preclinical Data

Activity

An important factor in the efficacy of cell therapies is potency: the ability to drive efficient tumor cell killing.

As shown in panel (A), lymphoma-derived Daudi cells expressing both CD19 and CD20 antigens were targeted in an experiment using T cells modified with either a CD19 CAR or with ACTR combined with rituximab. The CD19 CAR tested in this experiment is the same CAR construct used in Kymriah, a CAR-T therapy recently approved for pediatric ALL. ACTR exhibited stronger activity relative to the CAR under all conditions.

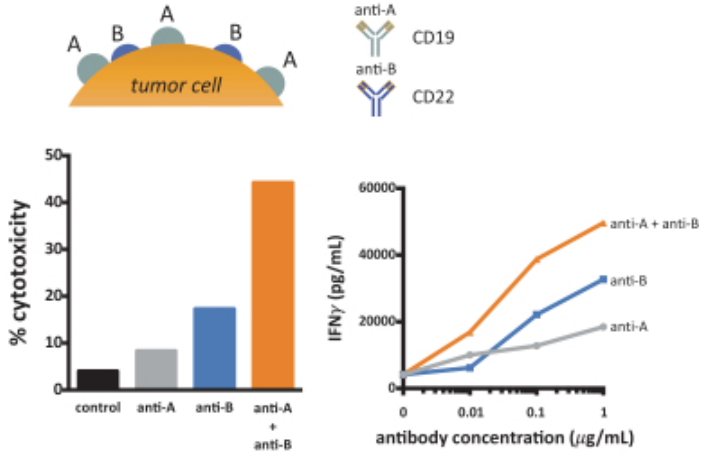
In the study shown in panel (B), both ACTR and CAR were directed to attack the same antigen (GD2) using the same antibody, formatted as an IgG for use with ACTR or as an scFv for use as a CAR. Both tested ACTR and CAR constructs rely upon the same intracellular signaling components (4-1BB and CD3zeta). ACTR outperformed CAR at all tested concentrations. In both figures, the percent of tumor cells killed by each administration is plotted as a function of the ratio of effector T cells to tumor cells.



ACTR = ACTR087 + Rituximab
CAR = anti-CD19-41BB-CD3z CAR
Control = T cells with no chimeric receptor

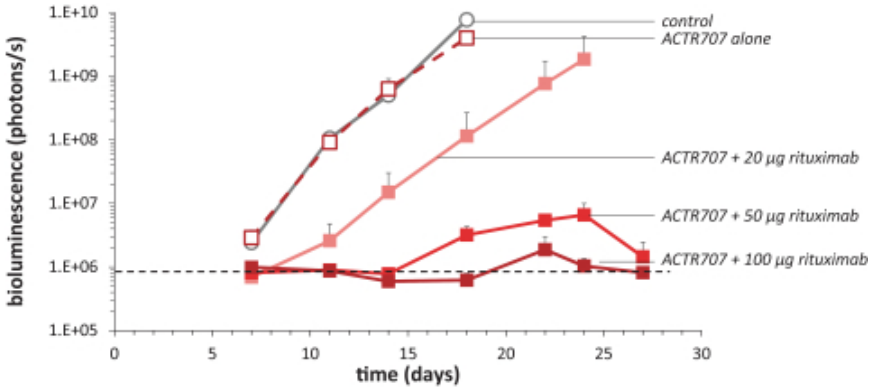
ACTR = ACTR087 + hu14.18K322A
CAR = hu14.18K322A-41BB-CD3z CAR
Control = T cells with no chimeric receptor

By effectively separating tumor cell targeting and tumor cell killing into the two components that make up an ACTR-antibody combination, we have created a universal ACTR T cell that is intended to be used with a wide range of tumor-targeting antibodies. We believe ACTR T cells can be used in combination with more than one type of antibody to more effectively attack a tumor without having to re-engineer the ACTR T cell, which gives ACTR flexibility in use that is difficult or impossible to achieve with CARs. The figure below shows the results of an *in vitro* experiment in which ACTR T cells were directed to attack tumor cells using two types of antibodies against two distinct tumor antigens, CD19 and CD22. The combination shows increased activity, demonstrating better tumor cell killing than obtained with either antibody alone.



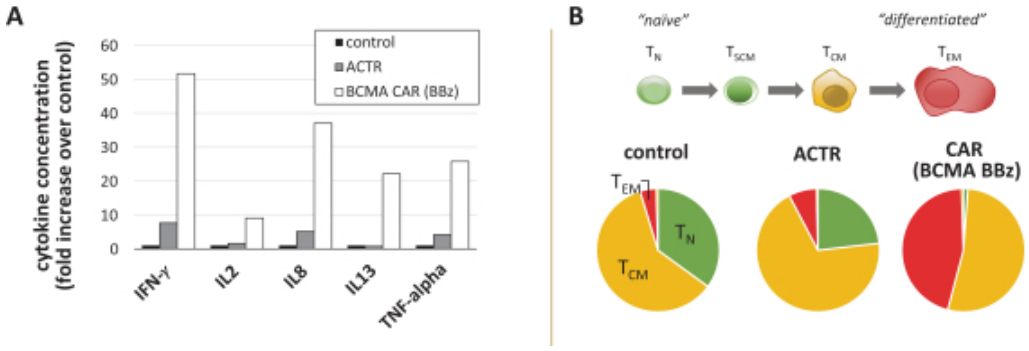
Controlling Activity

We believe ACTR has intrinsic advantages as a cell therapy because of our ability to adjust its activity by modulating antibody dosing in clinical studies. In the *in vivo* experiment shown below, ACTR T cell activity was assessed with a stringent xenograft model using bioluminescent Raji cells administered by IV injection. The amount of the targeting antibody was systematically increased to change the level of cytotoxic killing. At a low dose of rituximab, tumor growth is slowed (as demonstrated by reduced bioluminescence). At higher doses, tumors are completely cleared.



Solid Tumors

Solid tumors create a tumor microenvironment that is hostile to T cells and reduces their functionality. To sustain solid tumor killing activity, it is important to prevent T cells from converting into differentiated and exhausted cell types known to have limited anti-tumor activity. Several lines of evidence indicate that tonic signaling, activation of T cells in the absence of a target, drives T cell differentiation. Using cytokine secretion in the absence of tumor cells as a measure of tonic signaling, we find that ACTR T cells have very low activity (panel A in the figure below). As a result, ACTR T cells maintain a “naïve” phenotype, enriched for cell types that correlate with potent anti-tumor activity (panel B in the figure below). In contrast, CARs are known to signal in the absence of target cells as a result of misfolding and receptor aggregation. As shown below for one such CAR targeting BCMA, we see much higher background signaling (high cytokine secretion in the absence of tumor cells) and correspondingly, a much higher proportion of differentiated CAR-T cell types. We believe reduced tonic signaling is an intrinsic advantage of ACTR T cells that should translate into potent cell killing in solid tumor cancers.

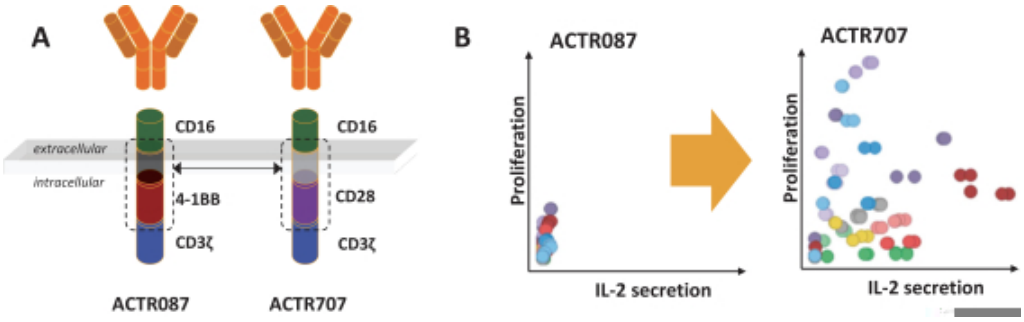


Understanding the stringent requirements for T cell function in the immunosuppressive environment of solid tumors, we have pursued a high throughput screening approach to identify ACTR constructs that may perform

better in this setting. We initially assembled over a hundred ACTR constructs by combining functional domains from a number of different starting genes. We evaluated these constructs using *in vitro* and *in vivo* screening tests to assess expected functionality in a solid tumor environment, including sustained high-level cytokine secretion, sustained proliferation, cytotoxicity, and resistance to exhaustion.

Through this screening effort, we identified ACTR707 as an ACTR construct with enhanced activity against a number of hematologic and solid tumor cancers. Relative to ACTR087, ACTR707 is modified in terms of its costimulatory domain (CD28 versus 4-1BB) and the hinge and transmembrane domains that bridge the extracellular and intracellular components (panel A in the figure below). These changes translate into significant differences in IL-2 secretion and proliferation in response to tumor cells (panel B in the figure below). Both features are expected to be especially important in targeting solid tumors.

Panel B in the figure below shows the results from our in vitro evaluation of IL-2 secretion for each of ACTR087 and ACTR707. The solid tumor microenvironment lacks cytokines that promote T cell growth and function, either because they are not produced, or because they are competitively consumed by cells in the tumor (e.g., IL-2 by T regulatory cells). Increased IL-2 secretion by ACTR707 is expected to counteract this effect. Each point in panel B represents a different antibody plus cell line combination, including both hematologic and solid tumor cell lines.



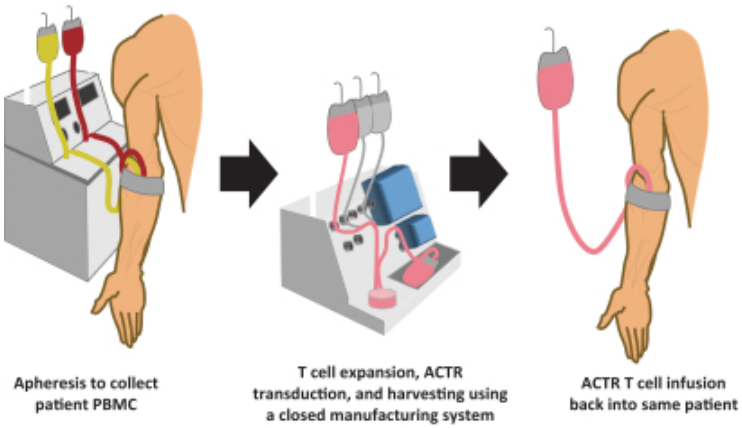
Product Development and Manufacturing

The ACTR process is designed as an automated, closed system that uses a serum-free growth medium and other materials that are readily available from qualified suppliers. Because ACTR is a platform technology that can target a wide variety of antigens using a single viral vector, we are refining a platform manufacturing process that is expected to address multiple indications with little or no modification. We understand that the T cell therapy field, including manufacturing and analytical technology, is evolving rapidly and have invested in process development tools, such as high-throughput liquid handling and flow cytometry, design of experiments, and data analysis software in order to map the design space and develop multiple options for processing that can be rapidly deployed to exploit new indications or new discoveries.

In our process, patients initially undergo a laboratory procedure in which white blood cells are removed from the bloodstream (known as leukapheresis), to yield peripheral blood mononuclear cells (PBMCs) that serve as the starting point for ACTR T cell manufacture. Collected PBMCs are transferred to a central GMP manufacturing facility, where they are enriched, activated, and cultured to promote optimal T cell functionality. T cells are then transduced with a non-replicating gamma-retroviral vector containing the ACTR transgene. The culture is incubated for several days to allow the T cell population to expand to the desired dose level. Once expansion has completed, cells are harvested, formulated, packaged, and cryopreserved for shipment back to the clinic for infusion into the same patient from whom the white blood cells were removed. ACTR is currently administered as a single infusion, following preparatory lymphodepletion.

ACTR product is dosed based on the total number of cells expressing the ACTR transgene. The manufacturing process can take from six days to 12 days, depending on the desired dose for a given patient. This manufacturing timeline is typical for the therapeutic T cell industry and can potentially be further optimized. ACTR product is tested using a panel of release assays that assess the safety and suitability of the product candidate for clinical trials. Suitability is controlled through specifications that include the purity of the T cell population and the quantity of ACTR T cells in the final product. Safety is controlled via specifications on appearance, endotoxin, and the absence of microbial contamination and replication-competent viral vector.

An illustration of the manufacturing process is shown in the graphic below:



Commercialization Plan

We currently have no sales, marketing, or commercial product distribution capabilities and have no experience as a company in marketing products. We intend to expand our global commercialization capabilities over time.

As a first step, we plan to establish a U.S.-focused specialty sales and marketing organization in advance of receipt of regulatory approval of our first ACTR product. We believe that in the United States we can address physicians who treat our proposed clinical indications with a direct specialty sales force. Our commercial strategy for markets outside the United States may include the use of strategic partners or the establishment of our own commercial capabilities. We plan to further evaluate these alternatives as we approach approval of our first ACTR product.

We intend to leverage the infrastructure developed for our first approved ACTR product to facilitate commercialization of any additional product candidates for which we gain approval. In addition, we will build upon physicians' familiarity and experience with the first ACTR product to accelerate adoption of subsequent combinations. As additional product candidates advance through our pipeline, our commercial plans may change. In particular, some of our pipeline assets target potentially large solid tumor cancer indications. The potentially large amount of data, the size of the development programs, as well as the size of the target market and thus that of a commercial infrastructure and manufacturing capacity to address such market, may all influence our U.S., European Union (EU), and rest-of-world strategies.

For co-developed products under our collaboration with Seattle Genetics, if successful we will co-commercialize them with Seattle Genetics in the United States, and Seattle Genetics will commercialize them outside of the United States.

Intellectual Property

Intellectual property is an important component of our assets. We are working to establish both strong patent protection and trade secrets to position us as a leader in the practice of ACTR technology. Our efforts include our proprietary technology development as well as licensing patent rights from third parties. In doing so, we have strived to ensure our ability to operate freely within the complex patent landscape of cell therapy. To date, one European patent has issued from our in-license portfolio, but no other patents have issued from the patent applications that we own or in-license.

The ACTR platform was initially conceived and developed in the laboratories of our scientific founder, Dr. Dario Campana, who was working initially as an investigator at St. Jude Children's Research Hospital (St. Jude's) and subsequently at the National University of Singapore (NUS). The original patent application describing ACTR087 was filed in 2013. A worldwide, exclusive license to the patent rights resulting from this work was executed between us, St. Jude's, and NUS in 2014.

Our further work at encompassing a broad range of ACTR constructs was completed and described in subsequent patent applications filed in 2014. Additional patent applications filed by us between 2014 and 2017 encompass the following additional technological innovations and product-related claims:

- engineered ACTR constructs that specifically engage synthetic (i.e., not endogenous) antibodies.
- targeting non-traditional tumor-target antigens with ACTR (e.g., peptides bound to MHC).
- using ACTR with mixtures of antibodies to simultaneously target multiple antigens or epitopes.
- methods of using ACTR and rituximab to treat lymphoma.
- methods of using ACTR and other antibodies to treat other cancer indications.
- next-generation ACTR constructs with improved functionality in solid tumor cancers.

Our strategy is to pursue a variety of claims intended to provide multiple layers of protection. These include:

- pursuing broad claims in the U.S. for the ACTR concept (which we define as a chimeric receptor with the functional properties of Fc binding, T cell co-stimulation, and TCR signaling activity).
- pursuing claims to specific compositions of matter in connection with particular ACTR constructs (including specific protein and nucleic acid sequences).
- different methods of delivering ACTR to T cells, including viral vectors and mRNA.
- methods of using the ACTR platform in combination with antibodies to specified tumor-target antigens to treat disease.
- methods of using specific ACTR constructs in combination with specific monoclonal antibodies to specific tumor-target antigens to treat disease.

All of the patent applications that we own or license, including the original ACTR filings, are still in the early stages of prosecution and no claims have yet issued, other than a European patent from the licensed-in case. Examination of most of the patent applications that we own has not yet commenced, because they are either provisional applications or Patent Cooperation Treaty (PCT) applications. We will need to decide whether and where to pursue protection for the inventions disclosed in these provisional and PCT applications before applicable statutory deadlines, our applications will only be examined in jurisdictions where we elect to pursue protection, and we will only have the opportunity to attempt to obtain patents in such jurisdictions where we elect to pursue protection.

Under the terms of our agreement with NUS and St. Jude's, we have the right to review and comment on all correspondence and proposed responses to office actions and to provide consultation and input on all strategic decisions with respect to filing, prosecution, and maintenance of the licensed patents. We are seeking protection across a range of commercially important territories, including countries in North America, Europe, and Asia.

Our ACTR therapies require the use of commercially available antibodies (e.g., rituximab and trastuzumab, as used in our current clinical trials) or antibodies in preclinical or clinical development (e.g., SEA-BCMA, as used in our current clinical trials) for targeting cancer cells. These commercially available antibodies and antibodies in preclinical/clinical development are developed by third parties. More specifically, rituximab is jointly marketed by Biogen Inc. (Biogen) and Genentech, Inc. (Genentech) (a subsidiary of The Roche Group (Roche)); trastuzumab is marketed by Genentech (Roche); and SEA-BCMA is being developed by Seattle Genetics.

We do not own intellectual property, including patents, over these commercially available antibodies and antibodies in preclinical/clinical development *per se*. For commercially available antibodies, such as rituximab and trastuzumab, we rely on our ability to purchase them on commercially reasonable terms for the clinical trials and their availability for commercialized product. For antibodies in preclinical/clinical development, such as SEA-BCMA, we have formed a strategic partnership with Seattle Genetics under which we have access to the antibodies for clinical trials and development of commercial products.

With respect to rituximab (Rituxan®), Biogen's Form 10-K filed on February 4, 2015 states:

> We have several U.S. patents and patent applications, and numerous corresponding foreign counterparts, directed to anti-CD20 antibody technology, including RITUXAN. The principal patents with claims to RITUXAN or its uses expire in the U.S. between 2015 and 2018 and expired in the rest of the world in 2013, subject to any available patent term extensions. In addition, we and our collaborator Genentech, have additional patents and patent applications directed to anti-CD20 antibodies and their uses to treat various diseases. Genentech has principal responsibility for managing the intellectual property portfolio for RITUXAN and the other anti-CD20 antibodies under our agreements with Genentech.

With respect to trastuzumab (Herceptin®), the latest publicly available information from Genentech in its Form 10-K filed on February 20, 2009 listed the following last-to-expire, product-specific U.S. patents:

Product	Last-to-Expire Product-Specific U.S. Patents	Year of Expiration
Herceptin	6,339,142	2019
	6,407,213	2019
	7,074,404	2019

With respect to SEA-BCMA, Seattle Genetics has not provided any information regarding any relevant patents and patent applications publicly.

The effective term for individual patents varies based upon a number of factors including the date of patent application filing and the date of patent issuance, the territory within which protection is sought, and certain adjustments to patent term tied to regulatory review. Patents in both the U.S. and many other territories generally have an effective term of 20 years from the earliest filing date. Based on its initial filing date, should any patents issue from the ACTR core patent family, the 20-year term of such patents would be expected to expire in 2034. The actual protection afforded by any patents that may issue, if any patents do issue, is expected to vary across different ACTR plus antibody products and depends upon the claimed territory, the scope of claim coverage, the availability of extensions due to regulatory review, validity and enforceability of the claims, and a number of additional factors.

We are not currently a party and have not been a party to any legal proceedings involving patent rights.

The intellectual property value of companies like ours is intrinsically uncertain and involves complex legal and scientific questions. Competitors may commercialize products that infringe our intellectual property if we are unable to both obtain and enforce patent claims protecting our inventions. Our currently pending and future patent applications may not be granted. If granted, our patents may be challenged, invalidated, or circumvented,

thereby limiting our ability to stop competitors from marketing related products. Future changes to patent laws (or their interpretation) may limit our ability to protect our inventions and to enforce our patent rights. Any such changes may adversely impact the value ascribed to our intellectual property. Others with related but distinct technology may have freedom to operate and effectively compete with us. Moreover, patents issued to competitors may limit or prevent our ability to practice the ACTR technology and to commercialize ACTR products. In addition, because of the extensive time required for development, testing and regulatory review of a potential product, it is possible that, before any particular product candidate can be commercialized, any related patent may expire or remain in force for only a short period following commercialization, thereby reducing any advantage of the patent.

We seek to protect our technology and product candidates, in part, by entering into confidentiality agreements with those who have access to our confidential information, including our employees, contractors, consultants, collaborators, and advisors. We also seek to preserve the integrity and confidentiality of our proprietary technology and processes by maintaining physical security of our premises and physical and electronic security of our information technology systems. Although we have confidence in these individuals, organizations, and systems, agreements or security measures may be breached and we may not have adequate remedies for any breach. In addition, our trade secrets may otherwise become known or may be independently discovered by competitors. To the extent that our employees, contractors, consultants, collaborators, and advisors use intellectual property owned by others in their work for us, disputes may arise as to the rights in related or resulting know-how and inventions. For this and more comprehensive risks related to our proprietary technology, inventions, improvements and products, please see the section on “Risk Factors—Risks Related to Intellectual Property.”

Our trademark portfolio currently contains registrations in China, EUTM, Japan, Singapore, and the United States as well as a registration at WIPO under the Madrid Protocol.

Licenses and Third-Party Research Collaborations

Strategic Collaboration with Seattle Genetics

In June 2015, we entered into a collaboration agreement with Seattle Genetics to identify, research, develop, and commercialize novel antibody-coupled ACTR therapies incorporating Seattle Genetics’ antibodies for the treatment of cancer. We formed a strategic partnership with Seattle Genetics because of its leadership in the discovery, development, and manufacturing of antibody-based therapies for cancer. Under this agreement, we are actively working on developing ACTR combination therapies for two target antigens. The first product candidate under our collaboration is ACTR087 used in combination with SEA-BCMA, targeting the BCMA antigen. We have not yet disclosed the target antigen of the second product candidate under our collaboration. Under the agreement, Seattle Genetics had an option to nominate a third antigen; this option expired unexercised in June 2017.

Under the terms of the collaboration, Unum will conduct preclinical research and clinical development activities through Phase I clinical trials, and Seattle Genetics will provide all of the funding for those activities. We will work together to co-develop and fund product candidates after Phase I clinical trials unless either company opts out of further development and commercialization activities. Seattle Genetics has the option to opt-out from further development and commercialization activities for each of the two product candidates under the collaboration during two specified periods subsequent to Phase I clinical development. We have an option to opt-out from further development and commercialization activities for each of the two product candidates under the collaboration during a specified period subsequent to Phase II clinical development. If neither party elects to opt-out of further development and commercialization activities, we will co-commercialize any successful developed product candidates and share equally any profits and losses on any co-developed product candidates in the United States. Seattle Genetics retains exclusive commercial rights outside of the United States.

Through September 30, 2017, we had received $25.0 million in upfront payments, $5.0 million in equity investment in our Series B preferred stock financing, and $6.0 million in research and development funding

under our collaboration agreement. As of September 30, 2017, we were eligible to receive future collaboration and milestone payments of up to an aggregate of $400.0 million, payments of which are due upon the achievement of specified development, regulatory, and commercial milestones or the occurrence of specific events. During the term of the agreement, we will share equally all profits and losses related to the commercialization of any co-developed products in the United States. We are entitled to receive tiered royalties in the high single digit to mid-teens percentages on net sales achieved outside of the United States for each co-developed product.

Unless earlier terminated, our collaboration agreement will expire on a product-by-product basis in the United States on the date on which neither party is researching, developing or commercializing such product. Outside of the United States, our collaboration agreement will expire on a product-by-product and country-by-country basis at the end of the applicable royalty term for such product in such country. The royalty term will be in effect beginning at the first commercial sale of a product and ending upon the later to occur of (i) expiration of the last valid claim within any patent right that we or Seattle Genetics has that would be infringed by the manufacture, use, sale, offer for sale, or importation of such product in such country, (ii) the end of any regulatory exclusivity periods that apply to the manufacture, use, sale, offer for sale, or importation of such product in such country, or (iii) ten years from the first commercial sale of such product in such country.

License Agreement with National University of Singapore and St. Jude Children's Research Hospital

In August 2014, we entered into a license agreement with the National University of Singapore (NUS) and St. Jude's that grants us an exclusive, worldwide, sublicensable license to certain patent rights and to intellectual property rights related to certain know-how to develop, make, and commercialize licensed products and to perform services for all therapeutic and diagnostic uses. The agreement was subsequently amended twice. The patent applications covered by this agreement are directed to specific ACTR constructs, including ACTR087 and their use in immunotherapy. Pursuant to this license agreement, we have rights to one pending U.S. non-provisional patent application and the corresponding Patent Cooperation Treaty counterpart application, and other counterpart patent applications in jurisdictions outside the United States. The U.S. provisional applications under this license agreement have expired.

In 2014, we made payments of $0.1 million. We are required to pay license maintenance fees on each anniversary of the effective date of the agreement that escalate from less than $0.1 million for each of the first seven years to $0.1 million on the eighth anniversary and each year thereafter. The license agreement requires us to pay tiered royalties ranging in the low single-digit percentages based on annual net sales of licensed products. In the case that multiple royalty streams are required, due to multiple licenses required for marketed products or services, royalty fees for this technology may be reduced. We may also be obligated to pay up to a maximum of 5.5 million Singapore dollars (equivalent to approximately $4.0 million as of September 30, 2017) in one-time clinical and regulatory milestones related to the development of the first licensed product to hit such milestones. Licensed products could include at least ACTR087. In addition, we are required to pay a low double-digit percentage of certain payments that we receive, if these qualify as sublicensing income, as defined in the license agreement. Through September 30, 2017, we had paid a total of $0.1 million.

The license agreement will expire, on a country-by-country basis until the last to expire of the patents and patent applications covering such licensed product or service. NUS may terminate the license agreement within 60 days after written notice in the event of a breach of contract. NUS may also terminate the agreement upon written notice in the event of our bankruptcy, liquidation, or insolvency. In addition, we have the right to terminate this agreement in its entirety at will upon 90 days' advance written notice to NUS. However, if we have commenced the commercialization of licensed products, we can only terminate at will if we cease all development and commercialization of licensed products.

Competition

The biotechnology and pharmaceutical industries, including the oncology subsector, are characterized by rapidly advancing technologies, intense competition, and a strong emphasis on intellectual property. Any

candidates that we successfully develop and commercialize will have to compete with any existing therapies as well as therapies that may be developed in the future. While we believe our ACTR platform and scientific expertise provide us with competitive advantages, we face substantial competition from many different sources, including large and specialty pharmaceutical companies and biotechnology companies, academic research institutions and governmental agencies, and public and private research institutions.

Due to their promising clinical therapeutic effect in clinical trials, we anticipate substantial direct competition from other organizations developing advanced T cell therapies and other types of oncology therapies. In particular, we expect to compete with:

- Companies genetically engineering T cells with CARs that are reactive to tumor associated antigens. In particular, Kite Pharma, Inc. (a Gilead Sciences, Inc. company), Juno Therapeutics, Inc., Novartis AG, and bluebird bio, Inc. In addition, some companies, such as Cellectis SA, are developing allogeneic cell therapies that could compete with our products.
- Companies genetically engineering T cells with TCRs that are reactive to tumor associated antigens. In particular, Adaptimmune Therapeutics plc, Kite Pharma, Inc. (a Gilead Sciences, Inc. company), and Juno Therapeutics, Inc.
- Companies developing bi-specific antibodies that bring T cells and tumor cells into close proximity with each other. In particular, Macrogenics, Inc., Amgen Inc., Roche Holding AG, and Genmab A/S.
- Companies developing other immune cells that can be targeted using antibodies, such as NantKwest, Inc.

We believe that other known types of immunotherapies, such as certain check-point inhibitors, may be used in conjunction with ACTR platform to increase efficacy. However, we cannot predict whether other types of immunotherapies may be developed and show greater efficacy and we may have direct and substantial competition from such immunotherapies in the future. Such immunotherapies are being pursued by several biotech companies as well as by large-cap pharma. Many of our current or potential competitors, either alone or with their collaboration partners, have significantly greater financial resources and expertise in research and development, manufacturing, preclinical testing, conducting clinical trials, and marketing approved products than we do. Mergers and acquisitions in the pharmaceutical, biotechnology, and gene therapy 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 patient registration for clinical trials, as well as in acquiring technologies complementary to, or necessary for, our product candidates.

Government Regulation

Government authorities in the United States, at the federal, state, and local level, and in other countries and jurisdictions, including the European Union, extensively regulate, among other things, the research, development, testing, manufacture, quality control, approval, packaging, storage, recordkeeping, labeling, advertising, promotion, distribution, marketing, post-approval monitoring and reporting, and import and export of pharmaceutical products, including biological products. In addition, some jurisdictions regulate the pricing of pharmaceutical products. The processes for obtaining regulatory approvals in the United States and in foreign countries and jurisdictions, along with subsequent compliance with applicable statutes and regulations and other regulatory authorities, require the expenditure of substantial time and financial resources.

Licensure and Regulation of Biologics in the United States

In the United States, our candidate products are regulated as biological products (biologics), under the Public Health Service Act (PHSA), and the Federal Food, Drug, and Cosmetic Act (FDCA), and their

implementing regulations. The failure to comply with the applicable U.S. requirements at any time during the product development process, including non-clinical testing, clinical testing, or the approval process or post-approval process, may subject an applicant to delays in the conduct of a study, regulatory review and approval, and/or administrative or judicial sanctions. These sanctions may include, but are not limited to, the U.S. Food and Drug Administration's (FDA), refusal to allow an applicant to proceed with clinical testing, refusal to approve pending applications, license suspension or revocation, withdrawal of an approval, warning letters, adverse publicity, product recalls, product seizures, total or partial suspension of production or distribution, injunctions, fines, and civil or criminal investigations and penalties brought by the FDA or the Department of Justice (DOJ), or other governmental entities.

An applicant seeking approval to market and distribute a new biologic in the United States generally must satisfactorily complete each of the following steps:

- non-clinical laboratory tests, animal studies, and formulation studies all performed in accordance with the FDA's good laboratory practice (GLP) regulations;
- submission to the FDA of an investigational new drug application (IND) for human clinical testing, which must become effective before human clinical trials may begin;
- approval by an institutional review board (IRB) representing each clinical site before each clinical trial may be initiated;
- performance of adequate and well-controlled human clinical trials to establish the safety, potency, and purity of the product candidate for each proposed indication, in accordance with good clinical practices (GCP);
- preparation and submission to the FDA of a biologic license application (BLA), for a biologic product requesting marketing for one or more proposed indications, including submission of detailed information on the manufacture and composition of the product in clinical development and proposed labeling;
- FDA acceptance and review of the BLA, which might include review by an FDA advisory committee;
- one or more FDA inspections of the manufacturing facility or facilities, including those of third parties, at which the product, or components thereof, are produced to assess compliance with current good manufacturing practices (cGMP) requirements and to assure that the facilities, methods, and controls are adequate to preserve the product's identity, strength, quality, and purity;
- any FDA audits of the non-clinical and clinical trial sites to assure compliance with GLPs and GCPs, respectively, and the integrity of clinical data in support of the BLA;
- payment of user fees and securing FDA approval of the BLA and licensure of the new biologic product; and
- compliance with any post-approval requirements, including the potential requirement to implement a risk evaluation and mitigation strategy (REMS) and any post-approval studies required by the FDA as a condition of approval.

Non-clinical Studies and Investigational New Drug Application

Before testing any biologic product candidate in humans, the product candidate must undergo non-clinical testing. Non-clinical tests include laboratory evaluations of product chemistry, formulation, and stability, as well as animal studies to evaluate the potential for efficacy and toxicity for eventual use in humans. The conduct of the non-clinical tests and formulation of the compounds for testing must comply with federal regulations and requirements, including GLP requirements. The results of the non-clinical tests, together with manufacturing information, analytical data, any available literature and plans for clinical trials, among other things are submitted to the FDA as part of an IND. The IND automatically becomes effective 30 days after receipt by the

FDA, unless before that time the FDA raises concerns or questions about the product or conduct of the proposed clinical trial, including concerns that human research subjects will be exposed to unreasonable health risks. In that case, the IND sponsor and the FDA must resolve any outstanding FDA concerns before the clinical trial can begin.

As a result, submission of the IND may result in the FDA not allowing the trial to commence or allowing the trial to commence on the terms originally specified by the sponsor in the IND. If the FDA raises concerns or questions either during this initial 30-day period, or at any time during the IND process, it may choose to impose a partial or complete clinical hold. This order issued by the FDA would delay either a proposed clinical trial or cause suspension of an ongoing study, until all outstanding concerns have been adequately addressed and the FDA has notified the company that investigation may proceed. This could cause significant delays or difficulties in completing planned clinical trials in a timely manner. The FDA also may impose clinical holds on a biologic product candidate at any time before or during clinical trials due to safety concerns or non-compliance. If the FDA imposes a clinical hold, trials may not recommence without FDA authorization and then only recommence under terms authorized by the FDA.

Human Clinical Trials in Support of a BLA

Clinical trials involve the administration of the investigational product candidate to healthy volunteers or patients with the disease to be treated under the supervision of a qualified principal investigator in accordance with GCP requirements. Clinical trials are conducted under study protocols detailing, among other things, the objectives of the study, inclusion and exclusion criteria, the parameters to be used in monitoring safety, and the effectiveness criteria to be evaluated. A protocol for each clinical trial and any subsequent protocol amendments must be submitted to the FDA as part of the IND.

A sponsor who wishes to conduct a clinical trial outside the United States may, but need not, obtain FDA authorization to conduct the clinical trial under an IND. If a foreign clinical trial is not conducted under an IND, the sponsor may submit data from the clinical trial to the FDA in support of the BLA so long as the clinical trial is well-designed and well-conducted in accordance with GCP, including review and approval by an independent ethics committee, and the FDA is able to validate the study data through an onsite inspection, if necessary.

Further, each clinical trial must be reviewed and approved by an institutional review board (IRB), either centrally or individually at each institution at which the clinical trial will be conducted. The IRB will consider, among other things, clinical trial design, patient informed consent, ethical factors, and the safety of human subjects. An IRB must operate in compliance with FDA regulations. The FDA, IRB, or the clinical trial sponsor, including at the recommendation of a data monitoring committee, if applicable, may suspend or discontinue a clinical trial at any time for various reasons, including a finding that the clinical trial is not being conducted in accordance with FDA requirements or the subjects or patients are being exposed to an unacceptable health risk. Clinical testing also must satisfy extensive GCP rules and the requirements for informed consent. Additionally, some clinical trials are overseen by an independent group of qualified experts organized by the clinical trial sponsor, known as a data safety monitoring board or committee. This group may recommend continuation of the study as planned, changes in study conduct, or cessation of the study at designated check points based on access to certain data from the study.

Clinical trials typically are conducted in three sequential phases, which may overlap or be combined. Additional studies may be required after approval.

- *Phase I* clinical trials are initially conducted in a limited population to test the product candidate for safety, including adverse effects, dose tolerance, absorption, metabolism, distribution, excretion, and pharmacodynamics in healthy humans or, on occasion, in patients with the target disease or condition, such as cancer patients.
- *Phase II* clinical trials are generally conducted in a limited patient population to identify possible adverse effects and safety risks, evaluate the efficacy of the product candidate for specific targeted indications, and determine dose tolerance and optimal dosage. Multiple Phase II clinical trials may be conducted by the sponsor to obtain information prior to beginning larger and more costly Phase III clinical trials.
- *Phase III* clinical trials proceed if the Phase II clinical trials demonstrate that a dose range of the product candidate is potentially effective and has an acceptable safety profile. Phase III clinical trials are undertaken within an expanded patient population to further evaluate dosage, provide substantial evidence of clinical efficacy, and further test for safety in an expanded and diverse patient population generally at multiple, geographically dispersed clinical trial sites. A well-controlled, statistically robust Phase III trial may be designed to deliver the data that regulatory authorities will use to decide whether or not to approve, and, if approved, how to appropriately label a biologic.

In some cases, the FDA may approve a BLA for a product candidate but require the sponsor to conduct additional clinical trials to further assess the product candidate's safety and effectiveness after approval. Such post-approval trials are typically referred to as Phase IV clinical trials. These studies are used to gain additional experience from the treatment of patients in the intended therapeutic indication and to document a clinical benefit in the case of biologics approved under accelerated approval regulations. If the FDA approves a product while a company has ongoing clinical trials that were not necessary for approval, a company may be able to use the data from these clinical trials to meet all or part of any Phase IV clinical trial requirement or to request a change in the product labeling. Failure to exhibit due diligence with regard to conducting Phase IV clinical trials could result in withdrawal of approval for products.

Clinical trials at each phase of development may not be completed successfully within any specified period, or at all.

Review by the RAC was previously required for all gene transfer protocols. In April 2016, the NIH streamlined the review process for human gene transfer protocols subject to the NIH Guidelines. Per the guideline revisions, review is now performed only in exceptional cases that meet specified criteria as outlined in the NIH Guidelines, as determined either by a local regulatory body (e.g., an IBC) and endorsed by the NIH, or as determined solely by NIH.

Compliance with cGMP Requirements

Before approving a BLA, the FDA typically will 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 full compliance with cGMP requirements and adequate to assure consistent production of the product within required specifications. The PHSA emphasizes the importance of manufacturing control for products like biologics whose attributes cannot be precisely defined.

Manufacturers and others involved in the manufacture and distribution of products must also register their establishments with the FDA and certain state agencies. Both domestic and foreign manufacturing establishments must register and provide additional information to the FDA upon their initial participation in the manufacturing process. Any product manufactured by or imported from a facility that has not registered, whether foreign or

domestic, is deemed misbranded under the FDCA. Establishments may be subject to periodic unannounced inspections by government authorities to ensure compliance with cGMPs and other laws. Manufacturers may have to provide, on request, electronic or physical records regarding their establishments. Delaying, denying, limiting, or refusing inspection by the FDA may lead to a product being deemed to be adulterated.

Review and Approval of a BLA

The results of product candidate development, non-clinical testing, and clinical trials, including negative or ambiguous results as well as positive findings, are submitted to the FDA as part of a BLA requesting license to market the product. The BLA must contain extensive manufacturing information and detailed information on the composition of the product and proposed labeling as well as payment of a user fee.

The FDA has 60 days after submission of the application to conduct an initial review to determine whether it is sufficient to accept for filing based on the agency's threshold determination that it is sufficiently complete to permit substantive review. Once the submission has been accepted for filing, the FDA begins an in-depth review of the application. Under the goals and policies agreed to by the FDA under the Prescription Drug User Fee Act VI (PDUFA), the FDA has ten months in which to complete its initial review of a standard application and respond to the applicant, and six months for a priority review of the application. The FDA does not always meet its PDUFA goal dates for standard and priority BLAs. The review process may often be significantly extended by FDA requests for additional information or clarification. The review process and the PDUFA goal date may be extended by three months if the FDA requests or if the applicant otherwise provides additional information or clarification regarding information already provided in the submission within the last three months before the PDUFA goal date.

Under the PHSA, the FDA may approve a BLA if it determines that the product is safe, pure, and potent and the facility where the product will be manufactured meets standards designed to ensure that it continues to be safe, pure, and potent.

On the basis of the FDA's evaluation of the application and accompanying information, including the results of the inspection of the manufacturing facilities and any FDA audits of non-clinical and clinical trial sites to assure compliance with GLPs and GCPs, respectively, the FDA may issue an approval letter, denial letter, or a complete response letter. An approval letter authorizes commercial marketing of the product with specific prescribing information for specific indications. If the application is not approved, the FDA may issue a complete response letter, which will contain the conditions that must be met in order to secure final approval of the application, and when possible will outline recommended actions the sponsor might take to obtain approval of the application. Sponsors that receive a complete response letter may submit to the FDA information that represents a complete response to the issues identified by the FDA. Such resubmissions are classified under PDUFA as either Class 1 or Class 2. The classification of a resubmission is based on the information submitted by an applicant in response to an action letter. Under the goals and policies agreed to by the FDA under PDUFA, the FDA has two months to review a Class 1 resubmission and six months to review a Class 2 resubmission. The FDA will not approve an application until issues identified in the complete response letter have been addressed. The FDA issues a denial letter if it determines that the establishment or product does not meet the agency's requirements.

The FDA may also refer the application to an advisory committee for review, evaluation, and recommendation as to whether the application should be approved. In particular, the FDA may refer applications for novel biologic products or biologic products that present difficult questions of safety or efficacy to an advisory committee. Typically, an advisory committee is a panel of independent experts, including clinicians and other scientific experts, that reviews, evaluates, and provides a recommendation as to whether the application should be approved and under what conditions. The FDA is not bound by the recommendations of an advisory committee, but it considers such recommendations carefully when making decisions.

If the FDA approves a new product, it may limit the approved indications for use of the product. It may also require that contraindications, warnings or precautions be included in the product labeling. In addition, the FDA may call for post-approval studies, including Phase IV clinical trials, to further assess the product's safety after approval. The agency may also require testing and surveillance programs to monitor the product after commercialization, or impose other conditions, including distribution restrictions or other risk management mechanisms, including REMS, to help ensure that the benefits of the product outweigh the potential risks. REMS can include medication guides, communication plans for healthcare professionals, and elements to assure safe use (ETASU). ETASU can include, but are not limited to, special training or certification for prescribing or dispensing, dispensing only under certain circumstances, special monitoring, and the use of patent registries. The FDA may prevent or limit further marketing of a product based on the results of post-market studies or surveillance programs. After approval, many types of changes to the approved product, such as adding new indications, manufacturing changes and additional labeling claims, are subject to further testing requirements and FDA review and approval. Such post-approval requirements can be costly and time-consuming and can affect the potential market and profitability of the product.

Fast Track, Breakthrough Therapy, and Priority Review Designations

The FDA is authorized to designate certain products for expedited review if they are intended to address an unmet medical need in the treatment of a serious or life-threatening disease or condition. These programs are referred to as fast track designation, breakthrough therapy designation, and priority review designation.

Specifically, the FDA may designate a product for fast track review if it is intended, whether alone or in combination with one or more other products, for the treatment of a serious or life-threatening disease or condition, and it demonstrates the potential to address unmet medical needs for such a disease or condition. For fast track products, sponsors may have greater interactions with the FDA and the FDA may initiate review of sections of a fast track product's application before the application is complete. This rolling review may be available if the FDA determines, after preliminary evaluation of clinical data submitted by the sponsor, that a fast track product may be effective. The sponsor must also provide, and the FDA must approve, a schedule for the submission of the remaining information and the sponsor must pay applicable user fees. However, the FDA's time period goal for reviewing a fast track application does not begin until the last section of the application is submitted. In addition, the fast track designation may be withdrawn by the FDA if the FDA believes that the designation is no longer supported by data emerging in the clinical trial process.

Second, in 2012, Congress enacted the Food and Drug Administration Safety and Innovation Act (FDASIA). This law established a new regulatory scheme allowing for expedited review of products designated as "breakthrough therapies." A product may be designated as a breakthrough therapy if it is intended, either alone or in combination with one or more other products, to treat a serious or life-threatening disease or condition and preliminary clinical evidence indicates that the product 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 FDA may take certain actions with respect to breakthrough therapies, including holding meetings with the sponsor throughout the development process; providing timely advice to the product sponsor regarding development and approval; involving more senior staff in the review process; assigning a cross-disciplinary project lead for the review team; and taking other steps to design the clinical trials in an efficient manner.

Third, the FDA may designate a product for priority review if it treats a serious condition and, if approved, would provide a significant improvement in safety or effectiveness. The FDA determines, on a case-by-case basis, whether the proposed product represents a significant improvement when compared with other available therapies. Significant improvement may be illustrated by evidence of increased effectiveness in the treatment of a condition, elimination or substantial reduction of a treatment-limiting product reaction, documented enhancement of patient compliance that may lead to improvement in serious outcomes, and evidence of safety and effectiveness in a new subpopulation. A priority designation is intended to direct overall attention and resources to the evaluation of such applications, and to shorten the FDA's goal for taking action on a marketing application from ten months to six months.

Accelerated Approval Pathway

The FDA may grant accelerated approval to a product for a serious or life-threatening condition that provides meaningful therapeutic advantage to patients over existing treatments based upon a determination that the product has an effect on a surrogate endpoint that is reasonably likely to predict clinical benefit. The FDA may also grant accelerated approval for such a condition when the product has an effect on an intermediate clinical endpoint that can be measured earlier than an effect on irreversible morbidity or mortality (IMM) and that is reasonably likely to predict an effect on IMM or other clinical benefit, taking into account the severity, rarity, or prevalence of the condition and the availability or lack of alternative treatments. Products granted accelerated approval must meet the same statutory standards for safety and effectiveness as those granted traditional approval, and do not receive either more or less favorable review from the FDA based on such designation.

For the purposes of accelerated approval, a surrogate endpoint is a marker, such as a laboratory measurement, radiographic image, physical sign, or other measure that is thought to predict clinical benefit, but is not itself a measure of clinical benefit. Surrogate endpoints can often be measured more easily or more rapidly than clinical endpoints. An intermediate clinical endpoint is a measurement of a therapeutic effect that is considered reasonably likely to predict the clinical benefit of a product, such as an effect on IMM. The FDA has limited experience with accelerated approvals based on intermediate clinical endpoints, but has indicated that such endpoints generally may support accelerated approval where the therapeutic effect measured by the endpoint is not itself a clinical benefit and basis for traditional approval, if there is a basis for concluding that the therapeutic effect is reasonably likely to predict the ultimate clinical benefit of a product.

The accelerated approval pathway is most often used in settings in which the course of a disease is long and an extended period of time is required to measure the intended clinical benefit of a product, even if the effect on the surrogate or intermediate clinical endpoint occurs rapidly. Thus, accelerated approval has been used extensively in the development and approval of products for treatment of a variety of cancers in which the goal of therapy is generally to improve survival or decrease morbidity and the duration of the typical disease course requires lengthy and sometimes large trials to demonstrate a clinical or survival benefit.

The accelerated approval pathway is usually contingent on a sponsor’s agreement to conduct, in a diligent manner, additional post-approval confirmatory studies to verify and describe the product’s clinical benefit. As a result, a product candidate approved on this basis is subject to rigorous post-marketing compliance requirements, including the completion of Phase IV or post-approval clinical trials to confirm the effect on the clinical endpoint. Failure to conduct required post-approval studies, or confirm a clinical benefit during post-marketing studies, would allow the FDA to withdraw the product from the market on an expedited basis. All promotional materials for product candidates approved under accelerated regulations are subject to prior review by the FDA.

Accelerated Approval for Regenerative Advanced Therapies

As part of the 21st Century Cures Act, Congress recently amended the FDCA to create an accelerated approval program for regenerative advanced therapies, which include cell therapies, therapeutic tissue engineering products, human cell and tissue products, and combination products using any such therapies or products. Regenerative advanced therapies do not include those human cells, tissues, and cellular and tissue based products regulated solely under section 361 of the Public Health Service Act and 21 CFR Part 1271. The new program is intended to facilitate efficient development and expedite review of regenerative advanced therapies, which are intended to treat, modify, reverse, or cure a serious or life-threatening disease or condition. Products granted accelerated approval as regenerative advanced therapies must meet the same statutory standards for safety and effectiveness as those granted traditional approval, and do not receive either more or less favorable review from the FDA based on such designation. A drug sponsor may request that FDA designate a drug as a regenerative advanced therapy concurrently with or at any time after submission of an IND as an amendment. FDA has 60 calendar days after receipt of the designation request to determine whether the drug meets the criteria, including whether there is preliminary clinical evidence indicating that the drug has the potential to

address unmet medical needs for a serious or life-threatening disease or condition. A new drug application or BLA for a regenerative advanced therapy may be eligible for priority review or accelerated approval through (1) surrogate or intermediate endpoints reasonably likely to predict long-term clinical benefit or (2) reliance upon data obtained from a meaningful number of sites. Benefits of such designation also include early interactions with FDA to discuss any potential surrogate or intermediate endpoint to be used to support accelerated approval. A regenerative advanced therapy that is granted accelerated approval and is subject to postapproval requirements may fulfill such requirements through the submission of clinical evidence, clinical trials, patient registries, or other sources of real world evidence, such as electronic health records; the collection of larger confirmatory data sets; or postapproval monitoring of all patients treated with such therapy prior to its approval.

Post-Approval Regulation

If regulatory approval for marketing of a product or new indication for an existing product is obtained, the sponsor will be required to comply with all regular post-approval regulatory requirements as well as any post-approval requirements that the FDA has imposed as part of the approval process. The sponsor will be required to report certain adverse reactions and production problems to the FDA, provide updated safety and efficacy information comply with requirements concerning advertising and promotional labeling, as well as maintain certain records. 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, annual prescription drug program fees, as well as new application fees for certain supplemental applications. Manufacturers and certain of their subcontractors are required to register their establishments with the FDA and certain state agencies, and are subject to periodic unannounced inspections by the FDA and certain state agencies for compliance with ongoing regulatory requirements, including cGMP regulations, which impose certain procedural and documentation requirements upon manufacturers. Changes to the manufacturing process are strictly regulated and often require prior FDA approval before being implemented. Accordingly, the sponsor and its third-party manufacturers must continue to expend time, money, and effort in the areas of production and quality control to maintain compliance with cGMP regulations and other regulatory requirements.

A biologic product may also be subject to official lot release, meaning that the manufacturer is required to perform certain tests on each lot of the product before it is released for distribution. If the product is subject to official lot release, the manufacturer must submit samples of each lot, together with a release protocol showing a summary of the history of manufacture of the lot and the results of all of the manufacturer's tests performed on the lot, to the FDA. The FDA may in addition perform certain confirmatory tests on lots of some products before releasing the lots for distribution. Finally, the FDA will conduct laboratory research related to the safety, purity, potency, and effectiveness of pharmaceutical products.

Once an approval is granted, the FDA may withdraw the 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 trials to assess new safety risks; or imposition of distribution or other restrictions under a REMS program. Other potential consequences include, among other things:

- restrictions on the marketing or manufacturing of the product, suspension of the approval, complete withdrawal of the product from the market, or product recalls;
- fines, untitled letters or warning letters, or holds on post-approval clinical trials;
- refusal of the FDA to approve pending BLAs or supplements to approved BLAs, or suspension or revocation of product license approvals;
- product seizure or detention, or refusal to permit the import or export of products; or
- injunctions or the imposition of civil or criminal penalties.

The FDA strictly regulates marketing, labeling, advertising, and promotion of products that are placed on the market. Pharmaceutical products may be promoted only for the approved indications 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, and a company that is found to have improperly promoted off-label uses may be subject to significant liability.

Orphan Drug Designation

Orphan drug designation in the United States is designed to encourage sponsors to develop products intended for rare diseases or conditions. In the United States, a rare disease or condition is statutorily defined as a condition that affects fewer than 200,000 individuals in the United States or that affects more than 200,000 individuals in the United States and for which there is no reasonable expectation that the cost of developing and making available the biologic for the disease or condition will be recovered from sales of the product in the United States.

Orphan drug designation qualifies a company for tax credits and market exclusivity for seven years following the date of the product's marketing approval if granted by the FDA. An application for designation as an orphan product can be made any time prior to the filing of an application for approval to market the product. A product becomes an orphan when it receives orphan drug designation from the Office of Orphan Products Development (OOPD) at the FDA based on acceptable confidential requests made under the regulatory provisions. The product must then go through the review and approval process like any other product.

A sponsor may request orphan drug designation of a previously unapproved product or new orphan indication for an already marketed product. In addition, a sponsor of a product that is otherwise the same product as an already approved orphan drug may seek and obtain orphan drug designation for the subsequent product for the same rare disease or condition if it can present a plausible hypothesis that its product may be clinically superior to the first drug. More than one sponsor may receive orphan drug designation for the same product for the same rare disease or condition, but each sponsor seeking orphan drug designation must file a complete request for designation.

The period of exclusivity begins on the date that the marketing application is approved by the FDA and applies only to the indication for which the product has been designated. The FDA may approve a second application for the same product for a different use or a second application for a clinically superior version of the product for the same use. The FDA cannot, however, approve the same product made by another manufacturer for the same indication during the market exclusivity period unless it has the consent of the sponsor or the sponsor is unable to provide sufficient quantities.

Biosimilars and Exclusivity

The Patient Protection and Affordable Care Act, which was signed into law in March 2010, included a subtitle called the Biologics Price Competition and Innovation Act of 2009 (BPCIA). The BPCIA established a regulatory scheme authorizing the FDA to approve biosimilars and interchangeable biosimilars. To date, seven biosimilar products have been approved by the FDA for use in the United States. No interchangeable biosimilars, however, have been approved. The FDA has issued several guidance documents outlining an approach to review and approval of biosimilars. Additional guidances are expected to be finalized by the FDA in the near term.

Under the BPCIA, a manufacturer may submit an application for licensure of a biologic product that is "biosimilar to" or "interchangeable with" a previously approved biological product or "reference product." In order for the FDA to approve a biosimilar product, it must find that the product is "highly similar" to the reference product notwithstanding minor differences in clinically inactive components and that there are no clinically meaningful differences between the reference product and proposed biosimilar product in terms of safety, purity, and potency. For the FDA to approve a biosimilar product as interchangeable with a reference

product, the agency must find that the biosimilar product can be expected to produce the same clinical results as the reference product, and, for products administered multiple times, that the biologic and the reference biologic may be 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 of approval of the reference product. The FDA may not approve a biosimilar product until 12 years from the date on which the reference product was approved. Even if a product is considered to be a reference product eligible for exclusivity, another company could market a competing version of that product if the FDA approves a full BLA for such product containing the sponsor's own non-clinical data and data from adequate and well-controlled clinical trials to demonstrate the safety, purity, and potency of their product. The BPCIA also created certain exclusivity periods for biosimilars approved as interchangeable products. At this juncture, it is unclear whether products deemed "interchangeable" by the FDA will, in fact, be readily substituted by pharmacies, which are governed by state pharmacy law.

Pediatric Studies and Exclusivity

Under the Pediatric Research Equity Act of 2003, a BLA or supplement thereto must contain data that are adequate to assess the safety and effectiveness of the product for the claimed indications in all relevant pediatric subpopulations, and to support dosing and administration for each pediatric subpopulation for which the product is safe and effective. Sponsors must also submit pediatric study plans prior to the assessment data. Those plans must contain an outline of the proposed pediatric study or studies the applicant plans to conduct, including study objectives and design, any deferral or waiver requests, and other information required by regulation. The applicant, the FDA, and the FDA's internal review committee must then review the information submitted, consult with each other, and agree upon a final plan. The FDA or the applicant may request an amendment to the plan at any time.

The FDA may, on its own initiative or at the request of the applicant, grant deferrals for submission of some or all pediatric data until after approval of the product for use in adults, or full or partial waivers from the pediatric data requirements. Additional requirements and procedures relating to deferral requests and requests for extension of deferrals are contained in FDASIA.

Pediatric exclusivity is another type of non-patent marketing exclusivity in the United States and, if granted, provides for the attachment of an additional six months of marketing protection to the term of any existing regulatory exclusivity, including the non-patent exclusivity. This six month exclusivity may be granted if a BLA sponsor submits pediatric data that fairly respond to a written request from the FDA for such data. The data do not need to show the product to be effective in the pediatric population studied; rather, if the clinical trial is deemed to fairly respond to the FDA's request, the additional protection is granted. If reports of requested pediatric studies are submitted to and accepted by the FDA within the statutory time limits, whatever statutory or regulatory periods of exclusivity or patent protection cover the product are extended by six months. This is not a patent term extension, but it effectively extends the regulatory period during which the FDA cannot approve another application.

Patent Term Restoration and Extension

A patent claiming a new biologic product may be eligible for a limited patent term extension under the Drug Price Competition and Patent Term Restoration Act of 1984, referred to as the Hatch-Waxman Amendments, which permits a patent restoration of up to five years for patent term lost during product development and FDA regulatory review. The restoration period granted on a patent covering a product is typically one-half the time between the effective date of an IND and the submission date of a BLA, plus the time between the submission date of a BLA and the ultimate approval date. Patent term restoration cannot be used to extend the remaining term of a patent past a total of 14 years from the product's approval date. Only one patent applicable to an

approved product is eligible for the extension, and the application for the extension must be submitted prior to the expiration of the patent in question. A patent that covers multiple products for which approval is sought can only be extended in connection with one of the approvals. The USPTO reviews and approves the application for any patent term extension or restoration in consultation with the FDA.

Regulation and Procedures Governing Approval of Medicinal Products in the European Union

In order to market any product outside of the United States, a company also must comply with numerous and varying regulatory requirements of other countries and jurisdictions regarding quality, safety and efficacy and governing, among other things, clinical trials, marketing authorization, commercial sales and distribution of products. Whether or not it obtains FDA approval for a product, an applicant will need to obtain the necessary approvals by the comparable foreign regulatory authorities before it can commence clinical trials or marketing of the product in those countries or jurisdictions. Specifically, the process governing approval of medicinal products in the EU, generally follows the same lines as in the United States. It entails satisfactory completion of non-clinical studies and adequate and well-controlled clinical trials to establish the safety and efficacy of the product for each proposed indication. It also requires the submission to the relevant competent authorities of a marketing authorization application (MAA), and granting of a marketing authorization by these authorities before the product can be marketed and sold in the EU.

Clinical Trial Approval

Pursuant to the currently applicable Clinical Trials Directive 2001/20/EC and the Directive 2005/28/EC on GCP, a system for the approval of clinical trials in the EU has been implemented through national legislation of the member states. Under this system, an applicant must obtain approval from the competent national authority of an EU member state in which the clinical trial is to be conducted, or in multiple member states if the clinical trial is to be conducted in a number of member states. Furthermore, the applicant may only start a clinical trial at a specific trial site after the independent ethics committee has issued a favorable opinion. The clinical trial application (CTA) must be accompanied by an investigational medicinal product dossier with supporting information prescribed by Directive 2001/20/EC and Directive 2005/28/EC and corresponding national laws of the member states and further detailed in applicable guidance documents.

In April 2014, the EU adopted a new Clinical Trials Regulation (EU) No 536/2014, which is set to replace the current Clinical Trials Directive 2001/20/EC. It is expected that the new Clinical Trials Regulation (EU) No 536/2014 will apply in 2019 with a three-year transition period. It will overhaul the current system of approvals for clinical trials in the EU. Specifically, the new regulation, which will be directly applicable in all member states, aims at simplifying and streamlining the approval of clinical trials in the EU. For instance, the new Clinical Trials Regulation provides for a streamlined application procedure via a single entry point and strictly defined deadlines for the assessment of clinical trial applications.

Marketing Authorization

To obtain a marketing authorization for a product under the EU regulatory system, an applicant must submit an MAA, either under a centralized procedure administered by the European Medicines Authority (EMA) or one of the procedures administered by competent authorities in EU Member States (decentralized procedure, national procedure, or mutual recognition procedure). A marketing authorization may be granted only to an applicant established in the EU. Regulation (EC) No 1901/2006 provides that prior to obtaining a marketing authorization in the EU, an applicant must demonstrate compliance with all measures included in an EMA-approved Pediatric Investigation Plan (PIP) covering all subsets of the pediatric population, unless the EMA has granted a product-specific waiver, class waiver, or a deferral for one or more of the measures included in the PIP.

The centralized procedure provides for the grant of a single marketing authorization by the European Commission that is valid for all EU member states. Pursuant to Regulation (EC) No. 726/2004, the centralized

procedure is compulsory for specific products, including for medicines produced by certain biotechnological processes, advanced therapy products and products with a new active substance indicated for the treatment of certain diseases, including products for the treatment of cancer. For products with a new active substance indicated for the treatment of other diseases and products that are highly innovative or for which a centralized process is in the interest of patients, the centralized procedure may be optional.

Under the centralized procedure, the Committee for Medicinal Products for Human Use (CHMP) established at the EMA is responsible for conducting an initial assessment of a product. Under the centralized procedure in the European Union, the maximum timeframe for the evaluation of an MAA is 210 days, excluding clock stops when additional information or written or oral explanation is to be provided by the applicant in response to questions of the CHMP. Accelerated evaluation may be granted by the CHMP in exceptional cases, when a medicinal product is of major interest from the point of view of public health and, in particular, from the viewpoint of therapeutic innovation. If the CHMP accepts such a request, the time limit of 210 days will be reduced to 150 days, but it is possible that the CHMP may revert to the standard time limit for the centralized procedure if it determines that it is no longer appropriate to conduct an accelerated assessment.

Regulatory Data Protection in the European Union

In the European Union, new chemical entities approved on the basis of a complete independent data package qualify for eight years of data exclusivity upon marketing authorization and an additional two years of market exclusivity pursuant to Regulation (EC) No 726/2004, as amended, and Directive 2001/83/EC, as amended. Data exclusivity prevents regulatory authorities in the European Union from referencing the innovator's data to assess a generic (abbreviated) application for a period of eight years. During the additional two-year period of market exclusivity, a generic marketing authorization application can be submitted, and the innovator's data may be referenced, but no generic medicinal product can be marketed until the expiration of the market exclusivity. The overall ten-year period will be extended to a maximum of 11 years if, during the first eight years of those ten years, the marketing authorization holder obtains an authorization for one or more new therapeutic indications which, during the scientific evaluation prior to authorization, is held to bring a significant clinical benefit in comparison with existing therapies. Even if a compound is considered to be a new chemical entity so that the innovator gains the prescribed period of data exclusivity, another company may market another version of the product if such company obtained marketing authorization based on an MAA with a complete independent data package of pharmaceutical tests, non-clinical tests and clinical trials.

Periods of Authorization and Renewals

A marketing authorization is valid for five years, in principle, and it may be renewed after five years on the basis of a reevaluation of the risk benefit balance by the EMA or by the competent authority of the authorizing member state. To that end, the marketing authorization holder must provide the EMA or the competent authority with a consolidated version of the file in respect of quality, safety, and efficacy, including all variations introduced since the marketing authorization was granted, at least six months before the marketing authorization ceases to be valid. Once renewed, the marketing authorization is valid for an unlimited period, unless the European Commission or the competent authority decides, on justified grounds relating to pharmacovigilance, to proceed with one additional five-year renewal period. Any authorization that is not followed by the placement of the drug on the EU market (in the case of the centralized procedure) or on the market of the authorizing member state within three years after authorization ceases to be valid.

Regulatory Requirements after Marketing Authorization

Following approval, the holder of the marketing authorization is required to comply with a range of requirements applicable to the manufacturing, marketing, promotion, and sale of the medicinal product. These include compliance with the EU's stringent pharmacovigilance or safety reporting rules, pursuant to which post-authorization studies and additional monitoring obligations can be imposed. In addition, the manufacturing of

authorized products, for which a separate manufacturer's license is mandatory, must also be conducted in strict compliance with the EMA's GMP requirements and comparable requirements of other regulatory bodies in the EU, which mandate the methods, facilities, and controls used in manufacturing, processing and packing of drugs to assure their safety and identity. Finally, the marketing and promotion of authorized products, including industry-sponsored continuing medical education and advertising directed toward the prescribers of drugs and/or the general public, are strictly regulated in the European Union under Directive 2001/83EC, as amended.

Coverage, Pricing, and Reimbursement

Significant uncertainty exists as to the coverage and reimbursement status of any product candidates for which we may seek regulatory approval by the FDA or other government authorities. In the United States and markets in other countries, patients who are prescribed treatments for their conditions and providers performing the prescribed services generally rely on third-party payors to reimburse all or part of the associated healthcare costs. Patients are unlikely to use any product candidates we may develop unless coverage is provided and reimbursement is adequate to cover a significant portion of the cost of such product candidates. Even if any product candidates we may develop are approved, sales of such product candidates will depend, in part, on the extent to which third-party payors, including government health programs in the United States such as Medicare and Medicaid, commercial health insurers, and managed care organizations, provide coverage, and establish adequate reimbursement levels for, such product candidates. The process for determining whether a payor will provide coverage for a product may be separate from the process for setting the price or reimbursement rate that the payor will pay for the product once coverage is approved. Third-party payors are increasingly challenging the prices charged, examining the medical necessity, and reviewing the cost-effectiveness of medical products and services and imposing controls to manage costs. Third-party payors may limit coverage to specific products on an approved list, also known as a formulary, which might not include all of the approved products for a particular indication.

In order to secure coverage and reimbursement for any product that might be approved for sale, a company may need to conduct expensive pharmacoeconomic studies in order to demonstrate the medical necessity and cost-effectiveness of the product, in addition to the costs required to obtain FDA or other comparable regulatory approvals. Nonetheless, product candidates may not be considered medically necessary or cost effective. A decision by a third-party payor not to cover any product candidates we may develop could reduce physician utilization of such product candidates once approved and have a material adverse effect on our sales, results of operations, and financial condition. Additionally, a payor's decision to provide coverage for a product does not imply that an adequate reimbursement rate will be approved. Further, one payor's determination to provide coverage for a product does not assure that other payors will also provide coverage and reimbursement for the product, and the level of coverage and reimbursement can differ significantly from payor to payor. Third-party reimbursement and coverage may not be available to enable us to maintain price levels sufficient to realize an appropriate return on our investment in product development.

The containment of healthcare costs also has become a priority of federal, state, and foreign governments and the prices of pharmaceuticals, including biologics, have been a focus in this effort. Governments have shown significant interest in implementing cost-containment programs, including price controls, restrictions on reimbursement, and requirements for substitution of generic products. Adoption of price controls and cost-containment measures, and adoption of more restrictive policies in jurisdictions with existing controls and measures, could further limit a company's revenue generated from the sale of any approved products. Coverage policies and third-party reimbursement rates may change at any time. Even if favorable coverage and reimbursement status is attained for one or more products for which a company or its collaborators receive regulatory approval, less favorable coverage policies and reimbursement rates may be implemented in the future.

Outside the United States, ensuring adequate coverage and payment for any product candidates we may develop will face challenges. Pricing of prescription pharmaceuticals is subject to governmental control in many countries. Pricing negotiations with governmental authorities can extend well beyond the receipt of regulatory

approval for a product and may require us to conduct a clinical trial that compares the cost effectiveness of any product candidates we may develop to other available therapies. The conduct of such a clinical trial could be expensive and result in delays in our commercialization efforts.

In the European Union, pricing and reimbursement schemes vary widely from country to country. Some countries provide that products may be marketed only after a reimbursement price has been agreed. Some countries may require the completion of additional studies that compare the cost effectiveness of a particular product candidate to currently available therapies (so called health technology assessments (HTAs)) in order to obtain reimbursement or pricing approval. For example, the European Union provides options for its member states to restrict the range of products for which their national health insurance systems provide reimbursement and to control the prices of medicinal products for human use. EU member states may approve a specific price for a product or it may instead adopt a system of direct or indirect controls on the profitability of the company placing the product on the market. Other member states allow companies to fix their own prices for products, but monitor and control prescription volumes and issue guidance to physicians to limit prescriptions. Recently, many countries in the EU have increased the amount of discounts required on pharmaceuticals and these efforts could continue as countries attempt to manage healthcare expenditures, especially in light of the severe fiscal and debt crises experienced by many countries in the EU. The downward pressure on healthcare costs in general, particularly prescription products, has become intense. As a result, increasingly high barriers are being erected to the entry of new products. Political, economic, and regulatory developments may further complicate pricing negotiations, and pricing negotiations may continue after reimbursement has been obtained. Reference pricing used by various EU member states, and parallel trade (arbitrage between low-priced and high-priced member states), can further reduce prices. There can be no assurance that any country that has price controls or reimbursement limitations for pharmaceutical products will allow favorable reimbursement and pricing arrangements for any of our products, if approved in those countries.

Healthcare Law and Regulation

Healthcare providers and third-party payors play a primary role in the recommendation and prescription of pharmaceutical products that are granted regulatory approval. Arrangements with providers, consultants, third-party payors, and customers are subject to broadly applicable fraud and abuse, anti-kickback, false claims laws, reporting of payments to physicians and teaching physicians, and patient privacy laws and regulations and other healthcare laws and regulations that may constrain our business and/or financial arrangements. Restrictions under applicable federal and state healthcare laws and regulations include the following:

- the U.S. federal Anti-Kickback Statute, which prohibits, among other things, persons and entities from knowingly and willfully soliciting, offering, paying, receiving, or providing remuneration, directly or indirectly, in cash or in kind, to induce or reward either the referral of an individual for, or the purchase, order or recommendation of, any good or service, for which payment may be made, in whole or in part, under a federal healthcare program such as Medicare and Medicaid;
- the federal civil and criminal false claims laws, including the civil False Claims Act, and civil monetary penalties laws, which prohibit individuals or entities from, among other things: knowingly presenting, or causing to be presented, to the federal government, claims for payment that are false or fraudulent; making a false statement or record material to a false or fraudulent claim or obligation to pay or transmit money or property to the federal government; or knowingly concealing or knowingly and improperly avoiding or decreasing an obligation to pay money to the federal government. 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 of fraudulent claim for purposes of the False Claims Act;
- the federal Health Insurance Portability and Accountability Act of 1996 (HIPAA) which created additional federal criminal laws that prohibit, among other things, knowingly and willfully executing, or attempting to execute, a scheme to defraud any healthcare benefit program, or making false statements relating to healthcare matters;

- HIPAA, as amended by the Health Information Technology for Economic and Clinical Health Act, and their respective implementing regulations, including the Final Omnibus Rule published in January 2013, which impose obligations, including mandatory contractual terms, with respect to safeguarding the privacy, security, and transmission of individually identifiable health information;
- the federal transparency requirements known as the federal Physician Payments Sunshine Act, under the Affordable Care Act, which requires certain manufacturers of drugs, devices, biologics and medical supplies to report annually to CMS, information related to payments and other transfers of value made by that entity to physicians and teaching hospitals, as well as ownership and investment interests held by physicians and their immediate family members; and
- analogous state and foreign laws and regulations, such as state anti-kickback and false claims laws, which may apply to healthcare items or services that are reimbursed by non-governmental third-party payors, including private insurers.

Some state laws require pharmaceutical companies to comply with the pharmaceutical industry's voluntary compliance guidelines and the relevant compliance guidance promulgated by the federal government in addition to requiring pharmaceutical manufacturers to report information related to payments to physicians and other healthcare providers or marketing expenditures. State and foreign laws also govern the privacy and security of health information in some circumstances, many of which differ from each other in significant ways and often are not preempted by HIPAA, thus complicating compliance efforts.

We will be required to spend substantial time and money to ensure that our business arrangements with third parties comply with applicable healthcare laws and regulations. Violations of these laws can subject us to criminal, civil and administrative sanctions including monetary penalties, damages, fines, disgorgement, individual imprisonment, and exclusion from participation in government funded healthcare programs, such as Medicare and Medicaid, additional reporting requirements and oversight if we become subject to a corporate integrity agreement or similar agreement to resolve allegations of non-compliance with these laws, and reputational harm, we may be required to curtail or restructure our operations. Moreover, we expect that there will continue to be federal and state laws and regulations, proposed and implemented, that could impact our future operations and business.

Healthcare Reform

A primary trend in the U.S. healthcare industry and elsewhere is cost containment. There have been a number of federal and state proposals during the last few years regarding the pricing of pharmaceutical and biopharmaceutical products, limiting coverage and reimbursement for drugs and other medical products, government control and other changes to the healthcare system in the United States.

By way of example, the United States and state governments continue to propose and pass legislation designed to reduce the cost of healthcare. In March 2010, the United States Congress enacted the ACA, which, among other things, includes changes to the coverage and payment for products under government healthcare programs. Among the provisions of the ACA of importance to our potential product candidates are:

- an annual, nondeductible fee on any entity that manufactures or imports specified branded prescription drugs and biologic products, apportioned among these entities according to their market share in certain government healthcare programs;
- expansion of eligibility criteria for Medicaid programs by, among other things, allowing states to offer Medicaid coverage to certain individuals with income at or below 133% of the federal poverty level, thereby potentially increasing a manufacturer's Medicaid rebate liability;
- expanded manufacturers' rebate liability under the Medicaid Drug Rebate Program by increasing the minimum rebate for both branded and generic drugs and revising the definition of "average manufacturer price" (AMP) for calculating and reporting Medicaid drug rebates on outpatient

prescription drug prices and extending rebate liability to prescriptions for individuals enrolled in Medicare Advantage plans;

- addressed a new methodology by which rebates owed by manufacturers under the Medicaid Drug Rebate Program are calculated for products that are inhaled, infused, instilled, implanted or injected;
- expanded the types of entities eligible for the 340B drug discount program;
- established the Medicare Part D coverage gap discount program by requiring manufacturers to provide a 50% point-of-sale-discount off the negotiated price of applicable products to eligible beneficiaries during their coverage gap period as a condition for the manufacturers' outpatient products to be covered under Medicare Part D;
- a new Patient-Centered Outcomes Research Institute to oversee, identify priorities in, and conduct comparative clinical effectiveness research, along with funding for such research;
- the Independent Payment Advisory Board (IPAB) which has authority to recommend certain changes to the Medicare program to reduce expenditures by the program that could result in reduced payments for prescription products. The ACA provided that under certain circumstances, IPAB recommendations will become law unless Congress enacts legislation that will achieve the same or greater Medicare cost savings; and
- established the Center for Medicare and Medicaid Innovation within CMS to test innovative payment and service delivery models to lower Medicare and Medicaid spending, potentially including prescription product spending. Funding has been allocated to support the mission of the Center for Medicare and Medicaid Innovation from 2011 to 2019.

Members of the United States Congress and the Trump Administration have expressed an intent to pass legislation or adopt executive orders to fundamentally change or repeal parts of the Affordable Care Act. While Congress has not passed repeal legislation to date, the 2017 Tax Reform Act includes a provision repealing the individual insurance coverage mandate included in the Affordable Care Act, effective January 1, 2019. Further, on January 20, 2017, President Trump signed an Executive Order directing federal agencies with authorities and responsibilities under the ACA to waive, defer, grant exemptions from, or delay the implementation of any provision of the ACA that would impose a fiscal burden on states or a cost, fee, tax, penalty or regulatory burden on individuals, healthcare providers, health insurers, or manufacturers of pharmaceuticals or medical devices. On October 13, 2017, President Trump signed an Executive Order terminating the cost-sharing subsidies that reimburse insurers under the Affordable Care Act. Several state Attorneys General filed suit to stop the administration from terminating the subsidies, but their request for a restraining order was denied by a federal judge in California on October 25, 2017. In addition, CMS has recently proposed regulations that would give states greater flexibility in setting benchmarks for insurers in the individual and small group marketplaces, which may have the effect of relaxing the essential health benefits required under the Affordable Care Act for plans sold through such marketplaces.

It remains to be seen whether there will be further changes to the Affordable Care Act as a result of new legislation or further executive, administrative or judicial action. The impact that any such further action will have on the availability of healthcare and containing or lowering the cost of healthcare including the cost of pharmaceutical and biological products is unclear. The full impact of the Affordable Care Act and the political uncertainty surrounding it on our business also remains unclear.

Other legislative changes have been proposed and adopted in the United States since the ACA was enacted. For example, in August 2011, the Budget Control Act of 2011, among other things, created measures for spending reductions by Congress. A Joint Select Committee on Deficit Reduction, tasked with recommending a targeted deficit reduction of at least $1.2 trillion for the years 2012 through 2021, was unable to reach required goals, thereby triggering the legislation's automatic reduction to several government programs. This includes aggregate reductions of Medicare payments to providers of up to 2% per fiscal year, which went into effect in

April 2013 and will remain in effect through 2024 unless additional Congressional action is taken. In January 2013, President Obama signed into law the American Taxpayer Relief Act of 2012, which, among other things, further reduced Medicare payments to several 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.

There have been, and likely will continue to be, legislative and regulatory proposals at the foreign, federal, and state levels directed at broadening the availability of healthcare and containing or lowering the cost of healthcare. Such reforms could have an adverse effect on anticipated revenues from product candidates that we may successfully develop and for which we may obtain regulatory approval and may affect our overall financial condition and ability to develop product candidates.

Additional regulation

In addition to the foregoing, state, and federal laws regarding environmental protection and hazardous substances, including the Occupational Safety and Health Act, the Resource Conservation and Recovery Act, and the Toxic Substances Control Act, affect our business. These and other laws govern the use, handling, and disposal of various biologic, chemical, and radioactive substances used in, and wastes generated by, operations. If our operations result in contamination of the environment or expose individuals to hazardous substances, we could be liable for damages and governmental fines. Equivalent laws have been adopted in third countries that impose similar obligations.

Employees

As of January 31, 2018, we had 53 employees, approximately 74% of whom have an M.D., Ph.D., or other advanced degree. All of our employees are in Cambridge, Massachusetts. None of our employees are represented by a labor union or covered under a collective bargaining agreement. We consider our employee relations to be good.

Facilities

Our corporate headquarters are located in Cambridge, Massachusetts, where we lease approximately 33,500 square feet of office and laboratory space pursuant to a lease agreement commencing in July 2015 and expiring in January 2023. This facility houses our research, clinical, regulatory, commercial, and administrative personnel. We believe that our existing facilities are adequate for our near-term needs, but expect to need additional space as we grow. We believe that suitable additional or alternative space would be available as required in the future on commercially reasonable terms.

Legal Proceedings

From time to time, we may be involved in various claims and legal proceedings relating to claims arising out of our operations. Regardless of outcome, litigation can have an adverse impact on us because of defense and settlement costs, diversion of management resources and other factors. We are not currently a party to any legal proceedings.

MANAGEMENT

Executive Officers and Directors

The following table sets forth the name, age, and position of each of our executive officers and directors as of January 31, 2018:

Name	Age	Position
Charles Wilson, Ph.D.	53	Chief Executive Officer and Director
Seth Ettenberg, Ph.D.	45	Chief Scientific Officer
Christiana Stamoulis	47	President and Chief Financial Officer
Michael Vasconcelles, M.D.	54	Chief Medical Officer
Geoffrey Hodge	53	Chief Technical Officer
Jörn Aldag(1)(2)(3)	58	Director
Bruce Booth, DPhil(1)(2)(3) .	43	Chairman of the Board, Director
Liam Ratcliffe, M.D., Ph.D.(1)(2)(3)	54	Director

(1) Member of the audit committee.
(2) Member of the compensation committee.
(3) Member of the nominating and corporate governance committee.

Executive Officers

Charles Wilson, Ph.D. has served as our Chief Executive Officer and Director since March 2014. From 2008 until he joined Unum, Dr. Wilson was Vice President and Global Head of Strategic Alliances at the Novartis Institutes for BioMedical Research. In this role, he was responsible for partnering to support Novartis' research and early development efforts through to clinical proof of concept. Dr. Wilson has held both scientific and business management roles in biotechnology, including as co-founder and Chief Technology Officer of Archemix between 2001 and 2008. Dr. Wilson received a B.A. in Biology and Chemistry and an M.A. in Cell Biology from Boston University and a Ph.D. in Biophysics from the University of California, San Francisco. Dr. Wilson completed his post-doctoral training at Harvard University and Massachusetts General Hospital.

Seth Ettenberg, Ph.D. has served as our Chief Scientific Officer since September 2014. From 2005 until he joined Unum, Dr. Ettenberg served as Head of Novartis Oncology Biotherapeutics, Cambridge Site. Dr. Ettenberg is a cancer biologist and drug development scientist with experience building and leading teams in biotechnology and large pharmaceutical drug discovery settings. Dr. Ettenberg received his Ph.D. from the Uniform Services University of the Health Sciences and completed his post-doctoral training at the National Cancer Institute.

Christiana Stamoulis has served as our President since February 2018 and our Chief Financial Officer since January 2015. From January 2014 until she joined Unum, Ms. Stamoulis was an independent advisor to biopharmaceutical companies. From 2009 until December 2013, Ms. Stamoulis was a Senior Vice President of Corporate Strategy and Business Development at Vertex Pharmaceuticals, Inc. Prior to Vertex, Ms. Stamoulis served as a Managing Director in the Investment Banking division of Citigroup where she led the building of its U.S. Life Sciences investment banking practice. Prior to her role at Citigroup, she was a senior investment banker in the Healthcare group of the Investment Banking division of Goldman, Sachs & Co. where she spent the majority of her investment banking career. Ms. Stamoulis started her career as a strategy consultant at The Boston Consulting Group. Ms. Stamoulis has been an independent director at Hologic Inc. since November 2011. Ms. Stamoulis holds two undergraduate degrees from the Massachusetts Institute of Technology (MIT) and a Master of Business Administration from the MIT Sloan School of Management.

Michael Vasconcelles, M.D. has served as our Chief Medical Officer since October 2015. From March 2012 until he joined Unum, Dr. Vasconcelles served as the Senior Vice President, Head, Oncology Therapy Area Unit at Takeda Pharmaceuticals, where he was accountable for the oncology research and development strategy and progression of the oncology portfolio from candidate selection through life cycle management and a member of the research and development executive committee. From 2000 until 2012, Dr. Vasconcelles served in several positions at Genzyme Corporation and Sanofi S.A., including Group Vice President and Global Therapeutic Area Head, Transplant and Oncology. In this capacity, he was also a member of the Oncology Business Unit leadership team. Dr. Vasconcelles is a Clinical Instructor in Medicine at Harvard Medical School and a staff physician at the Dana-Farber Cancer Institute and Brigham & Women's Hospital. Dr. Vasconcelles received his B.A. from Northwestern University and his M.D. from Northwestern University's Feinberg School of Medicine.

Geoffrey Hodge has served as our Chief Technical Officer and Senior Vice President of Operations since July 2015. From 2003 and until he joined Unum, Mr. Hodge held several roles at GE Healthcare, the most recent of which was Bioprocess Technology Leader and prior to that Fast Trak Solutions Leader. Prior to GE Healthcare, Mr. Hodge was a co-founder of Xcellerex where he served as its VP of Process Development & Manufacturing. During his tenure at Xcellerex, Mr. Hodge is the inventor of record on multiple technology patents. Mr. Hodge holds a B.A. in Biology from Colgate University and an M.S. in Biotechnology from Worcester Polytechnic Institute.

Non-Employee Directors

Jörn Aldag has served as a member of our board of directors since February 2016. Mr. Aldag has been the Chief Executive Officer at Hookipa Biotech AG since June 2016. Mr. Aldag served as the Chief Executive Officer at uniQure N.V. (formerly, Amsterdam Molecular Therapeutics N.V.) from October 2009 to December 2015 and as an advisor to the board of uniQure N.V. from January 2016 to May 2016. Prior to his tenure at uniQure N.V., Mr. Aldag was President and Chief Executive Officer of Evotec AG from November 1997 to December 2008. Mr. Aldag also serves as the Chairman of Molecular Partners AG, Zurich, Switzerland (SWIX:MOLN) since 2007. He co-founded G7 Therapeutics AG in 2014, which was acquired by Heptares Therapeutics Ltd. in 2016. Mr. Aldag received business degrees from the Harvard Business School (Advanced Management Program) in 1994 and from the European Business School (Diplom Betriebswirt) in 1982. Mr. Aldag's qualifications to sit on our board of directors include his extensive leadership, executive, managerial and business experience with life sciences companies.

Bruce Booth, DPhil. has served as Chairman of our board of directors since February 2018 and as a member of our board of directors since March 2014. Dr. Booth joined Atlas Venture in 2005, and currently serves as a partner of Atlas Venture. Previously, from 2004 to 2005, Dr. Booth was a principal at Caxton Health Holdings L.L.C., a healthcare-focused investment firm, where he focused on the firm's venture capital activities. Dr. Booth serves on the board of several public and privately held companies, including Miragen Therapeutics, Inc. (Nasdaq: MGEN) and Zafgen, Inc. (Nasdaq: ZFGN), among others. Dr. Booth holds a DPhil. in molecular immunology from Oxford University's Nuffield Department of Medicine and a B.S. in biochemistry from Pennsylvania State University. Dr. Booth's qualifications to sit on our board of directors include his extensive leadership, executive, managerial and business experience with life sciences companies, including experience in the formation, development, and business strategy of multiple start-up companies in the life sciences sector.

Liam Ratcliffe, M.D., Ph.D. has served as a member of our board of directors since June 2015. Dr. Ratcliffe is a Managing Director at New Leaf Venture Partners where he is focused on biopharmaceutical investing. Dr. Ratcliffe joined New Leaf in September 2008. Dr. Ratcliffe was previously Senior Vice President and Development Head for Pfizer Neuroscience, as well as Worldwide Head of Clinical Research and Development at Pfizer. Dr. Ratcliffe received his M.D. degree and Ph.D. degree in immunology from the University of Cape Town and his M.B.A. degree from the University of Michigan. Dr. Ratcliffe continues to serve as a director on the boards of public companies such as Edge Therapeutics, Inc. (Nasdaq: EDGE) and Array Biopharmaceuticals, Inc. (2012-2014) as well as private companies such as Deciphera Pharmaceuticals, Inc. Dr. Ratcliffe's

qualifications to sit on our board of directors include his experience as an executive in the biopharmaceutical industry and as an investor in life sciences companies along with his medical training and executive skills.

Composition of Our Board of Directors

As of January 31, 2018, our board of directors consisted of four members, each of whom are members pursuant to the board composition provisions of our certificate of incorporation and agreements with our stockholders, which agreements are described under "Certain Relationships and Related Party Transactions." These board composition provisions will terminate upon the closing of this offering. Upon the termination of these provisions, there will be no further contractual obligations regarding the election of our directors. Our nominating and corporate governance committee and our board of directors may therefore consider a broad range of factors relating to the qualifications and background of nominees, which may include diversity, which is not only limited to race, gender, or national origin. We have no formal policy regarding board diversity. Our nominating and corporate governance committee's and our board of directors' priority in selecting board members is identification of persons who will further the interests of our stockholders through his or her established record of professional accomplishment, the ability to contribute positively to the collaborative culture among board members, knowledge of our business, understanding of the competitive landscape, and professional and personal experiences and expertise relevant to our growth strategy. Our directors hold office until their successors have been elected and qualified or until the earlier of their resignation or removal. Our amended and restated certificate of incorporation that will become effective upon the closing of this offering and amended and restated bylaws that will become effective upon the effectiveness of the registration statement of which this prospectus is a part also provide that our directors may be removed only for cause by the affirmative vote of the holders of at least 66.67% of the votes that all our stockholders would be entitled to cast in an annual election of directors, and that any vacancy on our board of directors, including a vacancy resulting from an enlargement of our board of directors, may be filled only by vote of a majority of our directors then in office.

Director Independence

In February 2018, our board of directors undertook a review of the composition of our board of directors and its committees and the independence of each director. Applicable Nasdaq rules require a majority of a listed company's board of directors to be comprised of independent directors within one year of listing. Based upon information requested from and provided by each director concerning his or her background, employment, and affiliations, including family relationships, our board of directors has determined that all directors other than Dr. Wilson are "independent directors" as defined under applicable Nasdaq rules. In making such determination, our board of directors considered the relationships that each such non-employee director has with our company and all other facts and circumstances that our board of directors deemed relevant in determining his or her independence, including the beneficial ownership of our capital stock by each non-employee director.

We intend to rely on the phase-in rules of Nasdaq with respect to the independence of the audit, compensation, and nominating and corporate governance committees. In accordance with these phase-in provisions, our audit, compensation, and nominating and corporate governance committees will have at least one independent member by the effective date of the registration statement of which this prospectus is a part, at least two independent members within 90 days of the effective date of the registration statement of which this prospectus is a part and all members will be independent within one year of the effective date of the registration statement of which this prospectus is a part.

There are no family relationships among any of our directors or executive officers.

Staggered Board

In accordance with the terms of our amended and restated certificate of incorporation that will become effective upon the closing of this offering and amended and restated bylaws that will become effective upon the

effectiveness of the registration statement of which this prospectus is a part, our board of directors will be divided into three staggered classes of directors and each will be assigned to one of the three classes. At each annual meeting of the stockholders, a class of directors will be elected for a three-year term to succeed the directors of the same class whose terms are then expiring. The terms of the directors will expire upon the election and qualification of successor directors at the annual meeting of stockholders to be held during the years 2019 for Class I directors, 2020 for Class II directors and 2021 for Class III directors.

- Our Class I director will be Liam Ratcliffe;
- Our Class II director will be Bruce Booth; and
- Our Class III directors will be Jörn Aldag and Charles Wilson.

Our amended and restated certificate of incorporation that will become effective upon the closing of this offering and amended and restated bylaws that will become effective upon the effectiveness of the registration statement of which this prospectus is a part provide that the number of our directors shall be fixed from time to time by a resolution of the majority of our board of directors.

The division of our board of directors into three classes with staggered three-year terms may delay or prevent stockholder efforts to effect a change of our management or a change in control. We expect that additional directorships resulting from an increase in the number of directors, if any, will be distributed among the three classes so that, as nearly as possible, each class shall consist of one third of the board of directors.

Board Leadership Structure and the Role of the Board in Risk Oversight

Board Leadership Structure

The positions of our chairperson of the board and chief executive officer are separated, with Dr. Wilson serving as our chief executive officer and Dr. Booth serving as our chairman of our board of directors. Separating these positions allows Dr. Wilson, as our chief executive officer, to focus on our day-to-day business, while allowing the chairperson of the board to lead the board of directors in its fundamental role of providing advice to and independent oversight of management. Our board of directors recognizes the time, effort, and energy that Dr. Wilson, as our chief executive officer, must devote to his position in the current business environment, as well as the commitment required to serve as our chairperson, particularly as the board of directors' oversight responsibilities continue to grow. Our board of directors also believes that this structure ensures a greater role for the independent directors in the oversight of our company and active participation of the independent directors in setting agendas and establishing priorities and procedures for the work of our board of directors. Our board of directors believes its administration of its risk oversight function has not affected its leadership structure. Although our amended and restated bylaws that will become effective upon the effectiveness of the registration statement of which this prospectus is a part will not require our chairperson and chief executive officer positions to be separate, our board of directors believes that having separate positions is the appropriate leadership structure for us at this time and demonstrates our commitment to good corporate governance.

Role of the Board in Risk Oversight

Risk is inherent with every business, and how well a business manages risk can ultimately determine its success. We face a number of risks, including those described under the section titled "Risk Factors" in this prospectus. Our board of directors is actively involved in oversight of risks that could affect us. This oversight is conducted primarily by our full board of directors, which has responsibility for general oversight of risks.

Following the closing of this offering, our board of directors will satisfy this responsibility through full reports by each committee chair regarding the committee's considerations and actions, as well as through regular reports directly from officers responsible for oversight of particular risks within our company. Our board of directors believes that full and open communication between management and the board of directors is essential for effective risk management and oversight.

Committees of Our Board of Directors

Our board of directors has established an audit committee, a compensation committee, and a nominating and corporate governance committee, each of which will operate pursuant to a charter to be adopted by our board of directors and will be effective upon the effectiveness of the registration statement of which this prospectus is a part. Upon the effectiveness of the registration statement of which this prospectus is a part, the composition and functioning of all of our committees will comply with all applicable requirements of the Sarbanes-Oxley Act of 2002, Nasdaq and SEC rules and regulations.

Audit Committee

Jörn Aldag, Liam Ratcliffe and Bruce Booth will serve on the audit committee, which will be chaired by Jörn Aldag. Our board of directors has determined that Liam Ratcliffe and Jörn Aldag are "independent" for audit committee purposes as that term is defined in the rules of the SEC and the applicable Nasdaq rules, and each has sufficient knowledge in financial and auditing matters to serve on the audit committee. Our board of directors has designated Jörn Aldag as an "audit committee financial expert," as defined under the applicable rules of the SEC. The audit committee's responsibilities upon closing of this offering include:

- appointing, approving the compensation of, and assessing the independence of our independent registered public accounting firm;
- pre-approving auditing and permissible non-audit services, and the terms of such services, to be provided by our independent registered public accounting firm;
- reviewing the overall audit plan with our independent registered public accounting firm and members of management responsible for preparing our financial statements;
- reviewing and discussing with management and our independent registered public accounting firm our annual and quarterly financial statements and related disclosures as well as critical accounting policies and practices used by us;
- coordinating the oversight and reviewing the adequacy of our internal control over financial reporting;
- establishing policies and procedures for the receipt and retention of accounting-related complaints and concerns;
- recommending based upon the audit committee's review and discussions with management and our independent registered public accounting firm whether our audited financial statements shall be included in our Annual Report on Form 10-K;
- monitoring the integrity of our financial statements and our compliance with legal and regulatory requirements as they relate to our financial statements and accounting matters;
- preparing the audit committee report required by SEC rules to be included in our annual proxy statement;
- reviewing all related person transactions for potential conflict of interest situations and approving all such transactions; and
- reviewing quarterly earnings releases.

Compensation Committee

Bruce Booth, Liam Ratcliffe and Jörn Aldag will serve on the compensation committee, which will be chaired by Liam Ratcliffe. Our board of directors has determined that each member of the compensation committee is "independent" as defined in the applicable Nasdaq rules. The compensation committee's responsibilities upon closing of this offering include:

- annually reviewing and approving corporate goals and objectives relevant to the compensation of our chief executive officer;

- evaluating the performance of our chief executive officer in light of such corporate goals and objectives and determining the compensation of our chief executive officer;
- reviewing and approving the compensation of our other executive officers;
- reviewing and establishing our overall management compensation, philosophy, and policy;
- overseeing and administering our compensation and similar plans;
- evaluating and assessing potential and current compensation advisors in accordance with the independence standards identified in the applicable Nasdaq rules;
- retaining and approving the compensation of any compensation advisors;
- reviewing and approving our policies and procedures for the grant of equity-based awards;
- evaluating director compensation and making recommendations on director compensation to the Board;
- preparing the compensation committee report required by SEC rules, if and when required, to be included in our annual proxy statement; and
- reviewing and approving the retention or termination of any consulting firm or outside advisor to assist in the evaluation of compensation matters.

Nominating and Corporate Governance Committee

Jörn Aldag, Liam Ratcliffe and Bruce Booth will serve on the nominating and corporate governance committee, which will be chaired by Bruce Booth. Our board of directors has determined that each member of the nominating and corporate governance committee is "independent" as defined in the applicable Nasdaq rules. The nominating and corporate governance committee's responsibilities upon closing of this offering include:

- developing and recommending to the board of directors criteria for board and committee membership;
- establishing procedures for identifying and evaluating board of director candidates, including nominees recommended by stockholders;
- reviewing the size and composition of the board of directors to ensure that it is composed of members containing the appropriate skills and expertise to advise us;
- identifying individuals qualified to become members of the board of directors;
- recommending to the board of directors the persons to be nominated for election as directors and to each of the board's committees;
- developing and recommending to the board of directors a code of business conduct and ethics and a set of corporate governance guidelines; and
- overseeing the evaluation of our board of directors and management.

Our board of directors may from time to time establish other committees.

Compensation Committee Interlocks and Insider Participation

None of the members of our compensation committee has at any time during the prior three years been one of our officers or employees. None of our executive officers currently serves, or in the past fiscal year has served, as a member of the board of directors or compensation committee of any entity that has one or more executive officers serving on our board of directors or compensation committee. For a description of transactions between us and members of our compensation committee and affiliates of such members, please see "Certain Relationships and Related Person Transactions."

Code of Business Conduct and Ethics

We plan to adopt a code of business conduct and ethics that applies to all of our employees, officers, and directors, including those officers responsible for financial reporting, which will be effective upon closing of this offering. Upon the closing of this offering, our code of business conduct and ethics will be available on the Corporate Governance section of our website at www.unumrx.com. We intend to disclose any amendments to the code, or any waivers of its requirements, on our website or in a Current Report on Form 8-K as may be required by SEC or Nasdaq rules.

EXECUTIVE COMPENSATION

Overview

As an emerging growth company, we have opted to comply with the executive compensation disclosure rules applicable to "smaller reporting companies," as such term is defined in the rules promulgated under the Securities Act.

This section provides an overview of the compensation awarded to, earned by, or paid to our principal executive officer and our next two most highly compensated executive officers in respect of their service to us for our fiscal year ended December 31, 2017. We refer to these individuals as our named executive officers. Our named executive officers are:

- Charles Wilson, Ph.D., our Chief Executive Officer;
- Michael Vasconcelles, M.D., our Chief Medical Officer; and
- Christiana Stamoulis, our President and Chief Financial Officer.

This section contains certain forward-looking statements that are based on our current intentions and expectations regarding compensatory plans or arrangements we may adopt in the future. Actual plans or arrangements that we adopt following the closing of this offering may be materially different from those described in this section.

Our executive compensation program is based on a pay for performance philosophy. Compensation for our executive officers is composed primarily of the following components: base salary, cash bonus, and long-term equity incentives. Our executive officers, like all full-time employees, are eligible to participate in our retirement and health and welfare benefit plans.

2017 Summary Compensation Table

The following table presents information regarding the total compensation awarded to, earned by, and paid to our named executive officers for services rendered to us in all capacities for the year ended December 31, 2017.

Name and Principal Position	Salary ($)	Bonus ($)	Option Awards ($)(2)	All Other Compensation ($)	Total ($)
Charles Wilson, Ph.D. *Chief Executive Officer*	360,000	(1)	—	—	360,000
Michael Vasconcelles, M.D. *Chief Medical Officer*	384,844	(1)	473,507	—	858,351
Christiana Stamoulis *President and Chief Financial Officer*	348,750	(1)	473,507	—	822,257

(1) The performance-based cash bonuses payable to our named executive officers for 2017 have not yet been determined. Performance-based cash bonuses, if any, for 2017 will be determined by our board of directors and paid during the first quarter of 2018.

(2) Amounts reflect the grant-date fair value of option awards granted in 2017 in accordance with ASC Topic 718. Such grant-date fair value does not take into account any estimated forfeitures related to service-vesting conditions. For information regarding assumptions underlying the valuation of equity awards, see Note 10 to our consolidated financial statements. These amounts do not correspond to the actual value that may be recognized by the executives upon vesting.

Narrative Disclosure to Summary Compensation Table

Base Salary. Each named executive officer's base salary is a fixed component of annual compensation for performing specific duties and functions, and has been established by our board of directors taking into account each individual's role, responsibilities, skills, and experience.

Cash Bonus. Our annual bonus program is intended to reward our named executive officers for meeting objective or subjective performance goals for a fiscal year.

Long-Term Equity Incentives. Our equity grant program is intended to align the interests of our named executive officers with those of our stockholders and to motivate them to make important contributions to our performance.

Employment Arrangements with our Named Executive Officers

Charles Wilson, Ph.D. For the year ended December 31, 2017, the annual base salary for Dr. Wilson was $360,000. For 2017, Dr. Wilson was eligible to earn an annual cash incentive bonus targeted at 30% of his base salary. Upon the effectiveness of the registration statement of which this prospectus is a part, we anticipate entering into an employment agreement with Dr. Wilson. Dr. Wilson's base salary will be $528,000 upon effectiveness of the employment agreement, which is subject to annual review and adjustment, and he will be eligible to earn an annual cash incentive bonus with a target amount equal to 50% of his base salary.

Dr. Wilson's employment agreement is expected to provide that, in the event that Dr. Wilson's employment is terminated by us without "cause" or Dr. Wilson resigns for "good reason" (as each are defined in the employment agreement), subject to the execution and effectiveness of a separation agreement, including a general release of claims in our favor, he will be entitled to receive (i) an amount equal to 12 months of base salary, payable in lump sum within 60 days after the date of termination, (ii) if Dr. Wilson is participating in our group health plan immediately prior to his termination and elects COBRA health continuation, a monthly cash payment until the earlier of 12 months following termination or the end of Dr. Wilson's COBRA health continuation period in an amount equal to the amount that we would have made to provide health insurance to Dr. Wilson had he remained employed with us, and (iii) acceleration of time-based equity awards in an amount that would have vested if he had remained employed for an additional 12 months following the date of his termination. The employment agreement is also expected to provide that, in lieu of the payments and benefits described above, in the event that Dr. Wilson's employment is terminated by us without cause or Dr. Wilson resigns for good reason, in either case within 12 months following a "change in control" (as defined in the employment agreement), subject to the execution and effectiveness of a separation agreement, including a general release of claims in our favor, he will be entitled to receive (i) a lump sum cash payment equal to 18 months of his then-current base salary (or his base salary in effect immediately prior to the change in control, if higher) plus 150 percent of his target bonus, (ii) if Dr. Wilson is participating in our group health plan immediately prior to his termination, a monthly cash payment until the earlier of 18 months following termination or the end of Dr. Wilson's COBRA health continuation period in an amount equal to the amount that we would have made to provide health insurance to him had he remained employed with us and (iii) full acceleration of all time-based equity awards held by Dr. Wilson.

Dr. Wilson is also eligible to participate in the employee benefit plans available to our employees, subject to the terms of those plans.

Michael Vasconcelles, M.D. Effective February 27, 2017, Dr. Vasconcelles' employment arrangement was subject to a company-wide raise which increased his base salary to $386,250. Prior to this adjustment, the annual base salary for Dr. Vasconcelles was $375,000. For 2017, Dr. Vasconcelles was eligible to earn an annual cash incentive bonus targeted at 30% of his base salary. Upon the effectiveness of the registration statement of which this prospectus is a part, we anticipate entering into an employment agreement with Dr. Vasconcelles. Dr. Vasconcelles' base salary will be $425,000 upon effectiveness of the employment agreement, which is subject to annual review and adjustment, and he will be eligible to earn an annual cash incentive bonus with a target amount equal to 35% of his base salary.

Dr. Vasconcelles' employment agreement is expected to provide that, in the event that Dr. Vasconcelles' employment is terminated by us without "cause" or Dr. Vasconcelles resigns for "good reason" (as each are defined in the employment agreement), subject to the execution and effectiveness of a separation agreement, including a general release of claims in our favor, he will be entitled to receive (i) an amount equal to 9 months of base salary, payable in lump sum within 60 days after the date of termination, (ii) if Dr. Vasconcelles is

participating in our group health plan immediately prior to his termination and elects COBRA health continuation, a monthly cash payment until the earlier of 9 months following termination or the end of Dr. Vasconcelles' COBRA health continuation period in an amount equal to the amount that we would have made to provide health insurance to Dr. Vasconcelles had he remained employed with us, and (iii) acceleration of time-based equity awards in an amount that would have vested if he had remained employed for an additional 9 months following the date of his termination. The employment agreement is also expected to provide that, in lieu of the payments and benefits described above, in the event that Dr. Vasconcelles' employment is terminated by us without cause or Dr. Vasconcelles resigns for good reason, in either case within 12 months following a "change in control" (as defined in the employment agreement), subject to the execution and effectiveness of a separation agreement, including a general release of claims in our favor, he will be entitled to receive (i) a lump sum cash payment equal to 12 months of his then-current base salary (or his base salary in effect immediately prior to the change in control, if higher) plus 100 percent of his target bonus, (ii) if Dr. Vasconcelles is participating in our group health plan immediately prior to his termination, a monthly cash payment until the earlier of 12 months following termination or the end of Dr. Vasconcelles' COBRA health continuation period in an amount equal to the amount that we would have made to provide health insurance to him had he remained employed with us and (iii) full acceleration of all time-based equity awards held by Dr. Vasconcelles.

Dr. Vasconcelles is also eligible to participate in the employee benefit plans available to our employees, subject to the terms of those plans.

Christiana Stamoulis. Effective February 15, 2017, Ms. Stamoulis' employment arrangement was amended to increase her base salary to $360,000 and to increase her eligible annual cash incentive bonus to a target of 35% of her base salary. Prior to this amendment, the annual base salary for Ms. Stamoulis was $270,000 and she was eligible to earn an annual cash incentive bonus targeted at 25% of her base salary. Upon the effectiveness of the registration statement of which this prospectus is a part, we anticipate entering into an employment agreement with Ms. Stamoulis. Ms. Stamoulis' base salary will be $425,000 upon effectiveness of the employment agreement, which is subject to annual review and adjustment, and she will be eligible to earn an annual cash incentive bonus with a target amount equal to 35% of her base salary.

Ms. Stamoulis' employment agreement is expected to provide that, in the event that Ms. Stamoulis' employment is terminated by us without "cause" or Ms. Stamoulis resigns for "good reason" (as each are defined in the employment agreement), subject to the execution and effectiveness of a separation agreement, including a general release of claims in our favor, she will be entitled to receive (i) an amount equal to 9 months of base salary, payable in lump sum within 60 days after the date of termination, (ii) if Ms. Stamoulis is participating in our group health plan immediately prior to her termination and elects COBRA health continuation, a monthly cash payment until the earlier of 9 months following termination or the end of Ms. Stamoulis' COBRA health continuation period in an amount equal to the amount that we would have made to provide health insurance to Ms. Stamoulis had she remained employed with us, and (iii) acceleration of time-based equity awards in an amount that would have vested if she had remained employed for an additional 9 months following the date of her termination. The employment agreement is also expected to provide that, in lieu of the payments and benefits described above, in the event that Ms. Stamoulis' employment is terminated by us without cause or Ms. Stamoulis resigns for good reason, in either case within 12 months following a "change in control" (as defined in the employment agreement), subject to the execution and effectiveness of a separation agreement, including a general release of claims in our favor, she will be entitled to receive (i) a lump sum cash payment equal to 12 months of her then-current base salary (or her base salary in effect immediately prior to the change in control, if higher) plus 100 percent of her target bonus, (ii) if Ms. Stamoulis is participating in our group health plan immediately prior to her termination, a monthly cash payment until the earlier of 12 months following termination or the end of Ms. Stamoulis' COBRA health continuation period in an amount equal to the amount that we would have made to provide health insurance to her had she remained employed with us and (iii) full acceleration of all time-based equity awards held by Ms. Stamoulis.

Ms. Stamoulis is also eligible to participate in the employee benefit plans available to our employees, subject to the terms of those plans.

Other Agreements

Each of our named executive officers has entered into a standard form agreement with respect to confidential information and assignment of inventions. Among other things, this agreement obligates each named executive officer to refrain from disclosing any of our proprietary information received during the course of employment and to assign to us any inventions conceived or developed during the course of employment. Such agreement also provides that during the period of the named executive officer's employment and for six months thereafter, the named executive officer will not compete with us and will not solicit our employees, consultants, customers, or suppliers.

Outstanding Equity Awards at 2017 Fiscal Year-End

The following table sets forth information concerning outstanding equity awards held by each of our named executive officers as of December 31, 2017.

Name	Grant Date	Number of Securities Underlying Unexercised Options (#) Exercisable	Number of Securities Underlying Unexercised Options (#) Unexercisable	Option Exercise Price ($)	Option Expiration Date
Charles Wilson, Ph.D.	—	—	—	—	—
Michael Vasconcelles, M.D.	11/4/2015	234,538	198,462(1)	3.33	11/3/2025
	10/27/2017	—	125,000(2)	6.22	10/26/2027
Christiana Stamoulis	1/29/2015	455,733	169,267(3)	0.11	1/28/2025
	4/30/2015	160,418	80,214(4)	0.11	4/29/2025
	10/27/2017	—	125,000(5)	6.22	10/26/2027

(1) Dr. Vasconcelles' stock option granted on November 4, 2015 vests over four years, with 25% of the shares vesting on the first anniversary of the vesting commencement date, October 20, 2015, and the remaining shares vesting in 36 equal monthly installments thereafter, subject to Dr. Vasconcelles' continuous service with us.

(2) Dr. Vasconcelles' stock option granted on October 27, 2017 vests over four years, with 25% of the shares vesting on the first anniversary of the vesting commencement date, October 27, 2017, and the remaining shares vesting in 36 equal monthly installments thereafter, subject to Dr. Vasconcelles' continuous service with us.

(3) Ms. Stamoulis' stock option granted on January 29, 2015 vests over four years, with 25% of the shares vesting on the first anniversary of the vesting commencement date, January 9, 2015, and the remaining shares vesting in 36 equal monthly installments thereafter, subject to Ms. Stamoulis' continuous service with us.

(4) Ms. Stamoulis' stock option granted on April 30, 2015 vests over four years, with 25% of the shares vesting on the first anniversary of the vesting commencement date, April 30, 2015, and the remaining shares vesting in 36 equal monthly installments thereafter, subject to Ms. Stamoulis' continuous service with us.

(5) Ms. Stamoulis' stock option granted on October 27, 2017 vests over four years, with 25% of the shares vesting on the first anniversary of the vesting commencement date, October 27, 2017, and the remaining shares vesting in 36 equal monthly installments thereafter, subject to Ms. Stamoulis' continuous service with us.

Compensation Risk Assessment

We believe that although a portion of the compensation provided to our executive officers and other employees is performance-based, our executive compensation program does not encourage excessive or unnecessary risk taking. This is primarily due to the fact that our compensation programs are designed to encourage our executive officers and other employees to remain focused on both short-term and long-term

strategic goals, in particular, in connection with our pay-for-performance compensation philosophy. As a result, we do not believe that our compensation programs are reasonably likely to have a material adverse effect on us.

Employee Benefit and Equity Compensation Plans

2018 Stock Option and Incentive Plan

Our 2018 Stock Option and Incentive Plan (2018 Plan) was adopted by our board of directors on February 9, 2018, and approved by our stockholders on , 2018 and will become effective upon the effectiveness of the registration statement of which this prospectus is a part. The 2018 Plan allows the board of directors' compensation committee to make equity-based incentive awards to our officers, employees, directors, and other key persons (including consultants).

We have initially reserved 4,000,000 shares of our common stock for the issuance of awards under the 2018 Plan, plus the shares of common stock remaining available for issuance under our 2015 Plan. These limits are subject to adjustment in the event of a stock split, stock dividend, or other change in our capitalization.

The shares we issue under the 2018 Plan will be authorized but unissued shares or shares underlying any awards that are forfeited, cancelled, held back upon exercise or settlement of an award to satisfy the exercise price or tax withholding, reacquired by us prior to vesting, satisfied without the issuance of stock, expire, or are otherwise terminated (other than by exercise) under the 2018 Plan.

Stock options and stock appreciation rights with respect to no more than 4,000,000 shares of common stock may be granted to any one individual in any one calendar year. The maximum number of shares that may be issued as incentive stock options may not exceed 4,000,000 shares, subject to the annual increase set by the 2018 Plan. The value of all awards made under the 2018 Plan and all other cash compensation paid by us to any non-employee director in any calendar year shall not exceed $1,250,000.

The 2018 Plan will be administered by our compensation committee. Our compensation committee has full power to select, from among the individuals eligible for awards, the individuals to whom awards will be granted, to make any combination of awards to participants, and to determine the specific terms and conditions of each award, subject to the provisions of the 2018 Plan. Persons eligible to participate in the 2018 Plan will be those full- or part-time officers, employees, non-employee directors, and other key persons (including consultants) as selected from time to time by our compensation committee in its discretion.

The 2018 Plan permits the granting of both options to purchase common stock intended to qualify as incentive stock options under Section 422 of the Code and options that do not so qualify. The option exercise price of each option will be determined by our compensation committee but may not be less than 100% of the fair market value of our common stock on the date of grant. The term of each option will be fixed by our compensation committee and may not exceed ten years from the date of grant. Our compensation committee will determine at what time or times each option may be exercised.

Our compensation committee may award stock appreciation rights subject to such conditions and restrictions as it may determine. Stock appreciation rights entitle the recipient to shares of common stock, or cash, equal to the value of the appreciation in our stock price over the exercise price. The exercise price may not be less than 100% of the fair market value of our common stock on the date of grant. The term of each stock appreciation right will be fixed by our compensation committee and may not exceed ten years from the date of grant. Our compensation committee will determine at what time or times each stock appreciation right may be exercised.

Our compensation committee may award restricted shares of common stock and restricted stock units to participants subject to such conditions and restrictions as it may determine. These conditions and restrictions may

include the achievement of certain performance goals and/or continued employment with us through a specified vesting period. Our compensation committee may also grant shares of common stock that are free from any restrictions under the 2018 Plan. Unrestricted stock may be granted to participants in recognition of past services or for other valid consideration and may be issued in lieu of cash compensation due to such participant.

Our compensation committee may grant performance share awards to participants that entitle the recipient to receive awards of common stock upon the achievement of certain performance goals and such other conditions as our compensation committee may determine. Our compensation committee may grant dividend equivalent rights to participants that entitle the recipient to receive credits for dividends that would be paid if the recipient had held a specified number of shares of common stock.

Our compensation committee may grant cash bonuses under the 2018 Plan to participants, subject to the achievement of certain performance goals.

Our compensation committee may grant awards of restricted stock, restricted stock units, performance share awards, or cash-based awards under the 2018 Plan that are intended to qualify as "performance-based compensation" under Section 162(m) of the Code. Such awards will only vest or become payable upon the attainment of performance goals that are established by our compensation committee and related to one or more performance criteria. The performance criteria that could be used with respect to any such awards include: total stockholder return, earnings before interest, taxes, depreciation and amortization, net income (loss) (either before or after interest, taxes, depreciation and/or amortization), changes in the market price of our common stock, economic value-added, development, clinical, regulatory or commercial milestones, funds from operations or similar measure, sales or revenue, acquisitions or strategic transactions, operating income (loss), cash flow (including, but not limited to, operating cash flow and free cash flow), return on capital, assets, equity, or investment, return on sales, gross or net profit levels, productivity, expense, margins, operating efficiency, customer satisfaction, working capital, earnings (loss) per share of our common stock, sales, or market shares and number of customers, any of which may be measured either in absolute terms or as compared to any incremental increase or as compared to results of a peer group. From and after the time that we become subject to Section 162(m) of the Code, the maximum award that is intended to qualify as "performance-based compensation" under Section 162(m) of the Code that may be made to certain of our officers during any one calendar year period is shares of common stock with respect to a share-based award and $ with respect to a cash-based award.

The 2018 Plan provides that upon the effectiveness of a "sale event," as defined in the 2018 Plan, an acquirer or successor entity may assume, continue or substitute outstanding awards under the 2018 Plan. To the extent that awards granted under the 2018 Plan are not assumed or continued or substituted by the successor entity, upon the effective time of the sale event, such awards under the 2018 Plan shall terminate. In the event of such termination, individuals holding options and stock appreciation rights will be permitted to exercise such options and stock appreciation rights (to the extent exercisable) within a specified period of time prior to the sale event. In addition, in connection with the termination of the 2018 Plan upon a sale event, we may make or provide for a cash payment to participants holding vested and exercisable options and stock appreciation rights equal to the difference between the per share cash consideration payable to stockholders in the sale event and the exercise price of the options or stock appreciation rights and we may make or provide for a cash payment to participants holding other vested awards.

Our board of directors may amend or discontinue the 2018 Plan, and our compensation committee may amend or cancel outstanding awards for purposes of satisfying changes in law or any other lawful purpose, but no such action may adversely affect rights under an award without the holder's consent. Certain amendments to the 2018 Plan require the approval of our stockholders.

No awards may be granted under the 2018 Plan after the date that is ten years from the date of stockholder approval of the 2018 Plan. No awards under the 2018 Plan have been made prior to the date hereof.

2015 Stock Incentive Plan

Our 2015 Stock Incentive Plan (2015 Plan) was approved and adopted by our board of directors on January 29, 2015, and was subsequently approved by our stockholders on January 30, 2015. Initially, under the 2015 Plan, we reserved for issuance an aggregate of 3,000,000 shares of our common stock; however, on June 10, 2015, the plan was amended to increase the aggregate number of shares reserved under the 2015 Plan to 6,508,000 shares of our common stock. This number of shares of common stock reserved for issuance is subject to adjustment in the event of a stock split, reverse stock split, stock dividend, recapitalization, combination of shares, reclassification of shares, spin-off, or other similar change in our capitalization, or any dividend or distribution to holders of common stock other than an ordinary cash dividend.

The shares of common stock underlying awards that expire, awards that are terminated, surrendered or canceled without having been fully exercised, awards that are forfeited, and awards that result in shares of common stock not being issued under the 2015 Plan are added back to the shares of common stock available for issuance under the 2015 Plan. In addition, shares of common stock tendered to us by a participant to exercise an award are added back to the shares available for grant under the 2015 Plan.

Our board of directors has acted as administrator of the 2015 Plan. The administrator has full power to select, from among the individuals eligible for awards, the individuals to whom awards will be granted, and to determine the specific terms and conditions of each award, subject to the provisions of the 2015 Plan. Persons eligible to participate in the 2015 Plan are those employees, officers and directors of, and consultants and advisors to, our company as selected from time to time by the administrator in its discretion.

The 2015 Plan permits the granting of (1) options to purchase common stock intended to qualify as incentive stock options under Section 422 of the Internal Revenue Code of 1986, as amended, (2) options that do not so qualify, (3) restricted stock, (4) restricted stock units, or (5) awards that are valued in whole or in part by reference to common stock, including stock appreciation rights. For stock options, the administrator will determine to establish the per share option exercise price and at what time or times each option may be exercised.

The 2015 Plan provides that upon the occurrence of a merger, consolidation, share exchange transaction, liquidation, or dissolution, our board of directors may take one or more of the following actions (or a combination of the following actions) as to some or any awards outstanding under the 2015 Plan, other than restricted stock awards: (i) provide that outstanding options awards will be assumed or substituted by the acquiring or successor corporation, (ii) upon written notice to participants, provide that all unexercised awards will terminate immediately prior to the consummation of such transaction unless exercised (to the extent exercisable) within a specified period following the date of such notice, (iii) provide that awards shall become exercisable or restrictions shall lapse (in whole or in part) prior to or upon such transaction, or (iv) make or provide for a cash payment to participants equal to the difference between the per share cash consideration in the transaction and the per share exercise price of the outstanding award. The restrictions on restricted stock awards under the 2015 Plan shall inure to the benefit of any successor company on a merger, consolidation, or share exchange transaction, and automatically be deemed terminated or satisfied on a liquidation or dissolution.

Our board of directors may amend, suspend, or terminate the 2015 Plan at any time, subject to stockholder approval where such approval is required by applicable law. Our board of directors may also amend, modify, or terminate any outstanding award, provided that no amendment to an award may adversely affect a participant’s rights without his or her consent.

The 2015 Plan will terminate automatically on January 29, 2025; however, awards previously granted may extend beyond that date. As of January 31, 2018, options to purchase 4,947,399 shares of common stock were outstanding under the 2015 Plan. Our board of directors has determined not to make any further awards under the 2015 Plan following the closing of this offering.

401(k) Plan

We maintain the Unum Therapeutics Inc. 401(k) Plan, a tax-qualified retirement plan for our employees. The 401(k) plan is intended to qualify under Section 401(k) of the Internal Revenue Service Code of 1986, as amended, so that contributions to the 401(k) plan by employees or by us, and the investment earnings thereon, are not taxable to the employees until withdrawn from the 401(k) plan, and so that contributions by us, if any, will be deductible by us when made. Under the 401(k) plan, employees may elect to reduce their current compensation by up to the statutorily prescribed annual limit and to have the amount of such reduction contributed to the 401(k) plan.

DIRECTOR COMPENSATION

2017 Director Compensation

Except as set forth below, in the year ended December 31, 2017, we did not pay any compensation, make any equity awards or non-equity awards to, or pay any other compensation to any of the non-employee members of our board of directors for their service as a director in 2017. Dr. Wilson, our Chief Executive Officer and a member of our board of directors, did not receive any compensation for his service as a member of our board of directors during 2017. Dr. Wilson's compensation for service as an employee for fiscal year 2017 is presented above in the "2017 Summary Compensation Table."

Name	Fees Earned or Paid in Cash ($)	Option Awards ($)	Total ($)
Jörn Aldag	30,000	—	30,000

Non-Employee Director Compensation Policy

Our board of directors is expected to adopt a non-employee director compensation policy, effective as of the completion of this offering, that is designed to enable us to attract and retain, on a long-term basis, highly qualified non-employee directors. Under the policy, each director who is not an employee will be paid cash compensation from and after the completion of this offering, as set forth below:

	Annual Retainer
Board of Directors:	
Members	$35,000
Additional retainer for chair	$30,000
Audit Committee:	
Members	$ 7,500
Chair	$15,000
Compensation Committee:	
Members	$ 5,000
Chair	$10,000
Nominating and Corporate Governance Committee:	
Members	$ 4,000
Chair	$ 8,000

Directors will be given the opportunity to elect to receive all or a portion of their retainer and committee fees in the form of an equity award having a grant-date fair value equal to the amount (or portion of the amount) of such retainer and committee fees.

Upon the earlier of the effective date of this offering or his or her election to the board of directors, each non-employee director will receive an initial, one-time stock option grant to purchase 40,000 shares of our common stock, which will vest in equal monthly installments over three years, subject to continued service as a member of the board of directors. In addition, each continuing non-employee member of the board will receive, at the time of the Company's annual meeting, an annual equity grant of options to purchase 20,000 shares of our common stock, which will vest in full upon the earlier of the first anniversary of the date of grant or the date of the next annual meeting of the Company's stockholders, subject to continued service as a member of the board of directors through such date. Each of the foregoing grants will vest in full upon the death or disability of the applicable director or upon a change in control of the Company. In addition, any stock options awarded to non-employee directors pursuant to the non-employee director compensation policy will be exercisable until the earlier of one year following the termination of the director's service on the board of directors or the original expiration date of the option.

CERTAIN RELATIONSHIPS AND RELATED PARTY TRANSACTIONS

Other than the compensation agreements and other arrangements described under “Executive Compensation” and “Director Compensation” in this prospectus and the transactions described below, since our inception on March 10, 2014, there has not been and there is not currently proposed to be, any transaction or series of similar transactions to which we were, or will be, a party in which the amount involved exceeded, or will exceed, $120,000 and in which any director, executive officer, holder of five percent or more of any class of our capital stock, or any member of the immediate family of, or entities affiliated with, any of the foregoing persons, had, or will have, a direct or indirect material interest.

Sales and Purchases of Securities

Convertible Promissory Note Financing

In June 2014, we issued and sold to Beacon Bioventures Fund III Limited Partnership, a holder of more than 5% of our capital stock and an affiliate of Benjamin Auspitz, then a member of our board of directors, a convertible promissory note in the principal amount of $250,000. The convertible promissory note carried an interest rate of 4.0% per annum.

Series A Preferred Stock Financing

In October 2014, we entered into a Series A Preferred Stock Purchase Agreement, pursuant to which we issued and sold to investors an aggregate of 6,297,276 shares of our Series A preferred stock, consisting of (i) 6,000,000 shares sold for cash proceeds of $6,000,000, at a purchase price of $1.00 per share, and (ii) 297,276 shares issued upon the conversion of $252,685 of principal and accrued interest on the convertible promissory note referred to above, at a conversion price of $0.85 per share, representing a 15% discount to the Series A preferred stock purchase price. In April 2015, we issued and sold to investors 6,000,000 shares of our Series A preferred stock for cash proceeds of $6,000,000, at a purchase price of $1.00 per share.

All 12,297,276 shares Series A preferred stock were issued and sold to members of our board of directors and holders of more than 5% of our capital stock, or entities affiliated with them. The table below summarizes these sales.

Purchaser	Shares of Series A Preferred Stock Purchased	Aggregate Purchase Price ($)
Beacon Bioventures Fund IV Limited Partnership(1)	5,297,276(2)	5,000,000(3)
Atlas Venture Fund IX, L.P.(4)	5,000,000	5,000,000
Aventisub LLC(5)	2,000,000	2,000,000
Total	12,297,276	12,000,000

(1) Beacon Bioventures Fund IV Limited Partnership, which changed its name to F-Prime Capital Partners Healthcare Fund IV LP after the purchase, is affiliated with F-Prime Capital Partners (F-Prime), a holder of more than 5% of our capital stock and an affiliate of Benjamin Auspitz, then a member of our board of directors.
(2) Includes 297,276 shares of Series A preferred stock issued to Beacon Bioventures Fund IV Limited Partnership pursuant to the conversion of a convertible promissory note.
(3) This amount does not include the principal and accrued interest on the convertible promissory note referenced above.
(4) Atlas Venture Fund IX, L.P. is a holder of more than 5% of our capital stock and is affiliated with Dr. Booth, a member of our board of directors.
(5) Aventisub LLC is a holder of more than 5% of our capital stock.

Series B Preferred Stock Financing

In June 2015, we entered into a Series B Preferred Stock Purchase Agreement, pursuant to which we issued and sold to investors an aggregate of 8,474,574 shares of our Series B preferred stock for proceeds of $64,999,990, at a purchase price of $7.67 per share. Of these 8,474,574 shares, 2,346,805 shares were sold to members of our board of directors and holders of more than 5% of our capital stock, or entities affiliated with them. The table below summarizes these sales.

Purchaser	Shares of Series B Preferred Stock Purchased	Aggregate Purchase Price ($)
New Leaf(1)	1,955,671	14,999,997
Beacon Bioventures Fund IV Limited Partnership	130,378	999,999
Atlas Venture Fund IX, L.P.	130,378	999,999
Aventisub LLC	130,378	999,999
Total	2,346,805	17,999,994

(1) New Leaf, through its affiliates New Leaf Ventures III, L.P. and New Leaf Biopharma Opportunities I, L.P., is a holder of more than 5% of our capital stock and is affiliated with Dr. Ratcliffe, a member of our board of directors.

Indemnification Agreements

We have entered into agreements to indemnify our directors and certain of our executive officers. These agreements, among other things, require us to indemnify these individuals for certain expenses (including attorneys' fees), judgments, fines and settlement amounts reasonably incurred by such person in any action or proceeding, including any action by or in our right, on account of any services undertaken by such person on behalf of our company or that person's status as a member of our board of directors to the maximum extent allowed under Delaware law.

Agreements with our Stockholders

In connection with our preferred stock financings, we entered into an amended and restated investors' rights agreement, an amended and restated right of first refusal and co-sale agreement, and an amended and restated voting agreement with the holders of our preferred stock and certain holders of our common stock. The parties to these agreements include members of our board of directors and holders of more than 5% of our capital stock, or entities affiliated with them, and our executive officers.

The amended and restated investors' rights agreement, among other things:

- grants the holders of our preferred stock specified registration rights with respect to shares of our common stock, including common stock issued or issuable upon conversion of the preferred stock held by such stockholders;
- obligates us to provide periodic financial statements to certain holders of our preferred stock;
- grants certain holders of our preferred stock a right of first offer with respect to our sale of new securities, subject to certain exclusions, which includes the securities sold in this offering; and
- specifies certain actions which require the approval of the members of our board of directors appointed by the holders of our preferred stock.

For more information regarding the registration rights provided in the amended and restated investors' rights agreement, please refer to the section titled "Description of Capital Stock – Registration Rights." The provisions of the amended and restated investors' rights agreement, other than those relating to registration rights, will terminate upon the closing of this offering.

The amended and restated right of first refusal and co-sale agreement, among other things, provides first refusal and tag-along sale rights for holders of our preferred stock with respect to transfers by certain stockholders. The provisions of the amended and restated right of first refusal and co-sale agreement will terminate upon the closing of this offering.

The amended and restated voting agreement, among other things, provides for the voting of shares with respect to the constituency of our board of directors and the voting of shares in favor of specified transactions approved by our board of directors and the holders of a requisite percentage of our preferred stock. The provisions of the amended and restated voting agreement will terminate upon the closing of this offering.

Policies for Approval of Related Party Transactions

Our board of directors reviews and approves transactions with directors, officers and holders of five percent or more of our voting securities and their affiliates, each a related party. Prior to this offering, the material facts as to the related party's relationship or interest in such a transaction are disclosed to our board of directors before their consideration of such transaction, and the transaction is not considered approved by our board of directors unless a majority of the directors who are not interested in the transaction approve the transaction. Further, when stockholders are entitled to vote on a transaction with a related party, the material facts of the related party's relationship or interest in the transaction are disclosed to the stockholders, who must approve the transaction in good faith.

In connection with this offering, we plan to adopt a written related party transactions policy that will provide that such transactions must be approved by our audit committee or another independent body of our board of directors.

PRINCIPAL STOCKHOLDERS

The following table sets forth certain information known to us regarding beneficial ownership of our capital stock as of January 31, 2018, as adjusted to reflect the sale of common stock offered by us in this offering, for:

- each person or group of affiliated persons known by us to be the beneficial owner of more than five percent of our capital stock;
- each of our named executive officers;
- each of our directors; and
- all of our executive officers and directors as a group.

To the extent that the underwriters sell more than shares in this offering, the underwriters have the option to purchase up to an additional shares at the initial public offering price less the underwriting discount.

Beneficial ownership is determined in accordance with the rules of the SEC and generally includes voting or investment power with respect to securities. Under those rules, beneficial ownership includes any shares as to which the individual or entity has sole or shared voting power or investment power. Except as noted by footnote, and subject to community property laws where applicable, we believe, based on the information provided to us, that the persons and entities named in the table below have sole voting and investment power with respect to all common stock shown as beneficially owned by them.

The percentage of beneficial ownership prior to this offering in the table below is based on shares of common stock deemed to be outstanding as of January 31, 2018, assuming the conversion of all outstanding shares of our preferred stock upon the closing of this offering, and the percentage of beneficial ownership after this offering in the table below is based on shares of common stock assumed to be outstanding after the closing of the offering. The information in the table below assumes no exercise of the underwriters' option to purchase additional shares. Options to purchase shares of common stock that are exercisable within 60 days of January 31, 2018 are deemed to be beneficially owned by the persons holding these options for the purpose of computing percentage ownership of that person, but are not treated as outstanding for the purpose of computing any other person's ownership percentage.

	Shares Beneficially Owned Prior to Offering		Shares Beneficially Owned After Offering	
Name and Address of Beneficial Owner(1)	Number	Percentage	Number	Percentage
5% Stockholders:				
Dario Campana	8,000,000	21.7%		
Atlas Venture Fund IX, L.P.(2)	5,130,378	13.9%		
Entities affiliated with F-Prime(3)	3,640,413	9.9%		
Aventisub LLC(4)	2,130,378	5.8%		
Entities affiliated with New Leaf(5)	1,955,671	5.3%		
Named Executive Officers and Directors:				
Jörn Aldag(6)	33,850	*		
Bruce Booth, DPhil.(7)	5,130,378	13.9%		
Liam Ratcliffe, M.D., Ph.D.(8)	1,955,671	5.3%		
Charles Wilson, Ph.D.	8,000,000	21.7%		
Michael Vasconcelles, M.D.(9)	261,600	*		
Christiana Stamoulis(10)	670,252	1.8%		
All executive officers and directors as a group (8 persons)(11)	16,894,395	43.8%		

* Represents beneficial ownership of less than one percent.

(1) Unless otherwise indicated, the address for each beneficial owner is c/o Unum Therapeutics Inc., 200 Cambridge Park Drive, Suite 3100, Cambridge, MA 02140.

(2) Consists of (i) 5,000,000 shares of common stock issuable upon conversion of shares of Series A preferred stock and (ii) 130,378 shares of common stock issuable upon conversion of shares of Series B preferred stock held by Atlas Venture Fund IX, L.P. (Atlas Venture Fund IX). All shares are held directly by Atlas Venture Fund IX. Atlas Venture Associates IX, L.P. (AVA IX LP), is the general partner of Atlas Venture Fund IX, and Atlas Venture Associates IX, LLC (AVA IX LLC), is the general partner of AVA IX LP. Peter Barrett, Bruce Booth, Jean-Francois Formela, Jeff Fagnan, and Ryan Moore are the members of AVA IX LLC and collectively make investment decisions on behalf of Atlas Venture Fund IX. Dr. Booth is also a member of our board of directors. Dr. Booth disclaims beneficial ownership of such shares, except to the extent of his pecuniary interest therein, if any. The address for Atlas Venture Fund IX is 25 First Street, Suite 303, Cambridge, MA 02141.

(3) Consists of (i) 548,702 shares of common stock issuable upon conversion of shares of Series A preferred stock held of record by F-Prime Capital Partners Healthcare Fund IV LP, (ii) 12,965 shares of common stock issuable upon conversion of shares of Series B preferred stock held of record by F-Prime Capital Partners Healthcare Fund IV LP, (iii) 35,614 shares of common stock issuable upon conversion of shares of Series A preferred stock held of record by F-Prime Capital Partners Healthcare Advisors Fund IV LP, (iv) 877 shares of common stock issuable upon conversion of shares of Series B preferred stock held of record by F-Prime Capital Partners Healthcare Advisors Fund IV LP, (v) 2,968,650 shares of common stock issuable upon conversion of shares of Series A preferred stock held of record by Impresa Fund III Limited Partnership, and (vi) 73,605 shares of common stock issuable upon conversion of shares of Series B preferred stock held of record by Impresa Fund III Limited Partnership. The general partner of F-Prime Capital Partners Healthcare Fund IV LP is F-Prime Capital Partners Healthcare Advisors Fund IV LP. F-Prime Capital Partners Healthcare Advisors Fund IV LP is solely managed by Impresa Management LLC, its general partner and investment manager. Impresa Management LLC is owned, directly or indirectly, by various shareholders and employees of FMR LLC. The general partner of Impresa Fund III Limited Partnership is Impresa Management LLC. Each of the entities listed above expressly disclaims beneficial ownership of the securities listed above except to the extent of any pecuniary interest therein. The address of these entities is 245 Summer Street, Boston, MA 02210.

(4) Consists of (i) 2,000,000 shares of common stock issuable upon conversion of shares of Series A preferred stock and (ii) 130,378 shares of common stock issuable upon conversion of shares of Series B preferred stock held by Aventisub LLC. Aventisub LLC is a subsidiary of Sanofi-Aventis (Sanofi). Sanofi has the ability to exercise voting and dispositive power over the shares held by Aventisub LLC. The address for Aventisub LLC is c/o Sanofi, 54 rue La Boetie, 75008 Paris, France.

(5) Consists of (i) 977,836 shares of common stock issuable upon conversion of shares of Series B preferred stock held by New Leaf Ventures III, L.P., (NLV-III) and (ii) 977,835 shares of common stock issuable upon conversion of shares of Series B preferred stock held by New Leaf Biopharma Opportunities I, L.P. (BPO-I). The general partner of NLV-III is New Leaf Venture Associates III, L.P. (NLVA-III). The general partner of BPO-I is New Leaf BPO Associates I, L.P. (NLBA-I). The general partner of both NLVA-III and NLBA-I is New Leaf Venture Management III, L.L.C. (Management-III). Jeani Delagardelle, Ronald M. Hunt, Vijay K. Lathi, and Liam Ratcliffe, a member of our board of directors, are individual members of Management-III (Individual Members) which is responsible for the investment decisions of NLV-III and BPO-I. Each of the Individual Members disclaim beneficial ownership of the shares held by NLV-III and BPO-I except to the extent of their pecuniary interest therein. The address of the entities and individuals listed above is 7 Times Square, Suite 3502, New York, New York 10036. Dr. Ratcliffe is a Managing Director at New Leaf Venture Partners, L.L.C., an affiliate of NLV-III and BPO-I.

(6) Consists of options to purchase 33,850 shares of common stock that are exercisable within 60 days of January 31, 2018.

(7) See note (2) above.

(8) See note (5) above.

(9) Consists of options to purchase 261,600 shares of common stock that are exercisable within 60 days of January 31, 2018.

(10) Consists of options to purchase 670,252 shares of common stock that are exercisable within 60 days of January 31, 2018.
(11) Includes options to purchase 1,808,346 shares of common stock that are exercisable within 60 days of January 31, 2018.

DESCRIPTION OF CAPITAL STOCK

The following descriptions are summaries of the material terms of our amended and restated certificate of incorporation, which will be effective immediately upon the closing of this offering and amended and restated bylaws, which will be effective upon the effectiveness of the registration statement of which this prospectus is a part. The descriptions of the common stock and preferred stock give effect to changes to our capital structure that will occur immediately upon the closing of this offering. We refer in this section to our amended and restated certificate of incorporation as our certificate of incorporation, and we refer to our amended and restated bylaws as our bylaws.

General

Upon closing of this offering, our authorized capital stock will consist of 150,000,000 shares of common stock, par value $0.001 per share, and 10,000,000 shares of preferred stock, par value $0.001 per share, all of which shares of preferred stock will be undesignated.

As of January 31, 2018, 36,789,850 shares of our common stock were outstanding and held by 21 stockholders of record. This amount assumes the conversion of all outstanding shares of our preferred stock into common stock, which will occur immediately upon the closing of this offering. In addition, as of January 31, 2018, we had outstanding options to purchase 4,947,399 shares of our common stock under our 2015 Stock Incentive Plan (2015 Plan), at a weighted average exercise price of $2.55 per share, 2,500,415 of which were exercisable.

Common Stock

The holders of our common stock are entitled to one vote for each share held on all matters submitted to a vote of the stockholders. The holders of our common stock do not have any cumulative voting rights. Holders of our common stock are entitled to receive ratably any dividends declared by our board of directors out of funds legally available for that purpose, subject to any preferential dividend rights of any outstanding preferred stock. Our common stock has no preemptive rights, conversion rights, or other subscription rights or redemption or sinking fund provisions.

In the event of our liquidation, dissolution, or winding up, holders of our common stock will be entitled to share ratably in all assets remaining after payment of all debts and other liabilities and any liquidation preference of any outstanding preferred stock. The shares to be issued by us in this offering will be, when issued and paid for, validly issued, fully paid and non-assessable.

Preferred Stock

Immediately upon the closing of this offering, all outstanding shares of our preferred stock will be converted into shares of our common stock. Upon the closing of this offering, our board of directors will have the authority, without further action by our stockholders, to issue up to 10,000,000 shares of preferred stock in one or more series and to fix the rights, preferences, privileges and restrictions thereof. These rights, preferences and privileges could include dividend rights, conversion rights, voting rights, terms of redemption, liquidation preferences, sinking fund terms and the number of shares constituting, or the designation of, such series, any or all of which may be greater than the rights of common stock. The issuance of our preferred stock could adversely affect the voting power of holders of common stock and the likelihood that such holders will receive dividend payments and payments upon our liquidation. In addition, the issuance of preferred stock could have the effect of delaying, deferring or preventing a change in control of our company or other corporate action. Immediately after closing of this offering, no shares of preferred stock will be outstanding, and we have no present plan to issue any shares of preferred stock.

Registration Rights

Upon the closing of this offering, the holders of 20,771,850 shares of our common stock, including those issuable upon the conversion of preferred stock, are entitled to rights with respect to the registration of such securities under the Securities Act. These rights are provided under the terms of an amended and restated investors' rights agreement between us and certain holders our common stock and our preferred stock. The amended and restated investors' rights agreement includes demand registration rights, short-form registration rights, and piggyback registration rights. All fees, costs and expenses of underwritten registrations under these agreements will be borne by us and all selling expenses, including underwriting discounts and selling commissions, will be borne by the holders of the shares being registered.

Demand Registration Rights

Beginning 180 days after the closing of this offering, the holders of 20,771,850 shares of our common stock, including those issuable upon the conversion of shares of our preferred stock, are entitled to demand registration rights. Under the terms of the amended and restated investors' rights agreement, we will be required, upon the written request of holders of at least 30% of these securities, to file a registration statement and use commercially reasonable efforts to effect the registration of all or a portion of these shares for public resale. We are required to effect only two registrations pursuant to this provision of the investor rights agreement.

Short-Form Registration Rights

The holders of 20,771,850 shares of our common stock, including those issuable upon the conversion of shares of our preferred stock, are entitled to short-form registration rights. Under the terms of the amended and restated investors' rights agreement, if we are eligible to file a registration statement on Form S-3, upon the written request of 15% in interest of these holders to sell registrable securities at an anticipated aggregate price of at least $5 million, we will be required to use commercially reasonable efforts to effect a registration of such shares. We are required to effect only two registrations in any 12-month period pursuant to this provision of the amended and restated investors' rights agreement.

Piggyback Registration Rights

The holders of 20,771,850 shares of our common stock, including those issuable upon the conversion of shares of our preferred stock, are entitled to piggyback registration rights. If we register any of our securities either for our own account or for the account of other security holders, the holders of these shares are entitled to include their shares in the registration. Subject to certain exceptions contained in the amended and restated investors' rights agreement, we and the underwriters may limit the number of shares included in the underwritten offering to the number of shares which we and the underwriters determine in our sole discretion will not jeopardize the success of the offering.

Indemnification

Our amended and restated investors' rights agreement contains customary cross-indemnification provisions, under which we are obligated to indemnify holders of registrable securities in the event of material misstatements or omissions in the registration statement attributable to us, and they are obligated to indemnify us for material misstatements or omissions attributable to them.

Expenses of Registration

We are generally required to bear all registration and selling expenses incurred in connection with the demand, short-form and piggyback registration described above, other than underwriting discounts and selling commissions.

Expiration of Registration Rights

The demand registration rights and short form registration rights granted under the amended and restated investors' rights agreement will terminate as to a given holder of registrable securities on the earliest to occur of (i) the fifth anniversary of the closing of this offering, (ii) such time as Rule 144 or another similar exemption under the Securities Act is available for the sale of all of such holder's shares without limitation during a three-month period without registration and (iii) the closing of a deemed liquidation event, as such term is defined in our certificate of incorporation.

Anti-Takeover Effects of our Certificate of Incorporation and Bylaws and Delaware Law

Our certificate of incorporation and bylaws include a number of provisions that may have the effect of delaying, deferring or preventing another party from acquiring control of us and encouraging persons considering unsolicited tender offers or other unilateral takeover proposals to negotiate with our board of directors rather than pursue non-negotiated takeover attempts. These provisions include the items described below.

Undesignated Preferred Stock

Our certificate of incorporation provides for 10,000,000 authorized shares of preferred stock. The existence of authorized but unissued shares of preferred stock may enable our board of directors to discourage an attempt to obtain control of us by means of a merger, tender offer, proxy contest or otherwise. For example, if in the due exercise of its fiduciary obligations, our board of directors were to determine that a takeover proposal is not in the best interests of our stockholders, our board of directors could cause shares of preferred stock to be issued without stockholder approval in one or more private offerings or other transactions that might dilute the voting or other rights of the proposed acquirer or insurgent stockholder or stockholder group. In this regard, our certificate of incorporation grants our board of directors broad power to establish the rights and preferences of authorized and unissued shares of preferred stock. The issuance of shares of preferred stock could decrease the amount of earnings and assets available for distribution to holders of shares of common stock. The issuance may also adversely affect the rights and powers, including voting rights, of these holders and may have the effect of delaying, deterring, or preventing a change in control of us.

Section 203 of the Delaware General Corporation Law

Upon closing of this offering, we will be subject to the provisions of Section 203 of the Delaware General Corporation Law. In general, Section 203 prohibits a publicly held Delaware corporation from engaging in a "business combination" with an "interested stockholder" for a three-year period following the time that this stockholder becomes an interested stockholder, unless the business combination is approved in a prescribed manner. Under Section 203, a business combination between a corporation and an interested stockholder is prohibited unless it satisfies one of the following conditions:

- before the stockholder became interested, our board of directors approved either the business combination or the transaction which resulted in the stockholder becoming an interested stockholder;
- upon consummation of the transaction which resulted in the stockholder becoming an interested stockholder, the interested stockholder owned at least 85% of the voting stock of the corporation outstanding at the time the transaction commenced, excluding for purposes of determining the voting stock outstanding, shares owned by persons who are directors and also officers, and employee stock plans, in some instances, but not the outstanding voting stock owned by the interested stockholder; or
- at or after the time the stockholder became interested, the business combination was approved by our board of directors and authorized at an annual or special meeting of the stockholders by the affirmative vote of at least two-thirds of the outstanding voting stock which is not owned by the interested stockholder.

Section 203 defines a business combination to include:

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

In general, Section 203 defines an interested stockholder as any entity or person beneficially owning 15% or more of the outstanding voting stock of the corporation and any entity or person affiliated with or controlling or controlled by the entity or person.

Amended and Restated Certificate of Incorporation and Amended and Restated Bylaws

Provisions of our amended and restated certificate of incorporation and bylaws may delay or discourage transactions involving an actual or potential change in our control or change in our management, including transactions in which stockholders might otherwise receive a premium for their shares or transactions that our stockholders might otherwise deem to be in their best interests. Therefore, these provisions could adversely affect the price of our common stock. Among other things, our amended and restated certificate of incorporation and amended and restated bylaws:

- permit our board of directors to issue up to 10,000,000 shares of preferred stock, with any rights, preferences and privileges as they may designate;
- provide that the authorized number of directors may be changed only by resolution adopted by a majority of the board of directors;
- provide that the board of directors or any individual director may only be removed with cause and the affirmative vote of the holders of at least 66.67% of the voting power of all of our then outstanding common stock;
- provide that all vacancies, including newly created directorships, may, except as otherwise required by law or subject to the rights of holders of preferred stock as designated from time to time, be filled by the affirmative vote of a majority of directors then in office, even if less than a quorum;
- divide our board of directors into three classes;
- require that any action to be taken by our stockholders must be effected at a duly called annual or special meeting of stockholders and not be taken by written consent or electronic transmission;
- provide that stockholders seeking to present proposals before a meeting of stockholders or to nominate candidates for election as directors at a meeting of stockholders must provide notice in writing in a timely manner and also specify requirements as to the form and content of a stockholder’s notice;
- do not provide for cumulative voting rights (therefore allowing the holders of a majority of the shares of common stock entitled to vote in any election of directors to elect all of the directors standing for election, if they should so choose);
- provide that special meetings of our stockholders may be called only by the chairperson of the board, our chief executive officer, or by the board of directors pursuant to a resolution adopted by a majority of the total number of authorized directors (whether or not there exists any vacancies); and

- provide that the Court of Chancery of the State of Delaware will be the sole and exclusive forum for (i) any derivative action or proceeding brought on our behalf, (ii) any action asserting a claim of breach of a fiduciary duty owed by any of our directors or officers to us or our stockholders, (iii) any action asserting a claim against the us arising pursuant to any provision of the DGCL or our certificate of incorporation or bylaws, or (iv) any action asserting a claim against us governed by the internal affairs doctrine.

The amendment of any of these provisions, with the exception of the ability of our board of directors to issue shares of preferred stock and designate any rights, preferences, and privileges thereto, would require the affirmative vote of the holders of at least 66.67% of the voting power of all of our then outstanding common stock.

Nasdaq Global Market Listing

We intend to apply to list our common stock on The Nasdaq Global Market under the trading symbol “UNUM.”

Transfer Agent and Registrar

The transfer agent and registrar for our common stock will be .

SHARES ELIGIBLE FOR FUTURE SALE

Prior to this offering, there has been no public market for shares of our common stock. Future sales of our common stock in the public market, or the availability of such shares for sale in the public market, could adversely affect market prices prevailing from time to time. As described below, only a limited number of shares will be available for sale shortly after this offering due to contractual and legal restrictions on resale. Nevertheless, sales of our common stock in the public market after such restrictions lapse, or the perception that those sales may occur, could adversely affect the prevailing market price at such time and our ability to raise equity capital in the future.

Based on the number of shares outstanding as of January 31, 2018, upon the closing of this offering, shares of our common stock will be outstanding, assuming no exercise of the underwriters' option to purchase additional shares and no exercise of outstanding options. Of the outstanding shares, all of the shares sold in this offering will be freely tradable, except that any shares held by our affiliates, as that term is defined in Rule 144 under the Securities Act, may only be sold in compliance with the limitations described below.

Rule 144

In general, a person who has beneficially owned restricted stock for at least six months would be entitled to sell their securities provided that (i) such person is not deemed to have been one of our affiliates at the time of, or at any time during the 90 days preceding, a sale and (ii) we are subject to the Securities Exchange Act of 1934, as amended, periodic reporting requirements for at least 90 days before the sale. Persons who have beneficially owned restricted shares for at least six months but who are our affiliates at the time of, or any time during the 90 days preceding, a sale, would be subject to additional restrictions, by which such person would be entitled to sell within any three-month period only a number of securities that does not exceed the greater of either of the following:

- 1% of the number of shares then outstanding, which will equal approximately shares immediately after this offering assuming no exercise of the underwriters' option to purchase additional shares, based on the number of shares outstanding as of January 31, 2018; or
- the average weekly trading volume of our common stock on The Nasdaq Global Market during the four calendar weeks preceding the filing of a notice on Form 144 with respect to the sale;

provided, in each case, that we are subject to the Exchange Act periodic reporting requirements for at least 90 days before the sale. Such sales both by affiliates and by non-affiliates must also comply with the manner of sale, current public information and notice provisions of Rule 144.

Rule 701

Rule 701 under the Securities Act, as in effect on the date of this prospectus, permits resales of shares in reliance upon Rule 144 but without compliance with certain restrictions of Rule 144, including the holding period requirement. Most of our employees, executive officers or directors who purchased shares under a written compensatory plan or contract may be entitled to rely on the resale provisions of Rule 701, but all holders of Rule 701 shares are required to wait until 90 days after the date of this prospectus before selling their shares. However, substantially all Rule 701 shares are subject to lock-up agreements as described below and under "Underwriters" included elsewhere in this prospectus and will become eligible for sale upon the expiration of the restrictions set forth in those agreements.

Lock-Up Agreements

All of our directors and officers and substantially all the holders of all of our outstanding stock and stock options have signed a lock-up agreement which prevents them from selling any of our common stock or any

securities convertible into or exercisable or exchangeable for common stock for a period of not less than 180 days from the date of this prospectus without the prior written consent of the representatives, subject to certain exceptions. See “Underwriters.”

Registration Rights

Upon closing of this offering, certain holders of our securities will be entitled to various rights with respect to registration of their shares under the Securities Act. Registration of these shares under the Securities Act would result in these shares becoming fully tradable without restriction under the Securities Act immediately upon the effectiveness of the registration. See “Description of Capital Stock—Registration Rights” for additional information.

Equity Incentive Plans

We intend to file one or more registration statements on Form S-8 under the Securities Act to register our shares issued or reserved for issuance under our equity incentive plans. The first such registration statement is expected to be filed soon after the date of this prospectus and will automatically become effective upon filing with the SEC. Accordingly, shares registered under such registration statement will be available for sale in the open market, unless such shares are subject to vesting restrictions with us or the lock-up restrictions described above. As of , 2018, we estimate that such registration statement on Form S-8 will cover approximately shares.

10b5-1 Plans

After the offering, certain of our employees, including our executive officers and/or directors may enter into written trading plans that are intended to comply with Rule 10b5-1 under the Exchange Act. Sales under these trading plans would not be permitted until the expiration of the lock-up agreements relating to the offering described above.

MATERIAL U.S. FEDERAL INCOME TAX CONSIDERATIONS FOR NON-U.S. HOLDERS OF COMMON STOCK

The following discussion is a summary of the material U.S. federal income tax considerations applicable to non-U.S. holders (as defined below) with respect to their ownership and disposition of shares of our common stock issued pursuant to this offering. For purposes of this discussion, a non-U.S. holder means a beneficial owner of our common stock that is for U.S. federal income tax purposes:

- a non-resident alien individual;
- a foreign corporation or any other foreign organization taxable as a corporation for U.S. federal income tax purposes; or
- a foreign estate or trust, the income of which is not subject to U.S. federal income tax on a net income basis.

This discussion does not address the tax treatment of partnerships or other entities that are pass-through entities for U.S. federal income tax purposes or persons that hold their common stock through partnerships or other pass-through entities. A partner in a partnership or other pass-through entity that will hold our common stock should consult his, her or its own tax advisor regarding the tax consequences of acquiring, holding and disposing of our common stock through a partnership or other pass-through entity, as applicable.

This discussion is based on current provisions of the U.S. Internal Revenue Code of 1986, as amended, which we refer to as the Code, existing and proposed U.S. Treasury Regulations promulgated thereunder, current administrative rulings and judicial decisions, all as in effect as of the date of this prospectus and, all of which are subject to change or to differing interpretation, possibly with retroactive effect. Any such change or differing interpretation could alter the tax consequences to non-U.S. holders described in this prospectus. There can be no assurance that the Internal Revenue Service, which we refer to as the IRS, will not challenge one or more of the tax consequences described herein. We assume in this discussion that a non-U.S. holder holds shares of our common stock as a capital asset, generally property held for investment.

This discussion does not address all aspects of U.S. federal income taxation that may be relevant to a particular non-U.S. holder in light of that non-U.S. holder's individual circumstances nor does it address any aspects of any U.S. federal tax other than the income tax, U.S. state, local or non-U.S. taxes, the alternative minimum tax, or the Medicare tax on net investment income. This discussion also does not consider any specific facts or circumstances that may apply to a non-U.S. holder and does not address the special tax rules applicable to particular non-U.S. holders, such as:

- insurance companies;
- tax-exempt or governmental organizations;
- financial institutions;
- brokers or dealers in securities;
- regulated investment companies;
- pension plans;
- "controlled foreign corporations," "passive foreign investment companies," and corporations that accumulate earnings to avoid U.S. federal income tax;
- "qualified foreign pension funds," or entities wholly owned by a "qualified foreign pension fund";
- partnerships or other entities or arrangements treated as partnerships for U.S. federal income tax purposes (and partners and investors therein);
- persons that have a functional currency other than the U.S. dollar;

- persons deemed to sell our common stock under the constructive sale provisions of the Code;
- persons that hold our common stock as part of a straddle, hedge, conversion transaction, synthetic security, or other integrated investment;
- persons who hold or receive our common stock pursuant to the exercise of any employee stock option or otherwise as compensation;
- persons for whom our stock constitutes "qualified small business stock" within the meaning of Section 1202 of the Code; and
- certain U.S. expatriates.

This discussion is for general information only and is not tax advice. Accordingly, all prospective non-U.S. holders of our common stock should consult their own tax advisors with respect to the U.S. federal, state, local, and non-U.S. tax consequences of the purchase, ownership and disposition of our common stock.

Distributions on Our Common Stock

Distributions, if any, on our common stock will constitute dividends for U.S. federal income tax purposes to the extent paid from our current or accumulated earnings and profits, as determined under U.S. federal income tax principles. If a distribution exceeds our current and accumulated earnings and profits, the excess will be treated as a tax-free return of the non-U.S. holder's investment, up to such holder's tax basis in the common stock. Any remaining excess will be treated as capital gain, subject to the tax treatment described below in "Gain on sale, exchange or other disposition of our common stock." Any such distributions will also be subject to the discussions below under the sections titled "Backup Withholding and Information Reporting" and "Withholding and Information Reporting Requirements—FATCA."

Subject to the discussion in the following two paragraphs in this section, dividends paid to a non-U.S. holder generally will be subject to withholding of U.S. federal income tax at a 30% rate or such lower rate as may be specified by an applicable income tax treaty between the United States and such holder's country of residence.

Dividends that are treated as effectively connected with a trade or business conducted by a non-U.S. holder within the United States and, if an applicable income tax treaty so provides, that are attributable to a permanent establishment or a fixed base maintained by the non-U.S. holder within the United States, are generally exempt from the 30% withholding tax if the non-U.S. holder satisfies applicable certification and disclosure requirements. However, such U.S. effectively connected income, net of specified deductions and credits, is taxed at the same graduated U.S. federal income tax rates applicable to United States persons (as defined in the Code). Any U.S. effectively connected income received by a non-U.S. holder that is a corporation may also, under certain circumstances, be subject to an additional "branch profits tax" at a 30% rate or such lower rate as may be specified by an applicable income tax treaty between the United States and such holder's country of residence.

A non-U.S. holder of our common stock who claims the benefit of an applicable income tax treaty between the United States and such holder's country of residence generally will be required to provide a properly executed IRS Form W-8BEN or W-8BEN-E (or successor form) to the applicable withholding agent and satisfy applicable certification and other requirements. Non-U.S. holders are urged to consult their tax advisors regarding their entitlement to benefits under a relevant income tax treaty. A non-U.S. holder that is eligible for a reduced rate of U.S. withholding tax under an income tax treaty may obtain a refund or credit of any excess amounts withheld by timely filing a U.S. tax return with the IRS.

Gain on Sale or Other Taxable Disposition of Our Common Stock

Subject to the discussions below under "Backup Withholding and Information Reporting" and "Withholding and Information Reporting Requirements – FATCA," a non-U.S. holder generally will not be subject to any U.S.

federal income tax on any gain realized upon such holder's sale or other taxable disposition of shares of our common stock unless:

- the gain is effectively connected with the non-U.S. holder's conduct of a U.S. trade or business and, if an applicable income tax treaty so provides, is attributable to a permanent establishment or a fixed-base maintained by such non-U.S. holder in the United States, in which case the non-U.S. holder generally will be taxed on a net income basis at the graduated U.S. federal income tax rates applicable to United States persons (as defined in the Code) and, if the non-U.S. holder is a foreign corporation, the branch profits tax described above in "Distributions on Our Common Stock" also may apply;
- the non-U.S. holder is a nonresident alien individual who is present in the United States for 183 days or more in the taxable year of the disposition and certain other conditions are met, in which case the non-U.S. holder will be subject to a 30% tax (or such lower rate as may be specified by an applicable income tax treaty between the United States and such holder's country of residence) on the net gain derived from the disposition, which may be offset by certain U.S. source capital losses of the non-U.S. holder, if any (even though the individual is not considered a resident of the United States), provided that the non-U.S. holder has timely filed U.S. federal income tax returns with respect to such losses; or
- we are, or have been, at any time during the five-year period preceding such sale of other taxable disposition (or the non-U.S. holder's holding period, if shorter) a "U.S. real property holding corporation," unless our common stock is regularly traded on an established securities market and the non-U.S. holder holds no more than 5% of our outstanding common stock, directly or indirectly, actually or constructively, during the shorter of the 5-year period ending on the date of the disposition or the period that the non-U.S. holder held our common stock. Generally, a corporation is a U.S. real property holding corporation only if the fair market value of its U.S. real property interests equals or exceeds 50% of the sum of the fair market value of its worldwide real property interests plus its other assets used or held for use in a trade or business. Although there can be no assurance, we do not believe that we are, or have been, a U.S. real property holding corporation, or that we are likely to become one in the future. No assurance can be provided that our common stock will be regularly traded on an established securities market for purposes of the rules described above.

Backup Withholding and Information Reporting

We must report annually to the IRS and to each non-U.S. holder the gross amount of the distributions on our common stock paid to such holder and the tax withheld, if any, with respect to such distributions. Non-U.S. holders may have to comply with specific certification procedures to establish that the holder is not a United States person (as defined in the Code) in order to avoid backup withholding at the applicable rate with respect to dividends on our common stock. Dividends paid to non-U.S. holders subject to withholding of U.S. federal income tax, as described above in "Distributions on Our Common Stock," generally will be exempt from U.S. backup withholding.

Information reporting and backup withholding will generally apply to the proceeds of a disposition of our common stock by a non-U.S. holder effected by or through the U.S. office of any broker, U.S. or foreign, unless the holder certifies its status as a non-U.S. holder and satisfies certain other requirements, or otherwise establishes an exemption. Generally, information reporting and backup withholding will not apply to a payment of disposition proceeds to a non-U.S. holder where the transaction is effected outside the United States through a non-U.S. office of a broker. However, for information reporting purposes, dispositions effected through a non-U.S. office of a broker with substantial U.S. ownership or operations generally will be treated in a manner similar to dispositions effected through a U.S. office of a broker. Non-U.S. holders should consult their own tax advisors regarding the application of the information reporting and backup withholding rules to them. Copies of information returns may be made available to the tax authorities of the country in which the non-U.S. holder resides or is incorporated under the provisions of a specific treaty or agreement. Backup withholding is not an additional tax. Any amounts withheld under the backup withholding rules from a payment to a non-U.S. holder

can be refunded or credited against the non-U.S. holder's U.S. federal income tax liability, if any, provided that an appropriate claim is filed with the IRS in a timely manner.

Withholding and Information Reporting Requirements—FATCA

The Foreign Account Tax Compliance Act (FATCA) generally imposes a U.S. federal withholding tax at a rate of 30% on payments of dividends on, or gross proceeds from the sale or other disposition of, our common stock paid to a foreign entity unless (i) if the foreign entity is a "foreign financial institution," such foreign entity undertakes certain due diligence, reporting, withholding, and certification obligations, (ii) if the foreign entity is not a "foreign financial institution," such foreign entity identifies certain of its U.S. investors, if any, or (iii) the foreign entity is otherwise exempt under FATCA. Under applicable U.S. Treasury regulations, withholding under FATCA currently applies to payments of dividends on our common stock, but will only apply to payments of gross proceeds from a sale or other disposition of our common stock made after December 31, 2018. Under certain circumstances, a non-U.S. holder may be eligible for refunds or credits of this withholding tax. An intergovernmental agreement between the United States and an applicable foreign country may modify the requirements described in this paragraph. Non-U.S. holders should consult their tax advisors regarding the possible implications of this legislation on their investment in our common stock and the entities through which they hold our common stock, including, without limitation, the process and deadlines for meeting the applicable requirements to prevent the imposition of the 30% withholding tax under FATCA.

UNDERWRITERS

Under the terms and subject to the conditions in an underwriting agreement dated the date of this prospectus, the underwriters named below, for whom Morgan Stanley & Co. LLC and Cowen and Company, LLC are acting as representatives, have severally agreed to purchase, and we have agreed to sell to them, severally, the number of shares indicated below:

Name	Number of Shares
Morgan Stanley & Co. LLC	
Cowen and Company, LLC	
Wedbush Securities Inc.	
Total	

The underwriters and the representatives are collectively referred to as the "underwriters" and the "representatives," respectively. The underwriters are offering the shares of common stock subject to their acceptance of the shares from us and subject to prior sale. The underwriting agreement provides that the obligations of the several underwriters to pay for and accept delivery of the shares of common stock offered by this prospectus are subject to the approval of certain legal matters by their counsel and to certain other conditions. The underwriters are obligated to take and pay for all of the shares of common stock offered by this prospectus if any such shares are taken. However, the underwriters are not required to take or pay for the shares covered by the underwriters' over-allotment option described below.

The underwriters initially propose to offer part of the shares of common stock directly to the public at the offering price listed on the cover page of this prospectus and part to certain dealers at a price that represents a concession not in excess of $ per share under the public offering price. After the initial offering of the shares of common stock, the offering price, and other selling terms may from time to time be varied by the representatives. We have granted to the underwriters an option, exercisable for 30 days from the date of this prospectus, to purchase up to additional shares of common stock at the public offering price listed on the cover page of this prospectus, less underwriting discounts and commissions. The underwriters may exercise this option solely for the purpose of covering over-allotments, if any, made in connection with the offering of the shares of common stock offered by this prospectus. To the extent the option is exercised, each underwriter will become obligated, subject to certain conditions, to purchase about the same percentage of the additional shares of common stock as the number listed next to the underwriter's name in the preceding table bears to the total number of shares of common stock listed next to the names of all underwriters in the preceding table.

The following table shows the per share and total public offering price, underwriting discounts and commissions, and proceeds before expenses to us. These amounts are shown assuming both no exercise and full exercise of the underwriters' option to purchase up to an additional shares of common stock.

	Per Share	Total	
		No Exercise	Full Exercise
Public offering price	$	$	$
Underwriting discounts and commissions to be paid by us	$	$	$
Proceeds, before expenses, to us	$	$	$

The estimated offering expenses payable by us, exclusive of underwriting discounts and commissions, are approximately $. We have agreed to reimburse the underwriters for expenses relating to clearance of this offering with the Financial Industry Regulatory Authority up to $.

The underwriters have informed us that they do not intend sales to discretionary accounts to exceed 5% of the total number of shares of common stock offered by them.

We intend to apply to quote our common stock on The Nasdaq Global Market under the trading symbol "UNUM."

We and all of our directors and officers and the holders of substantially all of our outstanding stock and stock options have agreed that, without the prior written consent of the representatives on behalf of the underwriters, we and they will not, during the period ending 180 days after the date of this prospectus (the "restricted period"):

- offer, pledge, sell, contract to sell, sell any option or contract to purchase, purchase any option or contract to sell, grant any option, right or warrant to purchase, lend, or otherwise transfer or dispose of, directly or indirectly, any shares of common stock or any securities convertible into or exercisable or exchangeable for shares of common stock;
- file any registration statement with the Securities and Exchange Commission relating to the offering of any shares of common stock or any securities convertible into or exercisable or exchangeable for common stock; or
- enter into any swap or other arrangement that transfers to another, in whole or in part, any of the economic consequences of ownership of the shares of common stock,

whether any such transaction described above is to be settled by delivery of shares of common stock or such other securities, in cash or otherwise. In addition, we and each such person agrees that, without the prior written consent of the representatives on behalf of the underwriters, we or such other person will not, during the restricted period, make any demand for, or exercise any right with respect to, the registration of any shares of common stock or any security convertible into or exercisable or exchangeable for common stock.

The restrictions described in the immediately preceding paragraph to do not apply to:

- transfers of shares of common stock or other securities acquired in this offering or acquired in open market transactions after this offering;
- transfers of shares of common stock or any security convertible into or exercisable or exchangeable for common stock as a bona fide gift, including without limitation to a charitable organization;
- distributions of shares of common stock or any security convertible into or exercisable or exchangeable for common stock to limited partners, general partners, managers, directors, officers, employees, members, stockholders or trust beneficiaries or to any controlled investment fund or other entity, including transfers or distributions of shares to a fund managed by the same manager or managing member or general partner or management company or by an entity controlling, controlled by, or under common control with such manager or managing member or general partner or managing company or who shares a common investment advisor;
- transfers or dispositions of shares of common stock or any security convertible into or exercisable or exchangeable for common stock by will or other testamentary document or by intestacy;
- transfers or dispositions of shares of common stock or any security convertible into or exercisable or exchangeable for common stock to any trust for the direct or indirect benefit of immediate family members in a transaction not involving a disposition for value;
- the exercise of options to purchase shares of common stock granted under a stock incentive plan or stock purchase plan described in this prospectus and outstanding as of the date of this prospectus or the exercise of warrants to purchase shares of common stock (or any security convertible into or exercisable or exchangeable for common stock) described in this prospectus and outstanding as of the date of this prospectus, provided that the underlying common stock continues to be subject to the restrictions set forth above and, provided further that any public filing or public announcement under Section 16(a) of the Exchange Act required or voluntarily made during the restricted period in

connection with the exercise of such stock option or warrant shall clearly indicate in the footnotes thereto or comments section thereof that the filing relates to the exercise of a stock option or warrant, as the case may be, that the shares of common stock received upon exercise of the stock option or warrant are subject to a lock-up agreement with the underwriters of this offering;

- transfers of shares of common stock or any security convertible into or exchangeable for common stock that occur by operation of law pursuant to a qualified domestic order or in connection with a divorce settlement;
- transfers or dispositions of shares of common stock or any security convertible into or exercisable or exchangeable for common stock to us pursuant to any contractual arrangement disclosed to the representatives and in effect on the date of this prospectus that provides for the repurchase of common stock or such other securities by us solely in connection with the termination of employment with us, provided that the repurchase price for any such shares or securities shall not exceed the original purchase price (subject to appropriate adjustment in the event of any stock dividend, stock split, combination or other similar recapitalization) paid to us for such shares or securities and, provided further that any public filing or public announcement under Section 16(a) of the Exchange Act required or voluntarily made during the restricted period in connection with such transfer or disposition shall clearly indicate in the footnotes thereto or comments section thereof that such transfer or disposition was made solely to us pursuant to the circumstances described above;
- the establishment of a trading plan that satisfies the requirements of Rule 10b5-1 under the Exchange Act for the transfer of shares of common stock, provided that (i) such plan does not provide for the transfer of shares of common stock during the restricted period and (ii) no public announcement or filing under the Exchange Act regarding the establishment of such plan shall be required or shall be voluntarily made during the restricted period;
- transfers to us of shares of common stock upon a vesting event or upon the exercise of options or warrants to purchase common stock, in each case on a “cashless” or “net exercise” basis solely to cover tax withholding obligations in connection with such vesting or exercise; and
- transfers in connection with a bona fide third party tender offer, merger, consolidation or other similar transaction involving a change of control that is approved by our board of directors, made to all holders of our common stock and occurring after the closing of this offering, provided that in the event that the tender offer, merger, consolidation or other such transaction is not completed, the shares of common stock shall remain subject to the restrictions in the immediately preceding paragraph;

provided further that (i) in the case of any transfer or distribution as described in the first, second, third, fourth, fifth, or seventh bullet point above, the recipient shall agree to be subject to the restrictions described in the immediately preceding paragraph and (ii) in the case of any transfer or distribution described in the first, second, third, fourth, fifth, seventh, or tenth bullet point above, no filing under Section 16(a) of the Exchange Act, reporting a reduction in beneficial ownership of shares of common stock, shall be required or shall be voluntarily made during the restricted period.

In addition, the restrictions described in the paragraph above relating to us do not apply to:

- the shares to be sold in this offering;
- our issuance of shares of common stock upon the exercise of an option or warrant or the conversion of a security outstanding on the date of this prospectus and disclosed to the underwriters; and
- the establishment of a trading plan pursuant to Rule 10b5-1 under the Exchange Act for the transfer of shares of common stock, provided that such plan does not provide for the transfer of shares of common stock during the restricted period and to the extent a public announcement or filing under the Exchange Act is required of or voluntarily made by the Company regarding the establishment of such plan, such announcement or filing shall include a statement to the effect that no transfer of shares of common stock may be made under such plan during the restricted period.

The representatives, in their sole discretion, may release the common stock and other securities subject to the lock-up agreements described above in whole or in part at any time.

In order to facilitate the offering of the common stock, the underwriters may engage in transactions that stabilize, maintain or otherwise affect the price of the common stock. Specifically, the underwriters may sell more shares than they are obligated to purchase under the underwriting agreement, creating a short position. A short sale is covered if the short position is no greater than the number of shares available for purchase by the underwriters under the over-allotment option. The underwriters can close out a covered short sale by exercising the over-allotment option or purchasing shares in the open market. In determining the source of shares to close out a covered short sale, the underwriters will consider, among other things, the open market price of shares compared to the price available under the over-allotment option. The underwriters may also sell shares in excess of the over-allotment option, creating a naked short position. The underwriters must close out any naked short position by purchasing shares in the open market. A naked short position is more likely to be created if the underwriters are concerned that there may be downward pressure on the price of the common stock in the open market after pricing that could adversely affect investors who purchase in this offering. As an additional means of facilitating this offering, the underwriters may bid for, and purchase, shares of common stock in the open market to stabilize the price of the common stock. These activities may raise or maintain the market price of the common stock above independent market levels or prevent or retard a decline in the market price of the common stock. The underwriters are not required to engage in these activities and may end any of these activities at any time.

We and the underwriters have agreed to indemnify each other against certain liabilities, including liabilities under the Securities Act.

A prospectus in electronic format may be made available on websites maintained by one or more underwriters, or selling group members, if any, participating in this offering. The representatives may agree to allocate a number of shares of common stock to underwriters for sale to their online brokerage account holders. Internet distributions will be allocated by the representatives to underwriters that may make Internet distributions on the same basis as other allocations.

The underwriters and their respective affiliates are full service financial institutions engaged in various activities, which may include securities trading, commercial and investment banking, financial advisory, investment management, investment research, principal investment, hedging, financing, and brokerage activities. The underwriters and their respective affiliates may in the future perform various financial advisory and investment banking services for us, for which they may receive customary fees and expenses.

In addition, in the ordinary course of their various business activities, the underwriters and their respective affiliates may make or hold a broad array of investments and actively trade debt and equity securities (or related derivative securities) and financial instruments (including bank loans) for their own account and for the accounts of their customers and may at any time hold long and short positions in such securities and instruments. Such investment and securities activities may involve our securities and instruments. For example, an affiliate of Cowen and Company, LLC, one of the underwriters in this offering, currently holds 912,647 shares of our Series B preferred stock, which was acquired in June 2015 in our private placement of an aggregate of 8,474,574 shares of our Series B preferred stock. The underwriters and their respective affiliates may also make investment recommendations or publish or express independent research views in respect of such securities or instruments and may at any time hold, or recommend to clients that they acquire, long or short positions in such securities and instruments.

Pricing of the Offering

Prior to this offering, there has been no public market for our common stock. The initial public offering price will be determined by negotiations between us and the representatives. Among the factors to be considered

in determining the initial public offering price are our future prospects and those of our industry in general, our sales, earnings and certain other financial and operating information in recent periods, and the price-earnings ratios, price-sales ratios, market prices of securities, and certain financial and operating information of companies engaged in activities similar to ours.

Selling Restrictions

Canada

Shares of our common stock may be sold only to purchasers purchasing, or deemed to be purchasing, as principal that are accredited investors, as defined in National Instrument 45-106 *Prospectus Exemptions* or subsection 73.3(1) of the *Securities Act* (Ontario), and are permitted clients, as defined in National Instrument 31-103 *Registration Requirements, Exemptions and Ongoing Registrant Obligations*. Any resale of shares of our common stock must be made in accordance with an exemption from, or in a transaction not subject to, the prospectus requirements of applicable securities laws.

Securities legislation in certain provinces or territories of Canada may provide a purchaser with remedies for rescission or damages if this prospectus (including any amendment thereto) contains a misrepresentation, provided that the remedies for rescission or damages are exercised by the purchaser within the time limit prescribed by the securities legislation of the purchaser's province or territory. The purchaser should refer to any applicable provisions of the securities legislation of the purchaser's province or territory for particulars of these rights or consult with a legal advisor.

Pursuant to section 3A.3 (or, in the case of securities issued or guaranteed by the government of a non-Canadian jurisdiction, section 3A.4) of National Instrument 33-105 Underwriting Conflicts (NI 33-105), the underwriters are not required to comply with the disclosure requirements of NI 33-105 regarding underwriter conflicts of interest in connection with this offering.

European Economic Area

In relation to each Member State of the European Economic Area which has implemented the Prospectus Directive (each, a "Relevant Member State") an offer to the public of any shares of our common stock may not be made in that Relevant Member State, except that an offer to the public in that Relevant Member State of any shares of our common stock may be made at any time under the following exemptions under the Prospectus Directive, if they have been implemented in that Relevant Member State:

(a) to any legal entity which is a qualified investor as defined in the Prospectus Directive;

(b) to fewer than 100 or, if the Relevant Member State has implemented the relevant provision of the 2010 PD Amending Directive, 150, natural or legal persons (other than qualified investors as defined in the Prospectus Directive), as permitted under the Prospectus Directive, subject to obtaining the prior consent of the representatives for any such offer; or

(c) in any other circumstances falling within Article 3(2) of the Prospectus Directive, provided that no such offer of shares of our common stock shall result in a requirement for the publication by us or any underwriter of a prospectus pursuant to Article 3 of the Prospectus Directive.

For the purposes of this provision, the expression an "offer to the public" in relation to any shares of our common stock in any Relevant Member State means the communication in any form and by any means of sufficient information on the terms of the offer and any shares of our common stock to be offered so as to enable an investor to decide to purchase any shares of our common stock, as the same may be varied in that Member State by any measure implementing the Prospectus Directive in that Member State, the expression "Prospectus Directive" means Directive 2003/71/EC (and amendments thereto, including the 2010 PD Amending Directive, to the extent implemented in the Relevant Member State), and includes any relevant implementing measure in the Relevant Member State, and the expression "2010 PD Amending Directive" means Directive 2010/73/EU.

United Kingdom

Each underwriter has represented and agreed that:

(a) it has only communicated or caused to be communicated and will only communicate or cause to be communicated an invitation or inducement to engage in investment activity (within the meaning of Section 21 of the Financial Services and Markets Act 2000 (FSMA) received by it in connection with the issue or sale of the shares of our common stock in circumstances in which Section 21(1) of the FSMA does not apply to us; and

(b) it has complied and will comply with all applicable provisions of the FSMA with respect to anything done by it in relation to the shares of our common stock in, from or otherwise involving the United Kingdom.

Hong Kong

The shares have not been offered or sold and will not be offered or sold in Hong Kong, by means of any document, other than (a) to "professional investors" as defined in the Securities and Futures Ordinance (Cap. 571) of Hong Kong and any rules made under that Ordinance; or (b) in other circumstances which do not result in the document being a "prospectus" as defined in the Companies Ordinance (Cap. 32) of Hong Kong or which do not constitute an offer to the public within the meaning of that Ordinance. No advertisement, invitation or document relating to the shares has been or may be issued or has been or may be in the possession of any person for the purposes of issue, whether in Hong Kong or elsewhere, which is directed at, or the contents of which are likely to be accessed or read by, the public of Hong Kong (except if permitted to do so under the securities laws of Hong Kong) other than with respect to the shares which are or are intended to be disposed of only to persons outside Hong Kong or only to "professional investors" as defined in the Securities and Futures Ordinance and any rules made under that Ordinance.

Japan

No registration pursuant to Article 4, paragraph 1 of the Financial Instruments and Exchange Law of Japan (Law No. 25 of 1948, as amended) (the "FIEL") has been made or will be made with respect to the solicitation of the application for the acquisition of the shares of our common stock.

Accordingly, the shares of our common stock have not been, directly or indirectly, offered or sold and will not be, directly or indirectly, offered or sold in Japan or to, or for the benefit of, any resident of Japan (which term as used herein means any person resident in Japan, including any corporation or other entity organized under the laws of Japan) or to others for re-offering or re-sale, directly or indirectly, in Japan or to, or for the benefit of, any resident of Japan except pursuant to an exemption from the registration requirements, and otherwise in compliance with, the FIEL and the other applicable laws and regulations of Japan.

For Qualified Institutional Investors ("QII")

Please note that the solicitation for newly-issued or secondary securities (each as described in Paragraph 2, Article 4 of the FIEL) in relation to the shares of our common stock constitutes either a "QII only private placement" or a "QII only secondary distribution" (each as described in Paragraph 1, Article 23-13 of the FIEL). Disclosure regarding any such solicitation, as is otherwise prescribed in Paragraph 1, Article 4 of the FIEL, has not been made in relation to the shares of our common stock. The shares of our common stock may only be transferred to QIIs.

For Non-QII Investors

Please note that the solicitation for newly-issued or secondary securities (each as described in Paragraph 2, Article 4 of the FIEL) in relation to the shares of our common stock constitutes either a "small number private placement" or a "small number private secondary distribution" (each as is described in Paragraph 4, Article 23-13 of the FIEL). Disclosure regarding any such solicitation, as is otherwise prescribed in Paragraph 1, Article 4 of the FIEL, has not been made in relation to the shares of our common stock. The shares of our common stock may only be transferred en bloc without subdivision to a single investor.

Singapore

This prospectus has not been registered as a prospectus with the Monetary Authority of Singapore. Accordingly, this prospectus and any other document or material in connection with the offer or sale, or invitation for subscription or purchase, of our shares may not be circulated or distributed, nor may our shares be offered or sold, or be made the subject of an invitation for subscription or purchase, whether directly or indirectly, to persons in Singapore other than (1) to an institutional investor under Section 274 of the Securities and Futures Act, Chapter 289 of Singapore, or the SFA, (2) to a relevant person or any person pursuant to Section 275(1A), and in accordance with the conditions specified in Section 275 of the SFA, or (3) otherwise pursuant to, and in accordance with the conditions of, any other applicable provision of the SFA, in each case subject to compliance with conditions set forth in the SFA.

Where our shares are subscribed or purchased under Section 275 by a relevant person which is: (a) a corporation (which is not an accredited investor as defined in Section 4A of the SFA) the sole business of which is to hold investments and the entire share capital of which is owned by one or more individuals, each of whom is an accredited investor; or (b) a trust (where the trustee is not an accredited investor) whose sole purpose is to hold investments and each beneficiary of the trust is an individual who is an accredited investor; shares, debentures and units of shares and debentures of that corporation or the beneficiaries' rights and interest (howsoever described) in that trust shall not transferred within six months after that corporation or that trust has acquired the shares under Section 275 of the SFA, except: (1) to an institutional investor (for corporations under Section 274 of the SFA) or to a relevant person defined in Section 275(2) of the SFA, or to any person pursuant to an offer that is made on terms that such shares, debentures and units of shares and debentures of that corporation or such rights and interest in that trust are acquired at a consideration of not less than $200,000 (or its equivalent in a foreign currency) for each transaction, whether such amount is to be paid for in cash or by exchange of securities or other assets, and further for corporations, in accordance with the conditions, specified in Section 275 of the SFA; (2) where no consideration is or will be given for the transfer; or (3) where the transfer is by operation of law.

LEGAL MATTERS

The validity of the shares of common stock offered by this prospectus will be passed upon for us by Goodwin Procter LLP, Boston, Massachusetts. Certain legal matters related to this offering will be passed upon for the underwriters by Ropes & Gray LLP, Boston, Massachusetts.

EXPERTS

The financial statements as of December 31, 2016 and 2015 and for each of the two years in the period ended December 31, 2016 included in this prospectus have been so included in reliance on the report of PricewaterhouseCoopers LLP, an independent registered public accounting firm, given on the authority of said firm as experts in auditing and accounting.

WHERE YOU CAN FIND MORE INFORMATION

We have filed with the SEC a registration statement on Form S-1 (File Number 333-) under the Securities Act with respect to the common stock we are offering by this prospectus. This prospectus does not contain all of the information included in the registration statement. For further information pertaining to us and our common stock, you should refer to the registration statement and to its exhibits. Whenever we make reference in this prospectus to any of our contracts, agreements or other documents, the references are not necessarily complete, and you should refer to the exhibits attached to the registration statement for copies of the actual contract, agreement or other document.

Upon the closing of the offering, we will be subject to the informational requirements of the Exchange Act and will file annual, quarterly and current reports, proxy statements and other information with the SEC. You can read our SEC filings, including the registration statement, at the SEC's website at www.sec.gov. You may also read and copy any document we file with the SEC at its public reference facility at 100 F Street, N.E., Room 1580, Washington, D.C. 20549. We also maintain a website at www.Unumtx.com. Upon closing of the offering, you may access, free of charge, our annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K and amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Exchange Act as soon as reasonably practicable after such material is electronically filed with, or furnished to, the SEC.

You may also obtain copies of the documents at prescribed rates by writing to the Public Reference Section of the SEC at 100 F Street, N.E., Washington, D.C. 20549. Please call the SEC at 1-800-SEC-0330 for further information on the operation of the public reference facilities.

INDEX TO CONSOLIDATED FINANCIAL STATEMENTS

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Board of Directors and Stockholders of
Unum Therapeutics Inc.

In our opinion, the accompanying consolidated balance sheets and the related consolidated statements of operations and comprehensive loss, of redeemable convertible preferred stock and stockholders' deficit, and of cash flows present fairly, in all material respects, the financial position of Unum Therapeutics Inc. and its subsidiary as of December 31, 2016 and 2015, and the results of their operations and their cash flows for the years then ended in conformity with accounting principles generally accepted in the United States of America. These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these financial statements based on our audits. We conducted our audits of these statements in accordance with the standards of the Public Company Accounting Oversight Board (United States) and in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements, assessing the accounting principles used and significant estimates made by management, and evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

/s/ PricewaterhouseCoopers LLP

Boston, Massachusetts
November 3, 2017

UNUM THERAPEUTICS INC.
CONSOLIDATED BALANCE SHEETS
(In thousands, except share and per share amounts)

	December 31, 2015	December 31, 2016	September 30, 2017 (unaudited)	Pro Forma September 30, 2017 (unaudited)
Assets				
Current assets:				
Cash and cash equivalents	$90,430	$ 41,321	$ 30,670	$ 30,670
Marketable securities	—	27,187	17,690	17,690
Accounts receivable	294	928	1,511	1,511
Prepaid expenses and other current assets	326	296	850	850
Restricted cash	50	—	25	25
Total current assets	91,100	69,732	50,746	50,746
Property and equipment, net	2,416	4,563	4,255	4,255
Deferred offering costs	—	—	137	137
Restricted cash	1,255	1,255	1,255	1,255
Total assets	$94,771	$ 75,550	$ 56,393	$ 56,393
Liabilities, Redeemable Convertible Preferred Stock and Stockholders' Equity (Deficit)				
Current liabilities:				
Accounts payable	$ 1,395	$ 1,454	$ 2,012	$ 2,012
Accrued expenses and other current liabilities	606	1,320	2,090	2,090
Deferred revenue	5,290	5,963	6,719	6,719
Total current liabilities	7,291	8,737	10,821	10,821
Deferred rent	665	908	911	911
Deferred revenue, net of current portion	17,295	13,517	10,179	10,179
Total liabilities	25,251	23,162	21,911	21,911
Commitments and contingencies (Note 12)				
Redeemable convertible preferred stock (Series A and B), $0.001 par value; 20,771,850 shares authorized at December 31, 2015 and 2016 and 20,791,407 shares authorized at September 30, 2017 (unaudited); 20,771,850 shares issued and outstanding at December 31, 2015 and 2016 and September 30, 2017 (unaudited); liquidation preference of $77,297 at December 31, 2016 and September 30, 2017 (unaudited); no shares issued or outstanding, pro forma at September 30, 2017 (unaudited)	77,022	77,086	77,135	—
Stockholders' equity (deficit):				
Common stock, $0.001 par value; 60,000,000 shares authorized at December 31, 2015 and 2016 and 60,040,000 shares authorized at September 30, 2017 (unaudited); 16,000,000 shares issued and outstanding at December 31, 2015 and 2016 and 16,004,580 shares issued and outstanding at September 30, 2017 (unaudited); 36,776,430 shares issued and outstanding, pro forma at September 30, 2017 (unaudited)	16	16	16	37
Additional paid-in capital	205	1,157	2,004	79,118
Accumulated other comprehensive loss	—	(24)	(24)	(24)
Accumulated deficit	(7,723)	(25,847)	(44,649)	(44,649)
Total stockholders' equity (deficit)	(7,502)	(24,698)	(42,653)	34,482
Total liabilities, redeemable convertible preferred stock and stockholders' equity (deficit)	$94,771	$ 75,550	$ 56,393	$ 56,393

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

UNUM THERAPEUTICS INC.
CONSOLIDATED STATEMENTS OF OPERATIONS AND COMPREHENSIVE LOSS
(In thousands, except share and per share amounts)

	Year Ended December 31,		Nine Months Ended September 30,	
	2015	2016	2016	2017
			(unaudited)	
Collaboration revenue	$ 2,986	$ 6,355	$ 4,608	$ 6,237
Operating expenses:				
Research and development	6,852	21,992	15,296	22,270
General and administrative	2,726	3,433	2,599	3,239
Total operating expenses	9,578	25,425	17,895	25,509
Loss from operations	(6,592)	(19,070)	(13,287)	(19,272)
Other income (expense):				
Interest income	—	265	179	287
Other income, net	—	681	681	183
Total other income, net	—	946	860	470
Net loss	(6,592)	(18,124)	(12,427)	(18,802)
Accretion of redeemable convertible preferred stock to redemption value	(43)	(64)	(49)	(49)
Net loss attributable to common stockholders	$ (6,635)	$ (18,188)	$ (12,476)	$ (18,851)
Net loss per share attributable to common stockholders, basic and diluted	$ (0.41)	$ (1.14)	$ (0.78)	$ (1.18)
Weighted average common shares outstanding, basic and diluted	16,000,000	16,000,000	16,000,000	16,001,036
Pro forma net loss per share attributable to common stockholders, basic and diluted (unaudited)		$ (0.49)		$ (0.51)
Pro forma weighted average common shares outstanding, basic and diluted (unaudited)		36,771,850		36,772,886
Comprehensive loss:				
Net loss	$ (6,592)	$ (18,124)	$ (12,427)	$ (18,802)
Other comprehensive income (loss):				
Unrealized gains (losses) on marketable securities, net of tax of $0	—	(24)	12	—
Comprehensive loss	$ (6,592)	$ (18,148)	$ (12,415)	$ (18,802)

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

UNUM THERAPEUTICS INC.
CONSOLIDATED STATEMENTS OF REDEEMABLE CONVERTIBLE PREFERRED STOCK AND STOCKHOLDERS' DEFICIT
(in thousands, except share amounts)

	Redeemable Convertible Preferred Stock		Common Stock		Additional Paid-in Capital	Accumulated Other Comprehensive Loss	Accumulated Deficit	Total Stockholders' Deficit
	Shares	Amount	Shares	Amount				
Balances at December 31, 2014	6,297,276	$ 6,350	16,000,000	$ 16	$ —	$ —	$ (1,254)	$ (1,238)
Issuance of Series A redeemable convertible preferred stock, net of $11 of issuance costs	6,000,000	5,989	—	—	—	—	—	—
Issuance of Series B redeemable convertible preferred stock, net of $237 of issuance costs	8,474,574	64,763	—	—	—	—	—	—
Reversal of cumulative dividends	—	(123)	—	—	—	—	123	123
Stock-based compensation expense	—	—	—	—	248	—	—	248
Accretion of redeemable convertible preferred stock to redemption value	—	43	—	—	(43)	—	—	(43)
Net loss	—	—	—	—	—	—	(6,592)	(6,592)
Balances at December 31, 2015	20,771,850	77,022	16,000,000	16	205	—	(7,723)	(7,502)
Stock-based compensation expense	—	—	—	—	1,016	—	—	1,016
Unrealized losses on marketable securities	—	—	—	—	—	(24)	—	(24)
Accretion of redeemable convertible preferred stock to redemption value	—	64	—	—	(64)	—	—	(64)
Net loss	—	—	—	—	—	—	(18,124)	(18,124)
Balances at December 31, 2016	20,771,850	77,086	16,000,000	16	1,157	(24)	(25,847)	(24,698)
Issuance of common stock upon exercise of stock options	—	—	4,580	—	15	—	—	15
Stock-based compensation expense	—	—	—	—	881	—	—	881
Accretion of redeemable convertible preferred stock to redemption value	—	49	—	—	(49)	—	—	(49)
Net loss	—	—	—	—	—	—	(18,802)	(18,802)
Balances at September 30, 2017 (unaudited)	20,771,850	$77,135	16,004,580	$ 16	$ 2,004	$ (24)	$(44,649)	$ (42,653)

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

UNUM THERAPEUTICS INC.
CONSOLIDATED STATEMENTS OF CASH FLOWS
(in thousands)

	Year Ended December 31,		Nine Months Ended September 30,	
	2015	2016	2016	2017
			(unaudited)	
Cash flows from operating activities:				
Net loss	$ (6,592)	$ (18,124)	$ (12,427)	$ (18,802)
Adjustments to reconcile net loss to net cash provided by (used in) operating activities:				
Stock-based compensation expense	248	1,016	748	881
Depreciation and amortization expense	179	830	578	864
Premiums paid on marketable securities	—	(56)	(17)	(13)
Net amortization of premiums on marketable securities	—	17	14	10
Non-cash interest expense	—	—	—	14
Changes in operating assets and liabilities:				
Accounts receivable	(294)	(634)	(527)	(583)
Prepaid expenses and other current assets	(292)	70	(423)	(568)
Accounts payable	705	389	(187)	743
Accrued expenses and other current liabilities	512	714	311	714
Deferred rent	665	243	235	3
Deferred revenue	22,585	(3,105)	(2,287)	(2,582)
Net cash provided by (used in) operating activities	17,716	(18,640)	(13,982)	(19,319)
Cash flows from investing activities:				
Purchases of property and equipment	(1,994)	(3,307)	(2,846)	(812)
Purchases of marketable securities	—	(55,172)	(52,700)	(6,500)
Maturities and sales of marketable securities	—	28,000	9,500	16,000
Changes in restricted cash	(1,255)	50	50	(25)
Net cash provided by (used in) investing activities	(3,249)	(30,429)	(45,996)	8,663
Cash flows from financing activities:				
Proceeds from issuance of redeemable convertible preferred stock, net of issuance costs	70,752	—	—	—
Proceeds from issuance of common stock upon exercise of stock options	—	—	—	15
Payments of initial public offering costs	—	—	—	(10)
Debt issuance costs	—	(40)	—	—
Net cash provided by (used in) financing activities	70,752	(40)	—	5
Net increase (decrease) in cash and cash equivalents	85,219	(49,109)	(59,978)	(10,651)
Cash and cash equivalents at beginning of period	5,211	90,430	90,430	41,321
Cash and cash equivalents at end of period	$90,430	$ 41,321	$ 30,452	$ 30,670
Supplemental disclosure of noncash investing and financing information:				
Purchases of property and equipment included in accounts payable	$ 601	$ 271	$ 113	$ 15
Deferred offering costs included in accounts payable and accrued expenses	$ —	$ —	$ —	$ 127
Accretion of redeemable convertible preferred stock to redemption value	$ 43	$ 64	$ 49	$ 49

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

UNUM THERAPEUTICS INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

1. Nature of the Business and Basis of Presentation

Unum Therapeutics Inc. ("Unum" or the "Company") is a clinical-stage biopharmaceutical company focused on the development and commercialization of novel immunotherapy products designed to harness the power of a patient's immune system to cure cancer. The Company's proprietary technology, called antibody-coupled T cell receptor ("ACTR"), is a universal, engineered cell therapy that is intended to be used in combination with a wide range of tumor-specific antibodies to target different tumor types. Unum was incorporated in March 2014 under the laws of the State of Delaware.

The Company is subject to risks and uncertainties common to early-stage companies in the biotechnology industry, including, but not limited to, development by competitors of new technological innovations, dependence on key personnel, protection of proprietary technology, compliance with government regulations and the ability to secure additional capital to fund operations. Product candidates currently under development will require significant additional research and development efforts, including extensive preclinical and clinical testing and regulatory approval prior to commercialization. These efforts require significant amounts of additional capital, adequate personnel and infrastructure and extensive compliance-reporting capabilities. Even if the Company's drug development efforts are successful, it is uncertain when, if ever, the Company will realize significant revenue from product sales.

The accompanying consolidated financial statements have been prepared on the basis of continuity of operations, realization of assets and the satisfaction of liabilities and commitments in the ordinary course of business. Through December 31, 2016 and September 30, 2017 (unaudited), the Company has funded its operations with the sales of redeemable convertible preferred stock and payments received in connection with a collaboration agreement. Since inception, the Company has incurred recurring losses, including net losses of $6.6 million for the year ended December 31, 2015, $18.1 million for the year ended December 31, 2016 and $18.8 million for the nine months ended September 30, 2017 (unaudited). As of December 31, 2016 and September 30, 2017 (unaudited), the Company had an accumulated deficit of $25.8 million and $44.6 million, respectively. The Company expects to continue to generate operating losses in the foreseeable future. As of November 3, 2017, the issuance date of the annual consolidated financial statements for the year ended December 31, 2016, the Company expected that its cash, cash equivalents and marketable securities of $54.9 million as of June 30, 2017 (unaudited), together with $15.0 million of available borrowings under its loan and security agreement, would be sufficient to fund its operating expenses and capital expenditure requirements through at least 12 months from the issuance date of the annual consolidated financial statements.

As of February 13, 2018, the issuance date of the interim consolidated financial statements for the nine months ended September 30, 2017, the Company expects that its cash, cash equivalents and marketable securities, together with $15.0 million of available borrowings under its loan and security agreement, will be sufficient to fund its operating expenses and capital expenditure requirements through at least 12 months from the issuance date of the interim consolidated financial statements.

The Company is seeking to complete an initial public offering of its common stock. Upon the completion of a qualified public offering on specified terms, the Company's outstanding redeemable convertible preferred stock will automatically convert into shares of common stock (see Note 8).

In the event the Company does not complete an initial public offering, the Company expects to seek additional funding through private equity financings, debt financings, collaborations, strategic alliances and marketing, distribution or licensing arrangements. The Company may not be able to obtain financing on acceptable terms, or at all, and the Company may not be able to enter into collaborations or other arrangements. The terms of any financing may adversely affect the holdings or the rights of the Company's stockholders. If the

UNUM THERAPEUTICS INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

Company is unable to obtain funding, the Company could be forced to delay, reduce or eliminate some or all of its research and development programs, product portfolio expansion or commercialization efforts, which could adversely affect its business prospects.

Although management continues to pursue these plans, there is no assurance that the Company will be successful in obtaining sufficient funding on terms acceptable to the Company to fund continuing operations, if at all.

The Company's consolidated financial statements have been prepared in conformity with accounting principles generally accepted in the United States of America ("GAAP").

The accompanying consolidated financial statements include the accounts of the Company and its wholly owned subsidiary. All intercompany accounts and transactions have been eliminated in consolidation.

2. Summary of Significant Accounting Policies

Use of Estimates

The preparation of financial statements in conformity with GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities, the disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenue and expenses during the reporting periods. Significant estimates and assumptions reflected in these consolidated financial statements include, but are not limited to, revenue recognition, the accrual of research and development expenses, the valuation of common stock and the valuation of stock-based awards. The Company bases its estimates on historical experience, known trends and other market-specific or other relevant factors that it believes to be reasonable under the circumstances. On an ongoing basis, management evaluates its estimates, as there are changes in circumstances, facts and experience. Actual results may differ from those estimates or assumptions.

Unaudited Interim Financial Information

The accompanying consolidated balance sheet as of September 30, 2017, the consolidated statements of operations and comprehensive loss and of cash flows for the nine months ended September 30, 2016 and 2017, and the consolidated statement of redeemable convertible preferred stock and stockholders' deficit for the nine months ended September 30, 2017 are unaudited. The unaudited interim consolidated financial statements have been prepared on the same basis as the audited annual consolidated financial statements and, in the opinion of management, reflect all adjustments, which include only normal recurring adjustments, necessary for the fair statement of the Company's financial position as of September 30, 2017 and the results of its operations and its cash flows for the nine months ended September 30, 2016 and 2017. The financial data and other information disclosed in these notes related to the nine months ended September 30, 2016 and 2017 are also unaudited. The results for the nine months ended September 30, 2017 are not necessarily indicative of results to be expected for the year ending December 31, 2017, any other interim periods, or any future year or period.

Unaudited Pro Forma Information

The accompanying unaudited pro forma consolidated balance sheet as of September 30, 2017 has been prepared to give effect to the automatic conversion of all shares of redeemable convertible preferred stock outstanding into 20,771,850 shares of common stock as if the proposed initial public offering had occurred on September 30, 2017.

UNUM THERAPEUTICS INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

In the accompanying consolidated statements of operations and comprehensive loss, the unaudited pro forma basic and diluted net loss per share attributable to common stockholders for the year ended December 31, 2016 and the nine months ended September 30, 2017 have been prepared to give effect to the automatic conversion of all shares of redeemable convertible preferred stock outstanding into shares of common stock as if the proposed initial public offering had occurred on the later of January 1, 2016 or the issuance date of the redeemable convertible preferred stock.

Concentrations of Credit Risk and of Significant Suppliers

Financial instruments that potentially expose the Company to concentrations of credit risk consist primarily of cash and cash equivalents. The Company maintains most of its cash and cash equivalents at three accredited financial institutions. The Company does not believe that it is subject to unusual credit risk beyond the normal credit risk associated with commercial banking relationships.

The Company is dependent on third-party vendors for its product candidates. In particular, the Company relies, and expects to continue to rely, on a small number of vendors to manufacture supplies and process its product candidates for its development programs. These programs could be adversely affected by a significant interruption in the manufacturing process.

Deferred Offering Costs

The Company capitalizes certain legal, professional accounting and other third-party fees that are directly associated with in-process equity financings as deferred offering costs until such financings are consummated. After consummation of the equity financing, these costs are recorded in stockholders' equity (deficit) as a reduction of additional paid-in capital generated as a result of the offering. Should the planned equity financing be abandoned, the deferred offering costs will be expensed immediately as a charge to operating expenses in the consolidated statement of operations and comprehensive loss. As of December 31, 2015 and 2016, the Company had no deferred offering costs. As of September 30, 2017 (unaudited), the Company recorded $0.1 million of deferred offering costs in contemplation of a planned initial public offering of common stock.

Debt Issuance Costs

The Company capitalizes certain legal and other third-party fees that are directly associated with obtaining access to capital under credit facilities. Debt issuance costs incurred in connection with obtaining access to capital are recorded in prepaid expenses and other current assets and are amortized over the availability period or term of the credit facility. Debt issuance costs related to a recognized debt liability are recorded as a direct reduction of the carrying amount of the debt liability.

Cash Equivalents

The Company considers all highly liquid investments with original maturities of three months or less at the date of purchase to be cash equivalents. Cash equivalents consisted of money market funds at December 31, 2016 and September 30, 2017 (unaudited). The Company had no cash equivalents at December 31, 2015.

UNUM THERAPEUTICS INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

Property and Equipment

Property and equipment are stated at cost less accumulated depreciation and amortization. Depreciation and amortization expense is recognized using the straight-line method over the estimated useful life of each asset as follows:

	Estimated Useful Life
Laboratory equipment	5 years
Computer equipment and software	3 years
Furniture and fixtures	5 years
Leasehold improvements	Shorter of life of lease or 10 years

Costs for capital assets not yet placed into service are capitalized as construction-in-progress and depreciated in accordance with the above guidelines once placed into service. Upon retirement or sale, the cost of assets disposed of and the related accumulated depreciation and amortization are removed from the accounts and any resulting gain or loss is included in loss from operations. Expenditures for repairs and maintenance are charged to expense as incurred.

Impairment of Long-Lived Assets

Long-lived assets consist of property and equipment. Long-lived assets to be held and used are tested for recoverability whenever events or changes in business circumstances indicate that the carrying amount of the assets may not be fully recoverable. Factors that the Company considers in deciding when to perform an impairment review include significant underperformance of the business in relation to expectations, significant negative industry or economic trends and significant changes or planned changes in the use of the assets. If an impairment review is performed to evaluate a long-lived asset group for recoverability, the Company compares forecasts of undiscounted cash flows expected to result from the use and eventual disposition of the long-lived asset group to its carrying value. An impairment loss would be recognized in loss from operations when estimated undiscounted future cash flows expected to result from the use of an asset group are less than its carrying amount. The impairment loss would be based on the excess of the carrying value of the impaired asset group over its fair value, determined based on discounted cash flows. The Company did not record any impairment losses on long-lived assets during the years ended December 31, 2015 or 2016 or during the nine months ended September 30, 2016 and 2017 (unaudited).

Fair Value Measurements

Certain assets and liabilities are carried at fair value under GAAP. Fair value is defined as the exchange price that would be received for an asset or paid to transfer a liability (an exit price) in the principal or most advantageous market for the asset or liability in an orderly transaction between market participants on the measurement date. Valuation techniques used to measure fair value must maximize the use of observable inputs and minimize the use of unobservable inputs. Financial assets and liabilities carried at fair value are to be classified and disclosed in one of the following three levels of the fair value hierarchy, of which the first two are considered observable and the last is considered unobservable:

- Level 1—Quoted prices in active markets for identical assets or liabilities.
- Level 2—Observable inputs (other than Level 1 quoted prices), such as quoted prices in active markets for similar assets or liabilities, quoted prices in markets that are not active for identical or similar assets or liabilities, or other inputs that are observable or can be corroborated by observable market data.

UNUM THERAPEUTICS INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

- Level 3—Unobservable inputs that are supported by little or no market activity and that are significant to determining the fair value of the assets or liabilities, including pricing models, discounted cash flow methodologies and similar techniques.

The Company's cash equivalents and marketable securities are carried at fair value, determined according to the fair value hierarchy described above (see Note 3). The carrying values of the Company's accounts receivable, accounts payable and accrued expenses approximate their fair values due to the short-term nature of these liabilities.

Marketable Securities

The Company's marketable securities are classified as available-for-sale and are carried at fair value, with the unrealized gains and losses reported as a component of accumulated other comprehensive income (loss) in stockholders' equity (deficit). Realized gains and losses and declines in value determined to be other than temporary are based on the specific identification method and are included as a component of other income (expense), net in the consolidated statements of operations and comprehensive loss. The Company classifies its marketable securities with maturities beyond one year as short-term, based on their highly liquid nature and because such marketable securities are available for current operations.

The Company evaluates its marketable securities with unrealized losses for other-than-temporary impairment. When assessing marketable securities for other-than-temporary declines in value, the Company considers such factors as, among other things, how significant the decline in value is as a percentage of the original cost, how long the market value of the investment has been less than its original cost, the Company's ability and intent to retain the investment for a period of time sufficient to allow for any anticipated recovery in fair value and market conditions in general. If any adjustment to fair value reflects a decline in the value of the investment that the Company considers to be "other than temporary," the Company reduces the investment to fair value through a charge to the statement of operations and comprehensive loss. No such adjustments were necessary during the periods presented.

Classification and Accretion of Redeemable Convertible Preferred Stock

The Company has classified redeemable convertible preferred stock outside of stockholders' equity (deficit) because the shares contain certain redemption features that are not solely within the control of the Company. The carrying values of the redeemable convertible preferred stock are accreted to their respective redemption values from the date of issuance through the earliest date of redemption.

Segment Information

The Company manages its operations as a single segment for the purposes of assessing performance and making operating decisions. The Company's singular focus is the development and commercialization of immunotherapy products for cancer. All of the Company's tangible assets are held in the United States.

Collaboration Agreements

The Company follows the accounting guidance for collaboration agreements, which requires that certain transactions between the Company and collaborators be recorded in its consolidated statements of operations and comprehensive loss on either a gross basis or net basis, depending on the characteristics of the collaborative relationship, and requires enhanced disclosure of collaborative relationships. The Company evaluates its collaboration agreements for proper classification in its consolidated statements of operations and comprehensive

loss based on the nature of the underlying activity. If payments to and from collaborative partners are not within the scope of other authoritative accounting literature, the consolidated statements of operations classification for the payments is based on a reasonable, rational analogy to authoritative accounting literature that is applied in a consistent manner. When the Company has concluded that it has a customer relationship with one of its collaborators, such as that with Seattle Genetics, Inc. (see Note 6), the Company follows the guidance in Accounting Standards Codification ("ASC") Topic 605, *Revenue Recognition* ("ASC 605"). When the Company has concluded that it has a vendor relationship with one of its collaborators, the Company recognizes any reimbursements received from these vendors as a reduction of the related expense incurred, in accordance with ASC 605-50, *Revenue Recognition—Customer Payments and Incentives*.

Revenue Recognition of Collaboration Agreements

The Company recognizes revenue from license and collaboration agreements in accordance with ASC 605. Accordingly, revenue is recognized when all of the following criteria are met: persuasive evidence of an arrangement exists, delivery has occurred or services have been rendered, the seller's price to the buyer is fixed or determinable, and collectibility is reasonably assured.

When evaluating multiple-element arrangements, the Company considers whether the deliverables under the arrangement represent separate units of accounting. This evaluation requires subjective determinations and requires management to make judgments about the individual deliverables and whether such deliverables are separable from the other aspects of the contractual relationship. In determining the units of accounting, management evaluates certain criteria, including whether the deliverables have standalone value, based on the consideration of the relevant facts and circumstances for each arrangement. The consideration to be received under each arrangement is allocated to the separate units of accounting using the relative selling price method, and the applicable revenue recognition criteria are applied to each of the separate units. Deliverables are considered separate units of accounting provided that (i) the delivered item has value to the customer on a standalone basis and (ii) if the arrangement includes a general right of return with respect to the delivered item, delivery or performance of the undelivered items is considered probable and substantially in the Company's control. In assessing whether an item has standalone value, the Company considers factors such as the research, development, manufacturing and commercialization capabilities of the collaboration partner and the availability of the associated expertise in the general marketplace. In addition, the Company considers whether the collaboration partner can use any other deliverable for its intended purpose without the receipt of the remaining deliverables, whether the value of the deliverable is dependent on the undelivered items, and whether there are other vendors that can provide the undelivered items.

The consideration received under the arrangement that is fixed or determinable is then allocated among the separate units of accounting based on the relative selling prices of the separate units of accounting. The Company determines the selling price of a unit of accounting within each arrangement following the hierarchy of evidence prescribed by ASC 605-25. Accordingly, the Company determines the estimated selling price for units of accounting within each arrangement using vendor-specific objective evidence ("VSOE") of selling price, if available; third-party evidence ("TPE") of selling price, if VSOE is not available; or best estimate of selling price ("BESP"), if neither VSOE nor TPE is available. The Company typically uses BESP to estimate the selling price as it generally does not have VSOE or TPE of selling price for its units of accounting. Determining the BESP for a unit of accounting requires significant judgment. In developing the BESP for a unit of accounting, the Company considers applicable market conditions and relevant entity-specific factors, including factors that were contemplated in negotiating the agreement with the customer and estimated costs. The Company validates the BESP for units of accounting by evaluating whether changes in the key assumptions used to determine the BESP will have a significant effect on the allocation of arrangement consideration between multiple units of accounting.

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The Company recognizes arrangement consideration allocated to each unit of accounting when all of the revenue recognition criteria in ASC 605 are met for that particular unit of accounting. In the event that a deliverable does not represent a separate unit of accounting, the Company recognizes revenue from the combined unit of accounting over the contractual or estimated period of performance for the undelivered items, which is typically the term of the Company's research and development obligations. If there is no discernible pattern of performance or objectively measurable performance measures do not exist, then the Company recognizes revenue under the arrangement on a straight-line basis over the period the Company is expected to complete its performance obligations. Conversely, if the pattern of performance over which the service is provided to the customer can be determined at the inception of the arrangement and if objectively measurable performance measures exist, then the Company recognizes revenue under the arrangement using the proportional performance method. Revenue recognized is limited to the lesser of the cumulative amount of payments received or the cumulative amount of revenue earned, as determined using the straight-line method or proportional performance method, as applicable, as of the end of each reporting period.

Significant management judgment is required in determining the level of effort required under an arrangement and the period over which the Company expects to complete its performance obligations under an arrangement. Steering committee services that are not inconsequential or perfunctory and that are determined to be performance obligations are combined with other research services or performance obligations required under an arrangement, if any, in determining the level of effort required in an arrangement and the period over which the Company expects to complete its aggregate performance obligations.

At the inception of an arrangement that includes options for a customer to purchase additional services or products at agreed upon prices in the future, the Company evaluates whether each option is substantive. Factors that the Company considers in evaluating whether an option is substantive include the overall objective of the arrangement, if the exercise of that option represents a separate buying decision, and if the services or products subject to the option are essential to the functionality of the current deliverables. When an option is considered substantive, the Company does not consider the option or item underlying the option to be a deliverable at the inception of the arrangement, and the associated option fees are not included in the allocable arrangement consideration, assuming the option is not priced at a significant and incremental discount. When an option is not considered substantive, the Company would consider the option, including other deliverables contingent upon the exercise of the option, to be a deliverable at the inception of the arrangement and a corresponding amount would be included in the allocable arrangement consideration. In addition, if the price of the option includes a significant incremental discount, the discount inherent in the option price would be included as a deliverable at the inception of the arrangement.

At the inception of an arrangement that includes potential milestone payments, the Company evaluates whether each milestone is substantive and at risk to both parties on the basis of the contingent nature of the milestone. This evaluation includes an assessment of whether: (i) the consideration is commensurate with either the Company's performance to achieve the milestone or the enhancement of the value of the delivered item as a result of a specific outcome resulting from the Company's performance to achieve the milestone, (ii) the consideration relates solely to past performance, and (iii) the consideration is reasonable relative to all of the deliverables and payment terms within the arrangement. The Company evaluates factors such as the scientific, clinical, regulatory, commercial and other risks that must be overcome to achieve the particular milestone and the level of effort and investment required to achieve the particular milestone in making this assessment. There is considerable judgment involved in determining whether a milestone satisfies all of the criteria required to conclude that a milestone is substantive. The Company will recognize revenue in its entirety upon successful accomplishment of any substantive milestones, assuming all other revenue recognition criteria are met. Milestones that are not considered substantive are recognized as earned if there are no remaining performance

obligations or over the remaining period of performance, with a cumulative catch-up being recognized for the elapsed portion of the period of performance, assuming all other revenue recognition criteria are met.

To date, the Company has not recorded any substantive milestones because no milestones that meet the required criteria listed above have been identified. Payments for achievement of non-substantive milestones are deferred and recognized as revenue over the estimated period of performance applicable to the collaboration agreement. As these milestones are achieved, the Company will recognize as revenue a portion of the milestone payment that is equal to the percentage of the period of performance completed when the milestone is achieved, multiplied by the amount of the milestone payment, upon achievement of such milestone. The Company will recognize the remaining portion of the milestone payment over the remaining period of performance under either the proportional performance method or on a straight-line basis.

Royalty revenue, if any, is recognized based on contractual terms when reported sales are reliably measurable and collectibility is reasonably assured, provided that there are no performance obligations then remaining. To date, none of the Company's product candidates have been approved and, therefore, the Company has not earned any royalty revenue from product sales.

Amounts received prior to satisfying the revenue recognition criteria listed above are recorded as deferred revenue in the accompanying consolidated balance sheets. Amounts expected to be recognized as revenue within 12 months of the balance sheet date are classified as current deferred revenue. Amounts not expected to be recognized as revenue within the following 12 months of the balance sheet date are classified as non-current deferred revenue.

In the event that a collaboration agreement were to be terminated and the Company had no further performance obligations, the Company would recognize as revenue any portion of the upfront payment and other payments that had not previously been recorded as revenue and were classified as deferred revenue at the date of such termination.

Research and Development Costs

Research and development costs are expensed as incurred. Research and development expenses are comprised of costs incurred in performing research and development activities, including salaries, stock-based compensation and benefits, facilities costs and laboratory supplies, depreciation, manufacturing expenses and external costs of outside vendors engaged to conduct preclinical development activities and clinical trials as well as the cost of licensing technology.

Upfront payments and milestone payments made for the licensing of technology are expensed as research and development in the period in which they are incurred. Nonrefundable advance payments for goods or services to be received in the future for use in research and development activities are recorded as prepaid expenses. The prepaid amounts are expensed as the related goods are delivered or the services are performed.

Research Contract Costs and Accruals

The Company has entered into various research and development contracts with companies both inside and outside of the United States. These agreements are generally cancelable, and related payments are recorded as research and development expenses as incurred. The Company records accruals for estimated ongoing research costs. When evaluating the adequacy of the accrued liabilities, the Company analyzes progress of the studies or trials, including the phase or completion of events, invoices received and contracted costs. Significant judgments and estimates are made in determining the accrued balances at the end of any reporting period. Actual results could differ from the Company's estimates. The Company's historical accrual estimates have not been materially different from the actual costs.

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Patent Costs

All patent-related costs incurred in connection with filing and prosecuting patent applications are expensed as incurred due to the uncertainty about the recovery of the expenditure. Amounts incurred are classified as general and administrative expenses.

Stock-Based Compensation

The Company measures all stock-based awards granted to employees and directors based on the fair value on the date of grant using the Black-Scholes option-pricing model. Compensation expense of those awards is recognized over the requisite service period, which is generally the vesting period of the respective award. Generally, the Company issues awards with only service-based vesting conditions and records the expense for these awards using the straight-line method.

For stock-based awards granted to non-employee consultants, compensation expense is recognized over the period during which services are rendered by such consultants until completed. At the end of each financial reporting period prior to completion of the service, the fair value of these awards is remeasured using the then-current fair value of the Company's common shares and updated assumption inputs in the Black-Scholes option-pricing model.

The Company classifies stock-based compensation expense in its consolidated statements of operations and comprehensive loss in the same manner in which the award recipient's payroll costs are classified or in which the award recipient's service payments are classified.

Comprehensive Loss

Comprehensive loss includes net loss as well as other changes in stockholders' equity (deficit) that result from transactions and economic events other than those with stockholders. For the year ended December 31, 2016 and the nine months ended September 30, 2016 (unaudited), the Company's only element of other comprehensive loss was unrealized gains (losses) on marketable securities. For the year ended December 31, 2015 and the nine months ended September 30, 2017 (unaudited), there was no difference between net loss and comprehensive loss.

Net Income (Loss) per Share

The Company follows the two-class method when computing net income (loss) per share, as the Company has issued shares that meet the definition of participating securities. The two-class method determines net income (loss) per share for each class of common and participating securities according to dividends declared or accumulated and participation rights in undistributed earnings. The two-class method requires income available to common stockholders for the period to be allocated between common and participating securities based upon their respective rights to receive dividends as if all income for the period had been distributed.

Basic net income (loss) per share attributable to common stockholders is computed by dividing the net income (loss) attributable to common stockholders by the weighted average number of common shares outstanding for the period. Diluted net income (loss) attributable to common stockholders is computed by adjusting net income (loss) attributable to common stockholders to reallocate undistributed earnings based on the potential impact of dilutive securities. Diluted net income (loss) per share attributable to common stockholders is computed by dividing the diluted net income (loss) attributable to common stockholders by the weighted average number of common shares outstanding for the period, including potential dilutive common shares assuming the dilutive effect of common stock equivalents.

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The Company's redeemable convertible preferred stock contractually entitles the holders of such shares to participate in dividends but does not contractually require the holders of such shares to participate in losses of the Company. Accordingly, in periods in which the Company reports a net loss, such losses are not allocated to such participating securities. In periods in which the Company reports a net loss attributable to common stockholders, diluted net loss per share attributable to common stockholders is the same as basic net loss per share attributable to common stockholders, since dilutive common shares are not assumed to have been issued if their effect is anti-dilutive. The Company reported a net loss attributable to common stockholders for the years ended December 31, 2015 and 2016 and the nine months ended September 30, 2016 and 2017 (unaudited).

Income Taxes

The Company accounts for income taxes using the asset and liability method, which requires the recognition of deferred tax assets and liabilities for the expected future tax consequences of events that have been recognized in the consolidated financial statements or in the Company's tax returns. Deferred tax assets and liabilities are determined on the basis of the differences between the financial statements and tax basis of assets and liabilities using enacted tax rates in effect for the year in which the differences are expected to reverse. Changes in deferred tax assets and liabilities are recorded in the provision for income taxes. The Company assesses the likelihood that its deferred tax assets will be recovered from future taxable income and, to the extent it believes, based upon the weight of available evidence, that it is more likely than not that all or a portion of the deferred tax assets will not be realized, a valuation allowance is established through a charge to income tax expense. Potential for recovery of deferred tax assets is evaluated by estimating the future taxable profits expected and considering prudent and feasible tax planning strategies.

The Company accounts for uncertainty in income taxes recognized in the consolidated financial statements by applying a two-step process to determine the amount of tax benefit to be recognized. First, the tax position must be evaluated to determine the likelihood that it will be sustained upon external examination by the taxing authorities. If the tax position is deemed more-likely-than-not to be sustained, the tax position is then assessed to determine the amount of benefit to recognize in the consolidated financial statements. The amount of the benefit that may be recognized is the largest amount that has a greater than 50% likelihood of being realized upon ultimate settlement. The provision for income taxes includes the effects of any resulting tax reserves, or unrecognized tax benefits, that are considered appropriate as well as the related net interest and penalties.

Recently Adopted Accounting Pronouncements

In August 2014, the Financial Accounting Standards Board ("FASB") issued ASU No. 2014-15, *Disclosure of Uncertainties about an Entity's Ability to Continue as a Going Concern* ("ASU 2014-15"). The amendments in this update explicitly require a company's management to assess an entity's ability to continue as a going concern and to provide related footnote disclosures in certain circumstances. The new standard is effective for annual periods ending after December 15, 2016 and for interim periods thereafter. The Company adopted ASU 2014-15 as of the required effective date of December 31, 2016. This guidance relates to footnote disclosure only, and its adoption had no impact on the Company's financial position, results of operations or cash flows.

In November 2014, the FASB issued ASU No. 2014-16, *Determining Whether the Host Contract in a Hybrid Financial Instrument Issued in the Form of a Share Is More Akin to Debt or to Equity* ("ASU 2014-16"). The guidance requires an entity to determine the nature of the host contract by considering all stated and implied substantive terms and features of the hybrid financial instrument, weighing each term and feature on the basis of the relevant facts and circumstances (commonly referred to as the whole-instrument approach). The Company adopted the standard retrospectively to all periods presented on the required effective date of January 1, 2016, and its adoption had no impact on the Company's financial position, results of operations or cash flows.

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In November 2015, the FASB issued ASU No. 2015-17, *Income Taxes (Topic 740): Balance Sheet Classification of Deferred Taxes* ("ASU 2015-17"), which requires deferred tax liabilities and assets to be classified as non-current in the consolidated balance sheet. ASU 2015-17 is required to be adopted for annual periods beginning after December 15, 2016, including interim periods within those fiscal years. The amendment may be applied either prospectively to all deferred tax liabilities and assets or retrospectively to all periods presented. The Company elected to early adopt the standard on January 1, 2016 and has reflected the adoption retrospectively to all periods presented. The adoption of ASU 2015-17 had no impact on the Company's financial position, results of operations or cash flows.

In March 2016, the FASB issued ASU No. 2016-09, *Compensation—Stock Compensation (Topic 718): Improvements to Employee Share-Based Payment Accounting* ("ASU 2016-09"). ASU 2016-09 involves several aspects of the accounting for share-based transactions, including the income tax consequences, classification of awards as either equity or liabilities, an option to recognize gross share compensation expense with actual forfeitures recognized as they occur and certain classifications on the statement of cash flows. Certain of these changes are required to be applied retrospectively, while other changes are required to be applied prospectively. The Company adopted ASU 2016-09 as of the required effective date of January 1, 2017 and has elected to account for forfeitures as they occur rather than apply an estimated forfeiture rate to share-based compensation expense. The adoption of ASU 2016-09 had no material impact on the Company's financial position, results of operations or cash flows.

Recently Issued Accounting Pronouncements

In May 2014, the FASB issued ASU No. 2014-09, *Revenue from Contracts with Customers (Topic 606)* ("ASU 2014-09"), which supersedes existing revenue recognition guidance under GAAP. The standard's core principle is that a company will recognize revenue when it transfers promised goods or services to customers in an amount that reflects the consideration to which the Company expects to be entitled in exchange for those goods or services. The standard outlines a five-step process to achieve this principle, and will require companies to use more judgment and make more estimates than under the current guidance. The Company expects that these judgments and estimates will include identifying performance obligations in the customer contract, estimating the amount of variable consideration to include in the transaction price and allocating the transaction price to each separate performance obligation. ASU 2014-09 also requires additional disclosure about the nature, amount, timing and uncertainty of revenue and cash flows arising from customer contracts. In August 2015, the FASB issued ASU 2015-14, *Revenue from Contracts with Customers (Topic 606): Deferral of the Effective Date*, which delays the effective date of ASU 2014-09 such that the standard is effective for public entities for annual periods beginning after December 15, 2017 and for interim periods within those fiscal years. In March 2016, the FASB issued ASU No. 2016-08, *Revenue from Contracts with Customers (Topic 606): Principal versus Agent Considerations* ("ASU 2016-08"), which further clarifies the implementation guidance on principal versus agent considerations in ASU 2014-09. In April 2016, the FASB issued ASU No. 2016-10, *Revenue from Contracts with Customers (Topic 606): Identifying Performance Obligations and Licensing*, clarifying the implementation guidance on identifying performance obligations and licensing. Specifically, the amendments in this update reduce the cost and complexity of identifying promised goods or services and improve the guidance for determining whether promises are separately identifiable. The amendments in this update also provide implementation guidance on determining whether an entity's promise to grant a license provides a customer with either a right to use the entity's intellectual property (which is satisfied at a point in time) or a right to access the entity's intellectual property (which is satisfied over time). In May 2016, the FASB issued ASU No. 2016-12, *Revenue from Contracts with Customers (Topic 606): Narrow-Scope Improvements and Practical Expedients* ("ASU 2016-12"), which clarifies the objective of the collectibility criterion, presentation of taxes collected from customers, non-cash consideration, contract modifications at transition, completed contracts at transition and how guidance in ASU 2014-09 is retrospectively applied. ASU 2016-08, ASU 2016-10 and ASU 2016-12 have the

same effective dates and transition requirements as ASU 2014-09, all of which collectively are herein referred to as "ASC 606".

The Company plans to adopt ASC 606 using the modified retrospective transition method, which will result in an adjustment to accumulated deficit in its consolidated balance sheet as of the January 1, 2018 effective date for the cumulative effect of applying the standard. As this adoption method does not result in a recast of the prior year consolidated financial statements, ASC 606 requires the Company to provide additional disclosures during the year of adoption of the amount by which each financial statement line item is affected by adoption of the new standard and explanations of the reasons for significant changes.

The Company is currently evaluating the impact of the adoption of ASC 606 on its consolidated financial statements. While its assessment is preliminary, the Company expects the adoption will have a material impact on its consolidated financial statements, in particular, related to the pattern and timing of revenue recognition of amounts from its collaboration agreement with Seattle Genetics, Inc. ("Seattle Genetics"). The Company currently expects that the cumulative effect adjustment to be recorded as of January 1, 2018 will include a material decrease in accumulated deficit and a material increase in deferred revenue recorded on its consolidated balance sheet.

Under ASC 606, the Company will recognize revenue using the cost-to-cost method, which it believes best depicts the transfer of control to the customer. In contrast, under the existing revenue recognition standard, the Company is recognizing revenue on a straight-line basis over the estimated period of performance. Under the cost-to-cost method, the extent of progress towards completion is measured based on the ratio of actual costs incurred to the total estimated costs expected upon satisfying the identified performance obligation. Under this method, revenue will be recorded as a percentage of the estimated transaction price based on the extent of progress towards completion. Under ASC 606, the estimated transaction price will include variable consideration for payments expected to be earned for preclinical research and clinical development activities through Phase I, which, under the existing standard, the Company was precluded from including in the estimated transaction price until such payments were determinable and due. The estimate of the Company's measure of progress and estimate of variable consideration to be included in the transaction price will be updated at each reporting date as a change in estimate. The amount of transaction price allocated to the satisfied portion of the performance obligation, based on the Company's measure of progress, will be recognized immediately on a cumulative catch-up basis, resulting in an adjustment to revenue in the period of change. The amount related to the unsatisfied portion will be recognized as that portion is satisfied over time.

The Company currently expects that under ASC 606 it will account for a single performance obligation under the collaboration agreement, just as it accounted for a single unit of accounting under the existing standard. The options held by Seattle Genetics are expected to continue to be accounted for as separate performance obligations as they do not represent material rights based on the criteria of ASC 606. Further, the Company does not expect ASC 606 will have an impact on its current accounting for milestone or royalty payments.

In February 2016, the FASB issued ASU No. 2016-02, *Leases (Topic 842)* ("ASU 2016-02"), which sets out the principles for the recognition, measurement, presentation and disclosure of leases for both parties to a contract (i.e., lessees and lessors). The new standard requires lessees to apply a dual approach, classifying leases as either finance or operating leases based on the principle of whether or not the lease is effectively a financed purchase by the lessee. This classification will determine whether lease expense is recognized based on an effective interest method or on a straight-line basis over the term of the lease, respectively. A lessee is also required to record a right-of-use asset and a lease liability for all leases with a term of greater than 12 months regardless of their classification. Leases with a term of 12 months or less will be accounted for similar to existing guidance for operating leases today. The guidance is effective for public entities for annual reporting periods

beginning after December 15, 2018 and for interim periods within those fiscal years, and early adoption is permitted. The Company is currently evaluating the impact that the adoption of ASU 2016-02 will have on its consolidated financial statements.

In August 2016, the FASB issued ASU No. 2016-15, *Statement of Cash Flows: Classification of Certain Cash Receipts and Cash Payments* ("ASU 2016-15"), to address diversity in practice in how certain cash receipts and cash payments are presented and classified in the statement of cash flows. The standard is effective for annual periods beginning after December 15, 2017, including interim periods within those fiscal years. The Company is currently evaluating the impact that the adoption of ASU 2016-15 will have on its consolidated financial statements.

In November 2016, the FASB issued ASU No. 2016-18, *Statement of Cash Flows (Topic 230)* ("ASU 2016-18"), which requires that amounts generally described as restricted cash and restricted cash equivalents should be included with cash and cash equivalents when reconciling the beginning-of-period and end-of-period total amounts shown on the statement of cash flows. ASU 2016-18 is effective for fiscal years beginning after December 15, 2017 and interim periods within those fiscal years and should be applied using a retrospective transition method to each period presented. Early adoption is permitted. The Company is currently evaluating the impact of ASU 2016-18 on its consolidated financial statements.

In May 2017, the FASB issued ASU No. 2017-09, *Compensation—Stock Compensation (Topic 718): Scope of Modification Accounting* ("ASU 2017-09"), which clarifies when to account for a change to the terms or conditions of a share-based payment award as a modification. Under the new guidance, modification accounting is required only if the fair value, the vesting conditions, or the classification of the award (as equity or liability) changes as a result of the change in terms or conditions. The standard is effective for annual periods beginning after December 15, 2017, including interim periods within those fiscal years. Early adoption is permitted. The Company is currently evaluating the impact that the adoption of ASU 2017-09 will have on its consolidated financial statements. The Company does not expect that the adoption of ASU 2017-09 will have a material impact on its financial position, results of operations or cash flows

In July 2017, the FASB issued ASU No. 2017-11, *Earnings Per Share (Topic 260), Distinguishing Liabilities from Equity (Topic 480), Derivatives and Hedging (Topic 815) I. Accounting for Certain Financial Instruments with Down Round Features II. Replacement of the Indefinite Deferral for Mandatorily Redeemable Financial Instruments of Certain Nonpublic Entities and Certain Mandatorily Redeemable Noncontrolling Interests with a Scope Exception* ("ASU 2017-11"). Part I applies to entities that issue financial instruments such as warrants, convertible debt or convertible preferred stock that contain down-round features. Part II replaces the indefinite deferral for certain mandatorily redeemable noncontrolling interests and mandatorily redeemable financial instruments of nonpublic entities contained within ASC Topic 480 with a scope exception and does not impact the accounting for these mandatorily redeemable instruments. ASU 2017-11 is required to be adopted for annual periods beginning after December 15, 2018, including interim periods within those fiscal years. The Company is currently evaluating the impact that the adoption of ASU 2017-11 will have on its consolidated financial statements.

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3. Marketable Securities and Fair Value Measurements

Marketable securities by security type consisted of the following (in thousands):

	December 31, 2016			
	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Fair Value
U.S. Treasury notes (due within one year)	$ 17,000	$ 2	$ (6)	$16,996
U.S. Treasury notes (due after one year through two years)	2,510	—	(11)	2,499
U.S. government agency bonds (due after one year through two years)	7,701	—	(9)	7,692
	$ 27,211	$ 2	$ (26)	$27,187

	September 30, 2017			
	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Fair Value
		(unaudited)		
U.S. Treasury notes (due within one year)	$ 10,014	$ —	$ (14)	$10,000
U.S. government agency bonds (due within one year)	7,700	—	(10)	7,690
	$ 17,714	$ —	$ (24)	$17,690

The Company did not have any marketable securities as of December 31, 2015.

The following tables present the Company's fair value hierarchy for its cash equivalents and marketable securities, which are measured at fair value on a recurring basis (in thousands):

	Fair Value Measurements at December 31, 2016 Using:			
	Level 1	Level 2	Level 3	Total
Cash equivalents:				
Money market funds	$ —	$ 32,980	$ —	$ 32,980
Marketable securities:				
U.S. Treasury notes	19,495	—	—	19,495
U.S. government agency bonds	—	7,692	—	7,692
	$ 19,495	$ 40,672	$ —	$ 60,167

	Fair Value Measurements at September 30, 2017 Using:			
	Level 1	Level 2	Level 3	Total
		(unaudited)		
Cash equivalents:				
Money market funds	$ —	$ 25,271	$ —	$ 25,271
Marketable securities:				
U.S. Treasury notes	10,000	—	—	10,000
U.S. government agency bonds	—	7,690	—	7,690
	$ 10,000	$ 32,961	$ —	$ 42,961

U.S. Treasury notes were valued based on Level 1 inputs. Money market funds and U.S. government agency bonds were valued by the Company using quoted prices in active markets for similar securities, which represent a

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Level 2 measurement within the fair value hierarchy. The Company did not have any cash equivalents or marketable securities as of December 31, 2015.

During the year ended December 31, 2016 and the nine months ended September 30, 2016 and 2017 (unaudited), there were no transfers between Level 1, Level 2 and Level 3.

4. Property and Equipment, Net

Property and equipment, net consisted of the following (in thousands):

	December 31,		September 30,
	2015	2016	2017 (unaudited)
Laboratory equipment	$1,984	$ 4,628	$ 5,167
Computer equipment and software	115	201	218
Furniture and fixtures	159	317	317
Leasehold improvements	337	426	426
	2,595	5,572	6,128
Less: Accumulated depreciation and amortization	(179)	(1,009)	(1,873)
	$2,416	$ 4,563	$ 4,255

Depreciation and amortization expense was $0.2 million and $0.8 million for the years ended December 31, 2015 and 2016, respectively, and $0.6 million and $0.9 million for the nine months ended September 30, 2016 and 2017 (unaudited), respectively.

5. Accrued Expenses and Other Current Liabilities

Accrued expenses and other current liabilities consisted of the following (in thousands):

	December 31,		September 30,
	2015	2016	2017 (unaudited)
Accrued employee compensation and benefits	$556	$1,202	$ 1,373
Accrued external research and development expenses	—	—	385
Other	50	118	332
	$606	$1,320	$ 2,090

6. Collaboration Agreement

In June 2015, the Company entered into a collaboration agreement with Seattle Genetics whereby the parties agreed to jointly develop two product candidates incorporating the Company's ACTR platform and Seattle Genetics' antibodies. The Company received an upfront payment of $25.0 million and an equity investment of $5.0 million, with terms consistent with those of other investors that purchased Series B redeemable convertible preferred stock in June 2015 (see Note 8). These shares of Series B redeemable convertible preferred stock were issued at a price of $7.67 per share, which was determined to be fair value based on the same price paid by other new and existing investors that purchased $60.0 million of the $65.0 million of Series B redeemable convertible preferred stock sold in the financing. The equity investment of $5.0 million was considered to be distinct from the collaboration agreement. The agreement included an option, held by Seattle Genetics, to expand the collaboration to include a third product candidate upon payment of an additional fee. This option expired unexercised in June 2017.

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Under the agreement, the Company will conduct preclinical research and clinical development activities related to the two specified product candidates through Phase I clinical development, and Seattle Genetics will provide all of the funding for those activities. Seattle Genetics will continue development activities of the two specified product candidates in collaboration with the Company unless it exercises one of its two options to opt-out from further development and commercialization activities for each of the two product candidates during specified periods subsequent to Phase I clinical development. In addition, the Company has an option to opt-out from further development and commercialization activities for each of the two product candidates, exercisable during a specified period subsequent to Phase II clinical development. If neither party exercises its options to opt-out from further development and commercialization activities for each product candidate, the parties will work together to co-develop and fund each product candidate after Phase I clinical development and Seattle Genetics will pay the Company specified collaboration and milestone payments upon the occurrence of specified events related to each product candidate. As of September 30, 2017 (unaudited), the Company was eligible to receive future collaboration and milestone payments under the collaboration agreement of up to an aggregate of $400.0 million across the two active product candidates, consisting of $100.0 million of aggregate collaboration payments, $100.0 million of aggregate regulatory milestone payments and $200.0 million of aggregate commercial milestone payments. The individual collaboration payments are payable upon the occurrence of specified clinical development events and range up to $30.0 million per product candidate. The individual regulatory milestone payments are payable upon the first regulatory approval of each product in the United States and the first regulatory approval of each product in specified territories outside the United States and range up to $35.0 million per product. The individual commercial milestone payments are payable upon the achievement of specified aggregate annual net sales for each product and range up to $60.0 million per product.

In the event that a party exercises its option to opt-out from further development and commercialization of a product candidate, the parties will negotiate in good faith the payment obligations of the continuing party to the opt-out party for that product candidate. Unless either party exercises its right to opt-out from further development and commercialization activities, the Company and Seattle Genetics will co-commercialize and share profits and losses equally on any co-developed products in the United States. Seattle Genetics will retain exclusive commercial rights outside of the United States and is obligated to pay the Company tiered royalties ranging in the high single-digit to mid-teens percentages based on net sales outside of the United States. The royalties are payable on a product-by-product basis and may be reduced in specified circumstances. Seattle Genetics will purchase ACTR T cells from the Company on a cost-plus basis for its commercial supply outside of the United States.

Unless earlier terminated, the collaboration agreement will expire on a product-by-product basis in the United States on the date on which neither party is researching, developing or commercializing such product. Outside of the United States, the collaboration agreement will expire on a product-by-product and country-by-country basis at the end of the applicable royalty term for such product in such country. The royalty term will be in effect beginning at the first commercial sale of a product and ending upon the later to incur of (i) expiration of the last valid claim within any patent right that the Company or Seattle Genetics has that would be infringed by the manufacture, use, sale, offer for sale, or importation of such product in such country, (ii) the end of any regulatory exclusivity periods that apply to the manufacture, use, sale, offer for sale, or importation of such product in such country, or (iii) ten years from the first commercial sale of such product in such country.

The Company analyzed this multiple-element arrangement in accordance with ASC 605 and evaluated whether the performance obligations under this agreement, including the license, research and development services, steering committee participation, and manufacturing services should be accounted for as a single unit or multiple units of accounting. Because of the risk associated with obtaining approval for commercial sale in the Seattle Genetics territories, manufacturing services associated with commercial supply were considered a contingent deliverable and will be accounted for if and when performed. At the inception of the arrangement, the

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Company determined that the license, research and development services, and steering committee services did not have standalone value to Seattle Genetics and, therefore, represented a single unit of accounting. As of the inception of the arrangement, the Company could not reasonably estimate the level of effort required to fulfill its obligations and, therefore, concluded to recognize the upfront payment and other payments associated with these deliverables as revenue on a straight-line basis over the estimated period of performance, which is the term of its preclinical research and clinical development activities related to the two specified product candidates through Phase I clinical development. The Company is recognizing the $25.0 million upfront payment as revenue on a straight-line basis over the estimated period of performance. As payments from Seattle Genetics are earned related to the Company's preclinical research and clinical development activities through Phase I clinical development, the Company recognizes as revenue the portion of the payments equal to the percentage of the elapsed research and development term to the total estimated research and development term, with the remaining portion of consideration received being recognized over the remaining estimated period of performance on a straight-line basis. The Company's initial estimate of the period of performance was approximately 58 months, which as of September 30, 2017 had not changed.

Any future milestone payments will be recognized, along with the other arrangement consideration, over the remaining estimated period of performance, if any, beginning at the time a milestone payment is earned, with a cumulative catch up being recognized for the elapsed portion of the estimated research term.

At the inception of the arrangement, the Company evaluated the separate options held by Seattle Genetics (i) to expand the collaboration to include a third product candidate upon payment of an additional fee and (ii) to continue development activities beyond Phase I clinical development activities and determined that each option was substantive. Each option represents a separate buying decision by Seattle Genetics, is not essential to the functionality of the current deliverables, and was not offered at a substantially discounted price. As each option was deemed to be substantive, the item underlying the option was not considered to be a deliverable at the inception of the arrangement and the incremental fees associated with each option were not included in the initial arrangement consideration. These options will be accounted for as separate units of accounting when, and if, such options are exercised by Seattle Genetics.

Under the collaboration agreement, the Company recognized revenue of $3.0 million and $6.4 million for the years ended December 31, 2015 and 2016, respectively, and of $4.6 million and $6.2 million for the nine months ended September 30, 2016 and 2017 (unaudited), respectively. As of December 31, 2016 and September 30, 2017 (unaudited), deferred revenue of $19.5 million and $16.9 million, respectively, was recorded related to this agreement.

7. Loan and Security Agreement

In January 2017, the Company entered into a loan and security agreement with a lender, which provides for term loan borrowings of up to $15.0 million through January 19, 2019. Borrowings under the loan and security agreement bear interest at a variable annual rate equal to the greater of (i) the prime rate plus 0.25% or (ii) 3.75%, and are payable over an interest-only period until January 19, 2019, followed by a 24-month period of equal monthly payments of principal and interest. All amounts outstanding as of the maturity date of January 19, 2021 become immediately due and payable.

In connection with the loan and security agreement, the Company agreed to enter into warrant agreements with the lender pursuant to which warrants will be issued to purchase a number of shares of the Company's capital stock equal to 1% of the amount of each term loan borrowing under the loan and security agreement, divided by the applicable exercise price.

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No amounts have been borrowed as term loans under the loan and security agreement as of September 30, 2017 (unaudited).

Borrowings under the loan and security agreement are collateralized by substantially all of the Company's assets, except for its intellectual property. Under the loan and security agreement, the Company has agreed to affirmative and negative covenants to which it will remain subject until maturity. These covenants include limitations on the Company's ability to incur additional indebtedness and engage in certain fundamental business transactions, such as mergers or acquisitions of other businesses. There are no financial covenants associated with the loan and security agreement. Events of default under the loan and security agreement include failure to make payments when due, insolvency events, failure to comply with covenants and material adverse effects with respect to the Company.

8. Redeemable Convertible Preferred Stock

The Company has issued Series A redeemable convertible preferred stock (the "Series A preferred stock") and Series B redeemable convertible preferred stock (the "Series B preferred stock"). The Series A preferred stock and the Series B preferred stock are collectively referred to as the "Preferred Stock".

In October 2014, the Company issued and sold 6,297,276 shares of Series A preferred stock, consisting of (i) 6,000,000 shares sold at a price of $1.00 per share for cash proceeds of $5.9 million, net of issuance costs of $0.1 million, and (ii) 297,276 shares issued upon the conversion of $0.3 million of principal and accrued interest on a convertible promissory note. In connection with this issuance and sale of Series A preferred stock, the purchasers of Series A preferred stock also agreed to purchase an aggregate of 6,000,000 shares of Series A preferred stock at a price of $1.00 per share upon the Company achieving specified development milestones. In 2015, the milestones were met and, in April 2015, the Company issued and sold 6,000,000 shares of Series A preferred stock at a price of $1.00 per share to these existing investors for proceeds of $6.0 million, net of issuance costs of less than $0.1 million. The Company determined that the future tranche obligation of the Series A preferred stock purchase agreement did not meet the definition of a freestanding financial instrument because, while separately exercisable, it was not legally detachable. Further, the Company determined that the embedded future tranche obligation did not require bifurcation for accounting purposes as it was clearly and closely related to the economic characteristics and risks of the initial preferred shares and would not meet the definition of a derivative on a standalone basis.

In June 2015, the Company issued and sold 8,474,574 shares of Series B preferred stock at a price of $7.67 per share for proceeds of $64.8 million, net of issuance costs of $0.2 million. In connection with the issuance and sale of Series B preferred stock, the Company amended its certificate of incorporation and the Series A preferred stockholders' rights to receive cumulative dividends was eliminated. The carrying value of the Series A was reduced by the accumulated dividend of $0.1 million, with a corresponding decrease to accumulated deficit.

Upon issuance of each class of Preferred Stock, the Company assessed the embedded conversion and liquidation features of the securities and determined that such features did not require the Company to separately account for these features. The Company also concluded that no beneficial conversion feature existed upon the issuance date of each class of Preferred Stock or as of December 31, 2015 or 2016 or September 30, 2017 (unaudited).

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As of each balance sheet date, the Preferred Stock consisted of the following (in thousands, except share amounts):

	December 31, 2015				
	Preferred Stock Authorized	Preferred Stock Issued and Outstanding	Carrying Value	Liquidation Preference	Common Stock Issuable Upon Conversion
Series A preferred stock	12,297,276	12,297,276	$12,233	$ 12,297	12,297,276
Series B preferred stock	8,474,574	8,474,574	64,789	65,000	8,474,574
	20,771,850	20,771,850	$77,022	$ 77,297	20,771,850

	December 31, 2016				
	Preferred Stock Authorized	Preferred Stock Issued and Outstanding	Carrying Value	Liquidation Preference	Common Stock Issuable Upon Conversion
Series A preferred stock	12,297,276	12,297,276	$12,250	$ 12,297	12,297,276
Series B preferred stock	8,474,574	8,474,574	64,836	65,000	8,474,574
	20,771,850	20,771,850	$77,086	$ 77,297	20,771,850

	September 30, 2017 (unaudited)				
	Preferred Stock Authorized	Preferred Stock Issued and Outstanding	Carrying Value	Liquidation Preference	Common Stock Issuable Upon Conversion
Series A preferred stock	12,297,276	12,297,276	$12,263	$ 12,297	12,297,276
Series B preferred stock	8,494,131	8,474,574	64,872	65,000	8,474,574
	20,791,407	20,771,850	$77,135	$ 77,297	20,771,850

The holders of the Preferred Stock have the following rights and preferences:

Voting

The holders of Preferred Stock are entitled to vote, together with the holders of common stock, on matters submitted to stockholders for a vote. The holders of Preferred Stock are entitled to the number of votes equal to the number of common shares into which each such share of Preferred Stock could convert. In addition, the holders of Series A preferred stock, voting exclusively and as a separate class, are entitled to elect two directors of the Company. The holders of Series B preferred stock, voting exclusively and as a separate class, are entitled to elect one director of the Company.

Conversion

Each share of Preferred Stock is convertible at the option of the holder at any time after the date of issuance. Each share of Preferred Stock will be automatically converted into shares of common stock at the applicable conversion ratio then in effect upon the closing of a firm commitment public offering with at least $50.0 million of gross proceeds to the Company, and at a price of at least $11.51 per share, subject to appropriate adjustment in the event of any stock split, stock dividend, combination or other similar recapitalization. Shares of Series A preferred stock will be automatically converted into shares of common stock at the applicable conversion ratio

then in effect upon written consent of the holders of at least 65% of the then-outstanding shares of Series A preferred stock. Shares of Series B preferred stock will be automatically converted into shares of common stock at the applicable conversion ratio then in effect upon written consent of the holders of at least a majority of the then-outstanding shares of Series B preferred stock.

The conversion ratio of each series of Preferred Stock is determined by dividing the Original Issue Price of each series by the Conversion Price of each series. The Original Issue Price is $1.00 per share for Series A preferred stock and $7.67 per share for Series B preferred stock. The Conversion Price at issuance was $1.00 per share for Series A preferred stock and $7.67 per share for Series B preferred stock, subject to appropriate adjustment in the event of any stock split, stock dividend, combination or other similar recapitalization and other adjustments as set forth in the Company's certificate of incorporation, as amended and restated.

Dividends

The holders of Preferred Stock are entitled to receive noncumulative dividends if and when declared by the Company's board of directors. The Company may not declare, pay or set aside any dividends on shares of any other series of capital stock of the Company, other than dividends on common stock payable in common stock, unless the holders of the Series A and Series B preferred stock first receive, or simultaneously receive, a dividend on each outstanding share of Series A and Series B preferred stock in an amount at least equal to the greater of (i) $0.08 per share in the case of Series A preferred stock and $0.61 per share in the case of Series B preferred stock, each subject to appropriate adjustment in the event of any stock split, stock dividend, combination or other similar recapitalization with respect to such shares, and (ii) (A) in the case of a dividend on common stock or any class or series of stock that is convertible into common stock, that dividend per share of Preferred Stock as would equal the product of (1) the dividend payable on each share of such class or series determined, if applicable, as if all shares of such class or series had been converted into common stock and (2) the number of shares of common stock issuable upon conversion of each share of Preferred Stock, or (B) in the case of a dividend on any class or series that is not convertible into common stock, at a rate per share of Preferred Stock determined by (1) dividing the amount of the dividend payable on each share of such class or series of capital stock by the Original Issue Price of such class or series of capital stock (subject to appropriate adjustment in the event of any stock dividend, stock split, combination of or other similar recapitalization affecting such shares) and (2) multiplying such fraction by an amount equal to the Original Issue Price of each series of Preferred Stock. If the Company declares, pays or sets aside, on the same date, a dividend on shares of more than one class or series of capital stock of the Company, the dividend payable to the holders of the Preferred Stock shall be calculated based upon the dividend on the class or series of capital stock that would result in the highest Preferred Stock dividend. Stockholders are not entitled to any accruing dividends. No dividends have been declared or paid during the years ended December 31, 2015 or 2016 or the nine months ended September 30, 2016 or 2017 (unaudited).

Liquidation

In the event of any voluntary or involuntary liquidation, dissolution or winding-up of the Company or Liquidating Event (as described below), the holders of shares of Preferred Stock will receive, in preference to the common stockholders, an amount equal to the greater of (i) the Original Issue Price per share of the respective share of Preferred Stock, plus all dividends declared but unpaid on such shares, or (ii) the amount the holders would receive if the Preferred Stock were converted into common stock prior to such liquidation event. In the event that the assets available for distribution to the Company's stockholders are not sufficient to permit payment to the holders of Preferred Stock in the full amount to which they are entitled, the assets available for distribution will be distributed on a pro rata basis among the holders of the Series A and Series B preferred stock. After the payment of all preferential amounts to the holders of the Preferred Stock then, to the extent available, the remaining assets available for distribution shall be distributed among the holders of the common stock ratably based on the number of shares of common stock held each holder.

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Unless the holders of at least two-thirds of the then-outstanding shares of Preferred Stock, voting together as a single class on an as-converted basis, elect otherwise, a Liquidating Event shall include a merger or consolidation (other than one in which stockholders of the Company own a majority by voting power of the outstanding shares of the surviving or acquiring corporation) or a sale, lease, transfer, exclusive license or other disposition of all or substantially all of the assets of the Company.

Redemption

At any time on or after June 10, 2020, shares of each of the Series A and Series B preferred stock are subject to mandatory redemption by the Company in three equal annual installments beginning 60 days after receipt of a notice of redemption from the holders of at least two-thirds of the combined voting power of the holders of outstanding shares of Series A and Series B preferred stock, voting together as a single class, in an amount equal to the Original Issue Price per share of each series of Preferred Stock plus any dividends declared but unpaid thereon.

9. Common Stock

Each share of common stock entitles the holder to one vote on all matters submitted to a vote of the Company's stockholders. Common stockholders are not entitled to receive dividends, unless declared by the board of directors.

10. Stock-Based Compensation

2015 Stock Incentive Plan

The Company's 2015 Stock Incentive Plan (the "2015 Plan") provides for the Company to grant incentive stock options or nonqualified stock options, restricted stock, restricted stock units and other equity awards to employees, directors and consultants of the Company. The 2015 Plan is administered by the board of directors or, at the discretion of the board of directors, by a committee of the board of directors. The board of directors may also delegate to one or more officers of the Company the power to grant awards to employees and certain officers of the Company. The exercise prices, vesting and other restrictions are determined at the discretion of the board of directors, or its committee if so delegated.

Stock options granted under the 2015 Plan with service-based vesting conditions generally vest over four years and expire after ten years.

The total number of shares of common stock that may be issued under the 2015 Plan was 6,508,000 shares as of December 31, 2016 and September 30, 2017 (unaudited), of which 2,512,736 shares and 2,280,441 shares remained available for future issuance as of December 31, 2016 and September 30, 2017 (unaudited), respectively. Shares that are expired, terminated, surrendered or canceled without having been fully exercised will be available for future awards under the 2015 Plan.

The exercise price for stock options granted is not less than the fair value of common shares as determined by the board of directors as of the date of grant. The Company's board of directors values the Company's common stock, taking into consideration its most recently available valuation of common stock performed by third parties as well as additional factors which may have changed since the date of the most recent contemporaneous valuation through the date of grant.

Stock Option Valuation

The fair value of stock option grants is estimated using the Black-Scholes option-pricing model. The Company historically has been a private company and lacks company-specific historical and implied volatility

information. Therefore, it estimates its expected stock volatility based on the historical volatility of a publicly traded set of peer companies and expects to continue to do so until such time as it has adequate historical data regarding the volatility of its own traded stock price. For options with service-based vesting conditions, the expected term of the Company's stock options has been determined utilizing the "simplified" method for awards that qualify as "plain-vanilla" options. The expected term of stock options granted to non-employees is equal to the contractual term of the option award. The risk-free interest rate is determined by reference to the U.S. Treasury yield curve in effect at the time of grant of the award for time periods approximately equal to the expected term of the award. Expected dividend yield is based on the fact that the Company has never paid cash dividends and does not expect to pay any cash dividends in the foreseeable future.

The following table presents, on a weighted average basis, the assumptions used in the Black-Scholes option-pricing model to determine the fair value of stock options granted to employees and directors:

	Year Ended December 31,		Nine Months Ended September 30,	
	2015	2016	2016	2017
			(unaudited)	
Risk-free interest rate	1.57%	1.30%	1.35%	1.81%
Expected volatility	61.72%	72.66%	73.53%	67.66%
Expected dividend yield	—	—	—	—
Expected life (in years)	6.21	6.59	6.82	6.03

The following table summarizes the Company's option activity since December 31, 2015:

	Number of Shares	Weighted Average Exercise Price	Weighted Average Contractual Term (in years)	Aggregate Intrinsic Value (in thousands)
Outstanding as of December 31, 2015	3,387,364	$ 1.34		
Granted	778,000	3.18		
Exercised	—	—		—
Forfeited	(170,100)	2.57		
Outstanding as of December 31, 2016	3,995,264	$ 1.65	8.59	$ 5,492
Granted	375,635	4.17		
Exercised	(4,580)	3.33		—
Forfeited	(143,340)	3.26		
Outstanding as of September 30, 2017 (unaudited)	4,222,979	$ 1.82	7.99	$ 18,595
Vested and expected to vest as of December 31, 2016	3,995,264	$ 1.65	8.59	$ 5,492
Vested and expected to vest as of September 30, 2017 (unaudited)	4,222,979	$ 1.82	7.99	$ 18,595
Options exercisable as of December 31, 2016	1,435,238	$ 0.97	8.32	$ 2,820
Options exercisable as of September 30, 2017 (unaudited)	2,241,516	$ 1.27	7.70	$ 11,103

The aggregate intrinsic value of stock options is calculated as the difference between the exercise price of the stock options and the fair value of the Company's common stock for those stock options that had strike prices lower than the fair value of the Company's common stock.

The weighted-average grant date fair value of awards granted during the years ended December 31, 2015 and 2016 was $0.86 per share and $2.10 per share, respectively. The weighted-average grant date fair value of

awards granted during the nine months ended September 30, 2016 and 2017 (unaudited) was $2.24 per share and $2.56 per share, respectively.

The total fair value of stock options vested during the years ended December 31, 2015 and 2016 was less than $0.1 million and $0.9 million, respectively. The total fair value of stock options vested during the nine months ended September 30, 2016 and 2017 (unaudited) was $0.4 million and $1.0 million, respectively.

As of December 31, 2016 and September 30, 2017 (unaudited), there were outstanding unvested service-based stock options held by non-employees for the purchase of 89,179 shares and 66,680 shares, respectively, of common stock.

The Company recorded stock-based compensation expense in the following expense categories of its consolidated statements of operations and comprehensive loss (in thousands):

	Year Ended December 31,		Nine Months Ended September 30,	
	2015	2016	2016	2017
			(unaudited)	
Research and development expenses	$ 145	$ 830	$ 598	$ 767
General and administrative expenses	103	186	150	114
	$ 248	$ 1,016	$ 748	$ 881

As of December 31, 2016, total unrecognized compensation cost related to the unvested stock-based awards was $3.1 million, which was expected to be recognized over a weighted average period of 2.6 years. As of September 30, 2017 (unaudited), total unrecognized compensation cost related to the unvested stock-based awards was $3.0 million, which was expected to be recognized over a weighted average period of 2.2 years.

11. Income Taxes

During the years ended December 31, 2015 and 2016 and the nine months ended September 30, 2016 and 2017 (unaudited), the Company recorded no income tax benefits for the net operating losses incurred in each year due to its uncertainty of realizing a benefit from those items.

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

	Year Ended December 31,	
	2015	2016
Federal statutory income tax rate	(34.0)%	(34.0)%
State taxes, net of federal benefit	(5.1)	(5.2)
Federal and state research and development tax credits	(4.2)	(6.0)
Nondeductible items	0.6	1.3
Increase in deferred tax asset valuation allowance	42.7	43.9
Effective income tax rate	0.0%	0.0%

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Net deferred tax assets as of December 31, 2015 and 2016 consisted of the following (in thousands):

	December 31, 2015	December 31, 2016
Deferred tax assets:		
Net operating loss carryforwards	$ 2,080	$ 1,741
Research and development tax credit carryforwards	300	1,398
Deferred revenue	—	6,793
Accrued expenses	218	472
Capitalized start-up costs	171	158
Capitalized research and development expense	139	122
Other	346	524
Total deferred tax assets	3,254	11,208
Valuation allowance	(3,254)	(11,208)
Net deferred tax assets	$ —	$ —

As of December 31, 2016, the Company had U.S. federal and state net operating loss carryforwards of $4.5 million and $4.2 million, respectively, which may be available to offset future income tax liabilities and begin to expire in 2034. As of December 31, 2016, the Company also had U.S. federal and state research and development tax credit carryforwards of $1.0 million and $0.5 million, respectively, which may be available to offset future income tax liabilities and begin to expire in 2034 and 2029, respectively. During the nine months ended September 30, 2017 (unaudited), gross deferred tax assets increased by approximately $7.4 million due to the operating loss incurred by the Company during that period.

Utilization of the U.S. net operating loss carryforwards and research and development tax credit carryforwards may be subject to a substantial annual limitation under Section 382 of the Internal Revenue Code of 1986, and corresponding provisions of state law, due to ownership changes that have occurred previously or that could occur in the future. These ownership changes may limit the amount of carryforwards that can be utilized annually to offset future taxable income. In general, an ownership change, as defined by Section 382, results from transactions increasing the ownership of certain stockholders or public groups in the stock of a corporation by more than 50% over a three-year period. The Company has not conducted a study to assess whether a change of control has occurred or whether there have been multiple changes of control since inception due to the significant complexity and cost associated with such a study. If the Company has experienced a change of control, as defined by Section 382, at any time since inception, utilization of the net operating loss carryforwards or research and development tax credit carryforwards would be subject to an annual limitation under Section 382, which is determined by first multiplying the value of the Company's stock at the time of the ownership change by the applicable long-term tax-exempt rate, and then could be subject to additional adjustments, as required. Any limitation may result in expiration of a portion of the net operating loss carryforwards or research and development tax credit carryforwards before utilization. Further, until a study is completed by the Company and any limitation is known, no amounts are being presented as an uncertain tax position.

The Company has evaluated the positive and negative evidence bearing upon its ability to realize the deferred tax assets. Management has considered the Company's history of cumulative net losses incurred since inception and its lack of commercialization of any products or generation of any revenue from product sales since inception and has concluded that it is more likely than not that the Company will not realize the benefits of the deferred tax assets. Accordingly, a full valuation allowance has been established against the deferred tax

assets as of December 31, 2015 and 2016 and September 30, 2017 (unaudited). Management reevaluates the positive and negative evidence at each reporting period.

Changes in the valuation allowance for deferred tax assets during the years ended December 31, 2015 and 2016 related primarily to the increase in net operating loss carryforwards and research and development tax credit carryforwards in 2015, and to the increase in deferred revenue and research and development tax credit carryforwards in 2016, and were as follows (in thousands):

	Year Ended December 31,	
	2015	2016
Valuation allowance as of beginning of year	$ 443	$ 3,254
Decreases recorded as benefit to income tax provision	—	—
Increases recorded to income tax provision	2,811	7,954
Valuation allowance as of end of year	$ 3,254	$ 11,208

The Company has not recorded any amounts for unrecognized tax benefits as of December 31, 2015 or 2016 or September 30, 2017 (unaudited). The Company's policy is to record interest and penalties related to income taxes as part of its income tax provision. As of December 31, 2015 and 2016 and September 30, 2017 (unaudited), the Company had no accrued interest or penalties related to uncertain tax positions and no amounts had been recognized in the Company's statement of operations and comprehensive loss. The Company files income tax returns in the U.S. and Massachusetts. The statute of limitations for assessment by the Internal Revenue Service and Massachusetts tax authorities remains open for all years since 2014. To the extent the Company has tax attribute carryforwards, the tax years in which the attribute was generated may still be adjusted upon examination by the Internal Revenue Service or state authorities to the extent utilized in a future period. No federal or state tax audits are currently in process.

12. Commitments and Contingencies

Operating Leases

The Company leases its facility under a non-cancelable operating lease that expires in April 2023. Under the terms of the lease, the Company secured a $1.3 million letter of credit as security for its leased facility. The underlying cash securing this letter of credit has been classified as non-current restricted cash in the accompanying consolidated balance sheets. The lease includes annual rent escalations, which are accrued, such that rent expense is recognized on a straight-line basis over the terms of occupancy.

Future minimum lease payments under the operating lease as of December 31, 2016 are as follows (in thousands):

Year Ending December 31,	
2017	$ 1,774
2018	1,826
2019	1,878
2020	1,933
2021	1,989
Thereafter	2,735
	$12,135

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Rent expense for the years ended December 31, 2015 and 2016 was $0.7 million and $1.8 million, respectively. Rent expense for the nine months ended September 30, 2016 and 2017 (unaudited) was $1.3 million and $1.3 million, respectively.

In December 2015, the Company entered into a 12-month sublease agreement with a tenant for approximately 11,500 square feet of general office and laboratory space at its headquarters. In June 2016, the tenant terminated the sublease and paid the Company $0.5 million, representing the remaining payments due under the sublease. The Company recognized $0.7 million received under the sublease as other income in the consolidated statements of operations and comprehensive loss for the year ended December 31, 2016 and the nine months ended September 30, 2016 (unaudited).

In January 2017, the Company entered into a new 12-month sublease agreement with a tenant for up to 2,500 square feet of general office and laboratory space at its headquarters. The Company recognized $0.2 million received under the sublease as other income in the consolidated statement of operations and comprehensive loss for the nine months ended September 30, 2017 (unaudited).

License Agreement

In 2014, the Company entered into a license agreement with the National University of Singapore and St. Jude Children's Research Hospital, Inc., collectively referred to as the Licensors, under which it was granted an exclusive, sublicensable, non-transferable license for certain patent rights relating to a chimeric receptor that triggers antibody-dependent cell cytotoxicity in T lymphocytes. The Company is licensing and further developing these patent rights for commercial applications. Per the terms of the license agreement, in 2014, the Company paid a non-refundable license fee upon execution of the agreement and another payment upon the closing of the Series A preferred stock financing, for an aggregate of $0.1 million, which were recognized as research and development expense in the consolidated statement of operations and comprehensive loss.

The Company is obligated to pay license maintenance fees on each anniversary of the effective date of the agreement that escalate from less than $0.1 million for each of the first seven years to $0.1 million on the eighth anniversary and each year thereafter. The Company is also obligated to make aggregate milestone payments of up to 5.5 million Singapore dollars (equivalent to approximately $4.0 million as of September 30, 2017 (unaudited)) upon the achievement of specified clinical and regulatory milestones and to pay tiered royalties ranging in the low single-digit percentages on annual net sales of licensed products sold by the Company or its sublicensees. The royalties are payable on a product-by-product and country-by-country basis, and may be reduced in specified circumstances. Additionally, under certain circumstances, the Company is obligated to pay the Licensors a percentage of amounts received from sublicensees.

The license agreement will expire on a country-by-country basis until the last to expire of the patents and patent applications covering such licensed product or service. The Licensors may terminate the license agreement within 60 days after written notice in the event of a breach of contract. The Licensors may also terminate the agreement upon written notice in the event of our bankruptcy, liquidation, or insolvency. In addition, the Company has the right to terminate this agreement in its entirety at will upon 90 days' advance written notice to the Licensors. However, if the Company has commenced the commercialization of licensed products, the Company can only terminate at will if it ceases all development and commercialization of licensed products.

Manufacturing Commitment

In May 2016, the Company entered into an agreement with a contract manufacturing organization to provide drug product materials. As of December 31, 2016 and September 30, 2017 (unaudited), the Company had

committed to non-cancelable minimum purchase commitments totaling $0.5 million and $0.8 million, respectively, over the following 12 months.

Indemnification Agreements

In the ordinary course of business, the Company may provide indemnification of varying scope and terms to vendors, lessors, business partners and other parties with respect to certain matters including, but not limited to, losses arising out of breach of such agreements or from intellectual property infringement claims made by third parties. In addition, the Company has entered into indemnification agreements with members of its board of directors and certain of its executive officers that will require the Company, among other things, to indemnify them against certain liabilities that may arise by reason of their status or service as directors or officers. The maximum potential amount of future payments the Company could be required to make under these indemnification agreements is, in many cases, unlimited. To date, the Company has not incurred any material costs as a result of such indemnifications. The Company does not believe that the outcome of any claims under indemnification arrangements will have a material effect on its financial position, results of operations or cash flows, and it has not accrued any liabilities related to such obligations in its consolidated financial statements as of December 31, 2015 or 2016 or September 30, 2017 (unaudited).

Legal Proceedings

The Company is not currently party to any material legal proceedings. At each reporting date, the Company evaluates whether or not a potential loss amount or a potential range of loss is probable and reasonably estimable under the provisions of the authoritative guidance that addresses accounting for contingencies. The Company expenses as incurred the costs related to such legal proceedings.

13. Net Loss and Unaudited Pro Forma Net Loss per Share

Net Loss per Share

Basic and diluted net loss per share attributable to common stockholders was calculated as follows (in thousands, except share and per share amounts):

	Year Ended December 31,		Nine Months Ended September 30,	
	2015	2016	2016	2017
			(unaudited)	
Numerator:				
Net loss	$ (6,592)	$ (18,124)	$ (12,427)	$ (18,802)
Accretion of redeemable convertible preferred stock to redemption value	(43)	(64)	(49)	(49)
Net loss attributable to common stockholders	$ (6,635)	$ (18,188)	$ (12,476)	$ (18,851)
Denominator:				
Weighted average common shares outstanding, basic and diluted	16,000,000	16,000,000	16,000,000	16,001,036
Net loss per share attributable to common stockholders, basic and diluted	$ (0.41)	$ (1.14)	$ (0.78)	$ (1.18)

UNUM THERAPEUTICS INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

The Company's potential dilutive securities, which include redeemable convertible preferred stock and common stock options, have been excluded from the computation of diluted net loss per share as the effect would be to reduce the net loss per share. Therefore, the weighted average number of common shares outstanding used to calculate both basic and diluted net loss per share attributable to common stockholders is the same. The Company excluded the following potential common shares, presented based on amounts outstanding at each period end, from the computation of diluted net loss per share attributable to common stockholders for the periods indicated because including them would have had an anti-dilutive effect:

	Year Ended December 31,		Nine Months Ended September 30,	
	2015	2016	2016	2017
			(unaudited)	
Redeemable convertible preferred stock (as converted to common stock)	20,771,850	20,771,850	20,771,850	20,771,850
Stock options to purchase common stock	3,387,364	3,995,264	3,780,264	4,222,979
	24,159,214	24,767,114	24,552,114	24,994,829

Unaudited Pro Forma Net Loss per Share

The unaudited pro forma basic and diluted net loss per share attributable to common stockholders for the year ended December 31, 2016 and the nine months ended September 30, 2017 have been prepared to give effect to adjustments arising upon the completion of a qualified initial public offering. The unaudited pro forma net loss attributable to common stockholders used in the calculation of unaudited pro forma basic and diluted net loss per share attributable to common stockholders does not include the effects of the accretion of redeemable convertible preferred stock to redemption value because the calculation gives effect to the automatic conversion of all shares of redeemable convertible preferred stock outstanding as of September 30, 2017 into shares of common stock as if the proposed initial public offering had occurred on the later of January 1, 2016 or the issuance date of the redeemable convertible preferred stock.

The unaudited pro forma basic and diluted weighted average common shares outstanding used in the calculation of unaudited pro forma basic and diluted net loss per share attributable to common stockholders for the year ended December 31, 2016 and the nine months ended September 30, 2017 have been prepared to give effect, upon a qualified initial public offering, to the automatic conversion of all outstanding shares of redeemable convertible preferred stock into common stock as if the proposed initial public offering had occurred on the later of January 1, 2016 or the issuance date of the redeemable convertible preferred stock.

UNUM THERAPEUTICS INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

Unaudited pro forma basic and diluted net loss per share attributable to common stockholders was calculated as follows (in thousands, except share and per share amounts):

	Year Ended December 31, 2016	Nine Months Ended September 30, 2017 (unaudited)
Numerator:		
Net loss attributable to common stockholders	$ (18,188)	$ (18,851)
Accretion of redeemable convertible preferred stock to redemption value	64	49
Pro forma net loss attributable to common stockholders	$ (18,124)	$ (18,802)
Denominator:		
Weighted average common shares outstanding, basic and diluted	16,000,000	16,001,036
Pro forma adjustment to reflect automatic conversion of redeemable convertible preferred stock to common stock upon the completion of the proposed initial public offering	20,771,850	20,771,850
Pro forma weighted average common shares outstanding, basic and diluted	36,771,850	36,772,886
Pro forma net loss per share attributable to common stockholders, basic and diluted	$ (0.49)	$ (0.51)

14. Retirement Plan

The Company has a defined-contribution plan under Section 401(k) of the Internal Revenue Code (the "401(k) Plan"). The 401(k) Plan covers all employees who meet defined minimum age and service requirements, and allows participants to defer a portion of their annual compensation on a pre-tax basis. As currently established, the Company is not required to make and to date has not made any contributions to the 401(k) Plan. The Company did not make any matching contributions during the years ended December 31, 2015 and 2016 or during the nine months ended September 30, 2016 and 2017 (unaudited).

15. Subsequent Events

For its consolidated financial statements as of December 31, 2016 and for the year then ended, the Company evaluated subsequent events through November 3, 2017, the date on which those financial statements were issued.

Issuance of Stock Options

On October 27, 2017, the Company granted stock options for the purchase of 765,000 shares of common stock to employees as compensation for future service to the Company. The stock options have an exercise price of $6.22 per share and have vesting terms of four years.

16. Subsequent Events (Unaudited)

For its interim consolidated financial statements as of September 30, 2017 and for the nine months then ended, the Company evaluated subsequent events through February 13, 2018, the date on which those financial statements were issued.

UNUM THERAPEUTICS INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

Recently Enacted U.S. Tax Legislation

On December 22, 2017, the Tax Cuts and Jobs Act (the "TCJA") was signed into United States law. The TCJA includes a number of changes to existing tax law, including, among other things, a permanent reduction in the federal corporate income tax rate from a top marginal rate of 35% to a flat rate of 21%, effective as of January 1, 2018, as well as limitation of the deduction for net operating losses to 80% of current year taxable income and elimination of net operating loss carrybacks, in each case, for losses arising in taxable years beginning after December 31, 2017 (though any such net operating losses may be carried forward indefinitely). The Company is currently evaluating the effect of the tax rate reduction on its deferred tax position, but expects that the tax rate change will result in (i) a reduction in the gross amount of its deferred tax assets, without an impact on the net amount of its deferred tax assets, which are recorded with a full valuation allowance, and (ii) no income tax expense or benefit being recognized as of the enactment date of the TCJA.


UNUM
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PART II

Information Not Required in Prospectus

Item 13. Other Expenses of Issuance and Distribution.

The following table sets forth the fees and expenses, other than underwriting discounts and commissions, payable by us in connection with the registration of our common stock hereunder. All amounts are estimates except the SEC registration fee and FINRA filing fee.

	Amount
SEC registration fee	$ *
FINRA filing fee	*
Nasdaq Global Market listing fee	*
Printing expenses	*
Legal fees and expenses	*
Accountants' fees and expenses	*
Transfer agent and registrar fees and expenses	*
Miscellaneous	*
Total	$ *

* To be filed by amendment.

Item 14. Indemnification of Directors and Officers.

Section 145 of the Delaware General Corporation Law (DGCL) authorizes a corporation to indemnify its directors and officers against liabilities arising out of actions, suits and proceedings to which they are made or threatened to be made a party by reason of the fact that they have served or are currently serving as a director or officer to a corporation. The indemnity may cover expenses (including attorneys' fees) judgments, fines, and amounts paid in settlement actually and reasonably incurred by the director or officer in connection with any such action, suit or proceeding. Section 145 permits corporations to pay expenses (including attorneys' fees) incurred by directors and officers in advance of the final disposition of such action, suit or proceeding. In addition, Section 145 provides that a corporation has the power to purchase and maintain insurance on behalf of its directors and officers against any liability asserted against them and incurred by them in their capacity as a director or officer, or arising out of their status as such, whether or not the corporation would have the power to indemnify the director or officer against such liability under Section 145.

We have adopted provisions in our certificate of incorporation to be in effect upon the closing of this offering and bylaws to be in effect upon the effectiveness of the registration statement of which this prospectus is a part that limit or eliminate the personal liability of our directors to the fullest extent permitted by the DGCL, as it now exists or may in the future be amended. Consequently, a director will not be personally liable to us or our stockholders for monetary damages or breach of fiduciary duty as a director, except for liability for:

- any breach of the director's duty of loyalty to us or our stockholders;
- any act or omission not in good faith or that involves intentional misconduct or a knowing violation of law;
- any unlawful payments related to dividends or unlawful stock purchases, redemptions or other distributions; or
- any transaction from which the director derived an improper personal benefit.

These limitations of liability do not alter director liability under the federal securities laws and do not affect the availability of equitable remedies, such as an injunction or rescission.

In addition, our bylaws will provide that:

- we will indemnify our directors, officers and, in the discretion of our board of directors, certain employees to the fullest extent permitted by the DGCL, as it now exists or may in the future be amended; and
- we will advance reasonable expenses, including attorneys' fees, to our directors and, in the discretion of our board of directors, to our officers and certain employees, in connection with legal proceedings relating to their service for or on behalf of us, subject to limited exceptions.

We have entered into indemnification agreements with each of our directors and intend to enter into such agreements with certain of our executive officers. These agreements provide that we will indemnify each of our directors, certain of our executive officers and, at times, their affiliates to the fullest extent permitted by Delaware law. We will advance expenses, including attorneys' fees (but excluding judgments, fines and settlement amounts), to each indemnified director, executive officer or affiliate in connection with any proceeding in which indemnification is available and we will indemnify our directors and officers for any action or proceeding arising out of that person's services as a director or officer brought on behalf of us or in furtherance of our rights. Additionally, certain of our directors or officers may have certain rights to indemnification, advancement of expenses or insurance provided by their affiliates or other third parties, which indemnification relates to and might apply to the same proceedings arising out of such director's or officer's services as a director referenced herein. Nonetheless, we have agreed in the indemnification agreements that our obligations to those same directors or officers are primary and any obligation of such affiliates or other third parties to advance expenses or to provide indemnification for the expenses or liabilities incurred by those directors are secondary.

We also maintain general liability insurance which covers certain liabilities of our directors and officers arising out of claims based on acts or omissions in their capacities as directors or officers, including liabilities under the Securities Act.

In the underwriting agreement that we enter into in connection with the sale of shares of our common stock in this offering, a form of which will be filed as Exhibit 1.1 to this registration statement, there will be provisions for indemnification of us and our directors and officers by the underwriters against certain liabilities under the Securities Act and the Exchange Act.

Item 15. Recent Sales of Unregistered Securities.

The following list sets forth information regarding all unregistered securities sold by us since our inception on March 10, 2014. No underwriters were involved in the sales and the certificates representing the securities sold and issued contain legends restricting transfer of the securities without registration under the Securities Act or an applicable exemption from registration.

1. In June 2014, we issued and sold to Beacon Bioventures Fund III Limited Partnership a convertible promissory note in the principal amount of $250,000, which carried interest at a rate of 4.0% per annum. This note converted into 297,276 shares of our Series A convertible preferred stock in October 2014 at a 15% discount to the Series A convertible preferred stock purchase price as described in paragraph 2 below.
2. In October 2014, we entered into a Series A Preferred Stock Purchase Agreement, pursuant to which we issued and sold to investors an aggregate of 6,297,276 shares of our Series A convertible preferred stock, consisting of (i) 6,000,000 shares sold for cash proceeds of $6,000,000, at a purchase price of $1.00 per share, and (ii) 297,276 shares issued upon the conversion of $252,685 of principal and accrued interest on the convertible promissory note referred to above, at a conversion price of $0.85 per

share, representing a 15% discount to the Series A convertible preferred stock purchase price. In April 2015, we issued and sold to investors 6,000,000 shares of our Series A convertible preferred stock for cash proceeds of $6,000,000, at a purchase price of $1.00 per share.

3. In June 2015, we entered into a Series B Preferred Stock Purchase Agreement, pursuant to which we issued and sold to investors an aggregate of 8,474,574 shares of our Series B convertible preferred stock for proceeds of $64,999,990, at a purchase price of $7.67 per share.

4. From January 1, 2015 until February 13, 2018, we granted stock options under our 2015 Stock Incentive Plan, as amended, to purchase up to an aggregate of 5,387,499 shares of our common stock to our employees, directors, and consultants, at a weighted average exercise price of $2.58 per share. In July 2017, 3,000 shares of our common stock were issued upon the exercise of options and the payment of $9,990. In August 2017, 1,580 shares of our common stock were issued upon the exercise of options and the payment of $5,261. In December 2017, 13,420 shares of our common stock were issued upon the exercise of options and the payment of $44,689.

We deemed the offers, sales, and issuances of the securities described in paragraphs (1) through (3) above to be exempt from registration under the Securities Act, in reliance on Section 4(a)(2) of the Securities Act, including Regulation D and Rule 506 promulgated thereunder, regarding transactions by an issuer not involving a public offering. All purchasers of securities in transactions exempt from registration pursuant to Regulation D represented to us that they were accredited investors and were acquiring the shares for investment purposes only and not with a view to, or for sale in connection with, any distribution thereof and that they could bear the risks of the investment and could hold the securities for an indefinite period of time. The purchasers received written disclosures that the securities had not been registered under the Securities Act and that any resale must be made pursuant to a registration statement or an available exemption from such registration.

We deemed the issuances of our common stock described in paragraph (4) to be exempt from registration under the Securities Act in reliance on Rule 701 of the Securities Act as offers and sales of securities under compensatory benefit plans and contracts relating to compensation in compliance with Rule 701. Each of the recipients of securities in any transaction exempt from registration either received or had adequate access, through employment, business, or other relationships, to information about us.

Item 16. Exhibits and Financial Statement Schedules.

(a) Exhibits

The exhibits to the registration statement are listed in the Exhibit Index to this registration statement and are incorporated herein by reference.

(b) Financial Statement Schedules

All schedules have been omitted because they are not required or because the required information is given in the financial statements or notes to those statements.

Item 17. Undertakings.

The undersigned registrant hereby undertakes to provide to the underwriters at the closing specified in the underwriting agreement certificates in such denominations and registered in such names as required by the underwriters to permit prompt delivery to each purchaser.

Insofar as indemnification for liabilities arising under the Securities Act may be permitted to directors, officers and controlling persons of the registrant pursuant to the foregoing provisions, or otherwise, the registrant has been advised that in the opinion of the Securities and Exchange Commission such indemnification is against public policy as expressed in the Act and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the registrant of expenses incurred or paid by

a director, officer or controlling person of the registrant in the successful defense of any action, suit or proceeding) is asserted by such director, officer or controlling person in connection with the securities being registered, the registrant will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Act and will be governed by the final adjudication of such issue.

The undersigned Registrant hereby undertakes:

(1) That for purposes of determining any liability under the Securities Act, the information omitted from the form of prospectus filed as part of this registration statement in reliance upon Rule 430A and contained in a form of prospectus filed by the Registrant pursuant to Rule 424(b)(1) or (4) or 497(h) under the Securities Act shall be deemed to be part of this registration statement as of the time it was declared effective.

(2) That for the purpose of determining any liability under the Securities Act, each post-effective amendment that contains a form of prospectus shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial *bona fide* offering thereof.

EXHIBIT INDEX

1.1*	Form of Underwriting Agreement
3.1^	Amended and Restated Certificate of Incorporation of the Registrant, as currently in effect
3.2*	Form of Amended and Restated Certificate of Incorporation of the Registrant (to be effective upon closing of this offering)
3.4^	Bylaws of the Registrant, as currently in effect
3.5*	Form of Amended and Restated Bylaws (to be in effective upon closing of this offering).
4.1*	Specimen Common Stock Certificate
4.2^	Amended Investor Rights Agreement among the Registrant and certain of its stockholders, dated June 10, 2015
5.1*	Opinion of Goodwin Procter LLP
10.1#^	2015 Amended and Restated Stock Incentive Plan, as amended, and forms of award agreements thereunder
10.2†	Collaboration Agreement by and between the Registrant and Seattle Genetics, Inc., dated June 7, 2015
10.3†^	Amended and Restated Exclusive License Agreement dated November 15, 2015
10.4^	Lease Agreement between the Registrant and King 200 CPD LLC, dated July 7, 2015
10.5^	Loan and Security Agreement between the Registrant and Pacific Western Bank, dated as of January 19, 2017
10.6*	Form of Indemnification Agreement
10.7*	Amended and Restated Employment Agreement by and between the Registrant and Charles Wilson, dated as of , 2018
10.8*	Amended and Restated Employment Agreement by and between the Registrant and Michael Vasconcelles, dated as of , 2018

10.9*	Amended and Restated Employment Agreement by and between the Registrant and Christiana Stamoulis, dated as of , 2018
10.10*	Unum Therapeutics Inc. 2018 Stock Option and Incentive Plan and forms of award agreements thereunder
10.11*	Unum Therapeutics Inc. 2018 Employee Stock Purchase Plan
21.1^	Subsidiaries of the Registrant
23.1*	Consent of PricewaterhouseCoopers LLP, Independent Registered Public Accounting Firm
23.2*	Consent of Goodwin Procter LLP (included in Exhibit 5.1)
24.1*	Power of Attorney (included in page II-6)

* To be included by amendment.
† Application has been made to the Securities and Exchange Commission for confidential treatment of certain provisions. Omitted material for which confidential treatment has been requested has been filed separately with the Securities and Exchange Commission.
# Indicates a management contract or any compensatory plan, contract or arrangement.
^ Previously filed.

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, the registrant has duly caused this Registration Statement on Form S-1 to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of Cambridge, Commonwealth of Massachusetts, on the day of , 2018.

UNUM THERAPEUTICS INC.

By: _____
Charles Wilson, Ph.D.
Chief Executive Officer

POWER OF ATTORNEY AND SIGNATURES

Each individual whose signature appears below hereby constitutes and appoints each of Charles Wilson, Ph.D. and Christiana Stamoulis as such person's true and lawful attorney-in-fact and agent with full power of substitution and resubstitution, for such person in such person's name, place and stead, in any and all capacities, to sign any and all amendments (including post-effective amendments) to this Registration Statement (or any Registration Statement for the same offering that is to be effective upon filing pursuant to Rule 462(b) under the Securities Act of 1933), and to file the same, with all exhibits thereto, and all documents in connection therewith, with the Securities and Exchange Commission granting unto each said attorney-in-fact and agent full power and authority to do and perform each and every act and thing requisite and necessary to be done in and about the premises, as fully to all intents and purposes as such person might or could do in person, hereby ratifying and confirming all that any said attorney-in-fact and agent, or any substitute or substitutes of any of them, may lawfully do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Act of 1933, as amended, this Registration Statement and Power of Attorney has been signed by the following person in the capacities and on the date indicated.

Name	Title	Date
Charles Wilson, Ph.D.	Chief Executive Officer and Director *(Principal Executive Officer)*	, 2018
Christiana Stamoulis	President and Chief Financial Officer *(Principal Financial and Accounting Officer)*	, 2018
Jörn Aldag	Director	, 2018
Bruce Booth, DPhil.	Director	, 2018
Liam Ratcliffe, M.D., Ph.D.	Director	, 2018

[***] INDICATES MATERIAL THAT HAS BEEN OMITTED AND FOR WHICH CONFIDENTIAL TREATMENT HAS BEEN REQUESTED. ALL SUCH OMITTED MATERIAL HAS BEEN FILED WITH THE SECURITIES AND EXCHANGE COMMISSION PURSUANT TO RULE 406 PROMULGATED UNDER THE SECURITIES ACT OF 1933, AS AMENDED

COLLABORATION AGREEMENT

BY AND BETWEEN

UNUM THERAPEUTICS, INC.

AND

SEATTLE GENETICS, INC.

DATED AS OF JUNE 7, 2015

[***] INDICATES MATERIAL THAT HAS BEEN OMITTED AND FOR WHICH CONFIDENTIAL TREATMENT HAS BEEN REQUESTED. ALL SUCH OMITTED MATERIAL HAS BEEN FILED WITH THE SECURITIES AND EXCHANGE COMMISSION PURSUANT TO RULE 406 PROMULGATED UNDER THE SECURITIES ACT OF 1933, AS AMENDED

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COLLABORATION AGREEMENT

THIS COLLABORATION AGREEMENT (the "**Agreement**") is entered into as of June 7, 2015 (the "**Effective Date**") by and between **UNUM THERAPEUTICS, INC.**, a Delaware corporation having its principal place of business at One Broadway 4th Floor, Cambridge, MA 02142 ("**Unum**"), and **SEATTLE GENETICS, INC.**, a Delaware corporation having a principal office at 21823 30th Drive SE, Bothell, WA 98021 ("**SGI**"). Unum and SGI are sometimes referred to herein individually as a "**Party**" and collectively as the "**Parties**."

BACKGROUND

Unum is a cellular immunotherapy biotechnology company with expertise in the research and development of ACTR therapeutics.

SGI is a biotechnology company focused on the development and commercialization of antibody-based therapies for the treatment of cancer.

SGI and Unum desire to collaborate together to develop combination therapies based upon antibodies co-administered with ACTR T-cells (as defined below).

NOW THEREFORE, in consideration of the foregoing premises and the mutual promises, covenants and conditions contained in this Agreement, the Parties agree as follows:

ARTICLE 1
DEFINITIONS

As used in this Agreement, the following initially capitalized terms, whether used in the singular or plural form, will have the meanings set forth in this Article 1. In addition, the terms "includes," "including," "include" and derivative forms of them will be deemed followed by the phrase "without limitation" (regardless of whether it is actually written there (and drawing no implication from the actual inclusion of such phrase in some instances after such terms but not others)) and the term "or" has the inclusive meaning represented by the phrase "and/or" (regardless of whether it is actually written (and drawing no implication from the actual use of the phrase "and/or" in some instances but not in others)). Unless otherwise stated, dollar amounts set forth herein are U.S. dollars.

1.1 "**A1 Antigen**" means the Antigen designated as [***], described with more particularity in the Research Plan.

1.2 "**A2 Antigen**" means the Antigen designated as B-cell maturation antigen (BCMA), described with more particularity in the Research Plan.

1.3 **"A3 Antigen"** means the Antigen designated by the Parties pursuant to Section 2.2(b).

1.4 "**A3 Antigen Notice**" has the meaning set forth in Section 2.2(b).

1.5 "**A3 Antigen Selection Fee**" has the meaning set forth in Section 11.3.

1.6 "**A3 Antigen Selection Period**" has the meaning set forth in Section 2.2(b).

1.7 "**Acquiring Party**" has the meaning set forth in Section 10.9(a).

1.8 "**Acquisition Third Party**" has the meaning set forth in Section 10.9(a).

1.9 "**Acquisition Transaction**" has the meaning set forth in Section 10.9(a).

1.10 "**ACTR**" means a chimeric T-cell receptor that has been genetically engineered to contain a Fc-binding-domain.

1.11 "**ACTR Data**" has the meaning set forth in Section 10.1(e).

1.12 "**ACTR Marks**" has the meaning set forth in Section 12.8.

1.13 "**ACTR Matter**" means any matter that (a) directly relates to ACTR T-cells or the ACTR platform technology and (b) could be reasonably expected to adversely impact (i) any [***] or [***],[***] or [***] matters, or [***] and [***] or [***] and [***] relating to any ACTR T-cells or the ACTR platform technology, or (ii) the [***] or [***] of the ACTR platform technology.

1.14 "**ACTR T-cell Clinical Supply Agreement**" has the meaning set forth in Section 9.2(d)(i).

1.15 "**ACTR T-cell Commercial Supply Agreement**" has the meaning set forth in Section 9.2(e)(i).

1.16 "**ACTR T-cells**" means T-cells that express an ACTR that engages an Antibody.

1.17 "**Actual Unit Cost**" means the Manufacturing Cost per unit for ACTR T-cells or SGI Antibodies (as applicable), calculated in accordance with GAAP and on the same basis as used to report cost of sales and inventory cost in a Party's externally provided financial statements and will be consistently applied during the Term.

1.18 "**Affiliate**" means, with respect to a particular Person, a person, corporation, partnership, or other entity that controls, is controlled by or is under common control with such Person. For the purposes of this definition, the word "control" (including, with correlative meaning, the terms "controlled by" or "under the common control with") means the actual power, either directly or indirectly through one or more intermediaries, to direct or cause the direction of the management and policies of such entity, whether by the ownership of more than [***] of the voting stock of such entity, or by contract or otherwise.

1.19 "**Agreement**" has the meaning set forth in the preamble hereto.

1.20 "**Alliance Manager**" has the meaning set forth in Section 4.1.

1.21 "**Alternative Product**" means any therapeutic compound or product (other than any Research Candidate, Development Candidate or Product) composed of the combination or co-administration of (a) an Antibody that specifically targets a Collaboration Antigen (that for clarity is the Collaboration Antigen of a Research Candidate, Development Candidate, Product or Reversion Product that is then subject to this Agreement) and (b) any [***] therapies (including [***], etc.), to the extent (and only to the extent) [***] are [***], whether administered together, separately, simultaneously, sequentially or otherwise in relation to such Antibody.

1.22 "**Alternative Product Notice**" has the meaning set forth in Section 10.9(a).

1.23 "**Ancillary Agreement**" means any supply agreement entered into between the Parties or their respective Affiliates pursuant to Article 9, any Co-Promotion Agreement, or any Transition Agreement.

1.24 "**Antibody**" means an antibody, or conjugate thereof, or fragment thereof, or a molecule that is derived from nucleotide sequences encoding, or amino acid sequences of, any such antibody or fragment, that specifically targets an Antigen.

1.25 "**Antigen**" means a protein and any unique fragment, peptide or epitope thereof, and any naturally occurring allelic variant or splice variants thereof, in each case that are encoded by the same gene.

1.26 "**Applicable Law**" means the applicable laws, rules and regulations, including any rules, regulations, guidelines or other requirements of Governmental Authorities, including Regulatory Authorities, that may be in effect from time to time, including the Foreign Corrupt Practices Act of 1977, as amended.

1.27 "**Arbitral Matter**" has the meaning set forth in Section 17.1.

1.28 "**Bankrupt Party**" has the meaning set forth in Section 16.8.

1.29 "**Bankruptcy Code**" has the meaning set forth in Section 16.3(b).

1.30 "**Biosimilar Product**" means, on a country-by-country basis, a biologic product (a) whose licensing, approval, or marketing authorization relies in whole or in part on a prior approval, licensing or marketing authorization granted any Product, (b) whose licensing, approval, or marketing authorization relies in whole or in part on any data generated in support of a prior approval, licensing, or marketing authorization granted any Product, or (c) is determined by the FDA to be interchangeable with a Product, as set forth at 42 USC 262(k)(4). Any product or component thereof (including any Product or component thereof) licensed, marketed, sold, manufactured, or produced by a Party, its Affiliates or (sub)licensees will not constitute a Biosimilar Product.

1.31 "**Business Combination**" has the meaning set forth in Section 18.6(a)(ii).

1.32 "**Business Day**" means a day other than (a) a Saturday or a Sunday, or (b) a holiday recognized by the U.S. federal government.

1.33 "**CART**" means a genetically engineered Antibody-fragment containing chimeric antigen receptor (CAR)-modified T-cell.

1.34 "**Claim**" has the meaning set forth in Section 14.3.

1.35 "Clinical Trials" means any human clinical trial of a product.

1.36 "**CMC Activities**" means those Manufacturing activities and regulatory activities designed to support preparation of the Chemistry, Manufacturing and Controls sections of any Regulatory Materials or Regulatory Approval.

1.37 "**CME Costs**" means all costs and expenses associated with providing continuing medical education for the Products in the Shared Territory, including costs of investigator sponsored trials, medical affairs, medical/scientific liaisons, and publications, professional symposia, speaker and activity programs, but specifically excludes any FTE costs or other internal costs associated with providing the foregoing.

1.38 "**CMO**" has the meaning set forth in Section 9.8(c).

1.39 "**Collaboration Antigen Exchange**" has the meaning set forth in Section 2.3(a).

1.40 "**Collaboration Antigens**" means any or all of the A1 Antigen, the A2 Antigen, the A3 Antigen, or any Replacement Antigen that is included as a Collaboration Antigen in a Collaboration Antigen Exchange in accordance with Section 2.3, as the context requires.

1.41 "**Commercialization**" means all activities, whether undertaken before or after obtaining Regulatory Approvals of an MAA or NDA, relating specifically to the pre-launch, launch, promotion, marketing, branding, sales, and distribution of a Product, including: (a) strategic marketing, sales force detailing, advertising, medical education and liaison, reimbursement (other than Pricing Approval) and market access activities and market and Product support; and (b) all customer support, Product distribution, invoicing and sales activities. For clarity, Commercialization will exclude any Research, Development and Manufacturing activities. "**Commercialize**" has a correlative meaning.

1.42 "**Commercially Reasonable Efforts**" means, with respect to the Research, Development or Commercialization of a Research Candidate, Development Candidate or Product, as applicable, that level of efforts and resources commonly dedicated in the pharmaceutical industry by [***] to the Research, Development or Commercialization, as the case may be, of a product of similar commercial potential at a similar stage in its lifecycle, in each case taking into account, on a market-by-market basis, issues of safety and efficacy, product profile, the therapeutic modality of the product, the proprietary position, the then-current competitive environment for such product and the likely timing of such product's entry into the market, the regulatory environment and status of such product, and other relevant scientific, technical and commercial factors; provided, however, that for the purpose of determining Commercially Reasonable Efforts with respect to a Party (a) any other pharmaceutical product such Party is then discovering, researching, developing, manufacturing or commercializing in the Territory other than pursuant to this Agreement, alone or with one or more Affiliates or Third Parties, or (b) the payments required to be made by such Party to the other Party pursuant to this Agreement, in each case [***].

1.43 "**Committee**" means the Joint Steering Committee, Joint Development Committee, Joint Commercialization Committee or Joint Manufacturing Committee, or any other subcommittee established under Article 4, as applicable.

1.44 "**Competitive Infringement**" has the meaning set forth in Section 12.6(a).

1.45 "**Confidential Information**" means, with respect to a Party or any of its Affiliates, and subject to Section 15.2, all confidential or proprietary information of such Party or such Affiliate that is disclosed to the other Party or any of its Affiliates under this Agreement.

1.46 "**Continuing Party**" means, on a Development Candidate-by-Development Candidate and associated Product-by-Product basis, the Party that continues to Develop and Commercialize such Development Candidate and associated Product following an opt-out by the Opt-Out Party pursuant to Section 3.1 or Section 3.2.

1.47 "**Control**" means, with respect to any Materials, Know-How, Patent, Regulatory Materials or Regulatory Approvals, the possession (whether by ownership or license) by a Party or its Affiliates of the ability to grant to the other Party a license, sublicense or access as provided herein to such item, without violating the terms of any agreement or other arrangement with any Third Party, in existence as of the time such Party or its Affiliates would first be required hereunder to grant the other Party such license, sublicense or access.

1.48 "**Co-Promotion**" means those detailing and promotional activities (including performing sales calls) with respect to a Product undertaken by personnel of either Party to encourage appropriate prescribing of such Product in the Shared Territory.

1.49 "**Co-Promotion Agreement**" has the meaning set forth in Section 8.3(c)(ii).

1.50 "**CPI**" means the Consumer Price Index for the U.S. City Average (all items) on a six (6) month look-back basis starting on January 1, 2016, and then on a twelve (12) month look-back basis starting on January 1, 2017 and continuing thereafter.

1.51 "**Detail Cost**" means (a) with respect to a face-to-face detail by either Party in the Shared Territory in an amount to be agreed to by the Parties in the Co-Promotion Agreement; and (b) with respect to any e-detail or detail through video, such amount approved by the JCC and subject to increase based on reasonable commercial comparisons at the time.

1.52 "**Develop**" or "**Development**" means the conduct of clinical drug development activities pertaining to a Development Candidate or Product, including toxicology, pharmacology, test method development, stability testing, process development, technology transfer, formulation development, delivery system development, quality assurance and quality control development, statistical analysis, clinical studies (including investigator-sponsored clinical trials, Supplemental Trials, Required Phase 4 Clinical Trials and any post-approval studies required by the relevant Regulatory Authority), regulatory affairs, pharmacovigilance, Regulatory Approval and Pricing Approval, and clinical study regulatory activities (including regulatory activities directed to obtaining pricing and reimbursement approvals). For clarity, Development will exclude any Research, Commercialization and Manufacturing activities.

1.53 "**Development Candidate**" means a Research Candidate that (a) is designated by the JSC pursuant to Section 2.5 for Development to be performed pursuant to an Early Clinical Development Plan and (b) has not yet been designated by the JSC pursuant to Section 2.6 as a Product hereunder. For clarity, a Reversion Product will not be considered a Development Candidate and instead will be treated in accordance with Section 3.3.

1.54 "**Development Candidate Selection Date**" has the meaning set forth in Section 2.5.

1.55 "**Development Costs**" means all costs and expenses incurred by or on behalf of a Party or any of its Affiliates or subcontractors that are directly allocable to (a) the Development of Development Candidates and Products, and (b) activities to support and obtain Regulatory Approvals for such Development Candidates and Products, including: (i) such costs and expenses for Clinical Trials (including Required Phase 4 Clinical Trials) designed to support and obtain Regulatory Approvals for Development Candidates and Products, (ii) such costs and expenses for compiling, filing and obtaining Regulatory Approvals of Development Candidates and Products, (iii) such costs for clinical research organizations and other Third Parties in support of Development of Development Candidates and Products, (iv) such costs for cell processing for the Development Candidates and Products, and (v) such costs for drug product or comparator drug for use in the activities described in clause (i); including, with respect to all such Development Costs, (A) internal FTE costs at the applicable FTE Rate; (B) recall expenses to be treated as Development Costs pursuant to Section 7.2; (C) Manufacturing Costs to be treated as Development Costs pursuant to Section 9.4; (D) Third Party Payments to the extent treated as Development Costs pursuant to Section 10.7, including, to the extent not already addressed in the Manufacturing Costs, any royalties or Third Party Payments attributable to Manufacture of ACTR T-cells or SGI Antibodies (as applicable) for Development; (E) prosecution and enforcement costs to be treated as Development Costs pursuant to Section 12.2(c)(iii)(A); and (F) Shared Program Damages from Third Party Claims to be treated as Development Costs pursuant to Section 14.4; but in each case ((A) through (F)) excluding Joint Commercialization Costs and each of the following (except to the extent included in Manufacturing Costs): tax liabilities, capital expenditures incurred by either Party to obtain or maintain manufacturing capacity for Products, and overhead and other indirect cost allocations from either Party. For clarity, Development Costs exclude Research Costs and costs of Commercialization.

1.56 "**Distribution Costs**" means the costs, excluding overhead, incurred by a Party or its Affiliate or for such Party's or its Affiliate's account, during the Term and pursuant to this Agreement that are directly allocable to the distribution of a Product with respect to a particular territory, including: (a) handling, transportation and insurance to fulfill orders with respect to such distribution; (b) customer services, including order entry, billing and adjustments, inquiry and credit and collection with respect to such distribution; (c) reasonable and customary fees and other amounts payable to wholesalers, specialty pharmacies and distributors with respect to such distribution; and (d) costs of storage and distribution of Products for sale in the applicable territory, but for clarity, excluding in each case ((a) through (d)) any such amounts to the extent included as a deduction in calculating Net Sales.

1.57 "**Distribution Matters**" means all issues and decisions regarding the distribution of Products in the Shared Territory, including decisions as to whether and with which wholesalers and distributors to contract, and the terms of contracts with such wholesalers and distributors.

1.58 "**Divest**" or "**Divestiture**" means, with respect to an Alternative Product, the sale, exclusive (even with respect to a Party and its Affiliates) license, or other delegation, assignment or transfer by a Party or its Affiliates of all of their respective research, development, manufacture and commercialization rights or obligations with respect to such compound or product to a Third Party without the retention or reservation of any commercialization interest or participation rights (other than solely an economic interest or the right to enforce customary terms and conditions contained in the relevant agreements effectuating such Divestiture, including rights of access and review in connection therewith).

1.59 "**DOJ**" has the meaning set forth in Section 1.91.

1.60 "**Drug Company**" has the meaning set forth in Section 18.5(b).

1.61 "**Drug Master File**" or "**DMF**" means (a) a Drug Master File filed with the FDA (and any foreign counterpart of a U.S. Drug Master File) and (b) all supplements and amendments that may be filed with respect to thereto.

1.62 "**Early Clinical Development Plan**" has the meaning set forth in Section 6.2(a)(i).

1.63 "**Early Clinical Development Program**" means, as to each Development Candidate, the program of Development activities for such Development Candidate in accordance with the associated Early Clinical Development Plan during the Early Clinical Development Term. For clarity, the Early Clinical Development Program will not include activities conducted under the Research Plan or Late Clinical Development Program or relating to Manufacturing.

1.64 "**Early Clinical Development Term**" means, on a Development Candidate-by-Development Candidate basis, the period commencing on the Development Candidate Selection Date and ending upon the earlier of (a) the exercise of the Opt-Out Right under Section 3.1 or the expiration, without exercise, of the period therefor and (b) termination of Development of such Development Candidate.

1.65 "**Effective Date**" has the meaning set forth in the preamble to this Agreement.

1.66 "**EMA**" means the European Medicines Agency or its successor.

1.67 "[***] **Opt-Out Notice**" has the meaning set forth in Section 3.1(b).

1.68 "**Equity Agreements**" means (a) that certain Participation Agreement, dated as of the date hereof, by and between Unum and SGI ("**Participation Agreement**"), and (b) all such agreements as may be executed in accordance with such Participation Agreement, in each case for clauses (a) and (b), as may be amended or restated from time to time.

1.69 "**European Union**" or "**EU**" means all of the European Union member states as of the Effective Date plus any countries later added as member states during the Term.

1.70 "**Exchange Act**" has the meaning set forth in Section 18.6(a).

1.71 "**Exchange Notice**" has the meaning set forth in Section 2.3(a).

1.72 "**Exchange Period**" means, for the A1 Antigen and the A2 Antigen, the period commencing on the [***] and [***] on the [***] set forth in the [***], and, for the A3 Antigen, the period commencing on [***] and ending on the completion of [***] set forth in the [***] (in each case, or such other period of time as the Parties may mutually agree in writing).

1.73 "**Executive Officer**" means (a) in the case of SGI, its Chief Executive Officer; and (b) in the case of Unum, its Chief Executive Officer.

1.74 "**Existing Confidentiality Agreement**" means the Mutual Non-Disclosure Agreement entered into by SGI and Unum, dated June 5, 2014.

1.75 "**Existing Phase 1 Clinical Trial**" means the Phase 1 Clinical Trial combining mRNA delivery of ACTR T-cells combined with rituximab [***] that is currently being conducted by the National University Hospital, Singapore pursuant to [***] in Singapore.

1.76 "**Exploit**" means, collectively, research, develop, use, manufacture, have manufactured, sell, offer for sale, commercialize, import, export and otherwise exploit. "**Exploitation**" has a correlative meaning.

1.77 "**FDA**" means the United States Food and Drug Administration or its successor.

1.78 "FD&C Act" means the United States Federal Food, Drug and Cosmetic Act, as amended.

1.79 "Finance Officers" has the meaning set forth in Section 11.5(a).

1.80 "**First Commercial Sale**" means, with respect to a Product and a country, the first sale to a Third Party of such Product in such country after all Regulatory Approvals (including any pricing or reimbursement approvals, if necessary) have been obtained in such country.

1.81 "**First Viral Phase 1 Clinical Trial**" means the Phase 1 Clinical Trial combining virally transduced ACTR T-cells and rituximab currently planned to be conducted by or on behalf of Unum in the U.S.

1.82 "**FTC**" has the meaning set forth in Section 1.91.

1.83 "**FTE**" means the equivalent of a full-time employee of either Party (including normal vacations, sick leave, and other similar matters) to the extent performing scientific, medical, technical, managerial, or other activities. An FTE charged to either Party will represent the actual time a full-time employee of such Party spends working on activities assigned to such Party under the Research Plan, Development Plan or Joint Commercialization Plan as recorded in such Party's project time reporting system. For the avoidance of doubt, the time will be recorded in a manner such that no employee of either Party can report him/herself as more than one (1) FTE in any given month. An FTE is measured on the basis of a total of one thousand eight hundred (1,800) hours per year. FTE efforts will not include the work of general corporate or administrative personnel, including legal services relating to patent activities, accounting and other finance activities, and other G&A activities.

1.84 "**FTE Rate**" means [***] per FTE, for the calendar year 2015, subject to annual increases (but not decreases, if any) beginning on January 1, 2016 (for the prior six (6)-month period) to reflect any year to year percentage increase (but not decrease) in the CPI for the [***] and for each subsequent calendar year.

1.85 "**GAAP**" means accounting principles generally accepted in the United States, consistently applied.

1.86 "**Generic Competition**" has the meaning set forth in Section 11.9(c).

1.87 "**Governmental Authority**" means any multi-national, federal, state, local, municipal or other government authority of any nature (including any governmental division, subdivision, department, agency, bureau, branch, office, commission, council, court or other tribunal).

1.88 "**HSR Act**" means the Hart-Scott-Rodino Antitrust Improvements Act of 1976, as amended, and the rules and regulations promulgated thereunder.

1.89 "**HSR Clearance**" means all waiting periods under the HSR Act applicable to a transaction notified in an HSR Filing have expired or have been terminated.

1.90 "**HSR Clearance Date**" means the earliest date on which the Parties have actual knowledge that all applicable waiting periods under the HSR Act with respect to a transaction notified in an HSR Filing have expired or have been terminated.

1.91 "**HSR Filing**" means filings by SGI and Unum with the United States Federal Trade Commission (the "**FTC**") and the Antitrust Division of the United States Department of Justice (the "**DOJ**") of a Notification and Report Form for Certain Mergers and Acquisitions (as that term is defined in the HSR Act) with respect to the acquisition of a license to any Reversion Product or Development Candidate and associated Product, together with all required documentary attachments thereto.

1.92 "**IMS**" has the meaning set forth in Section 11.9(c).

1.93 "**In-License**" has the meaning set forth in Section 10.7.

1.94 "**IND**" means (a) an Investigational New Drug Application as defined in the FD&C Act and applicable regulations promulgated thereunder by the FDA, or (b) the equivalent application to the equivalent Regulatory Authority in any other regulatory jurisdiction, the filing of which is necessary to initiate or conduct clinical testing of a pharmaceutical product in humans in such jurisdiction.

1.95 "**Indemnified Party**" has the meaning set forth in Section 14.3.

1.96 "**Indemnified Person**" means, in the case of SGI, any SGI Indemnitee, and in the case of Unum, any Unum Indemnitee.

1.97 "**Indemnifying Party**" has the meaning set forth in Section 14.3.

1.98 "**Industry Transaction**" has the meaning set forth in Section 18.5(b).

1.99 "**Initiation**" means, with respect to a given Clinical Trial, the first dosing of the first person pursuant to the protocol for such Clinical Trial.

1.100 "**IPO**" has the meaning set forth in Section 18.6(a).

1.101 "**Joint Commercialization Budget**" has the meaning set forth in Section 8.3(a)(i).

1.102 "**Joint Commercialization Committee**" or "**JCC**" means the committee formed by the Parties as described in Section 4.4(a).

1.103 "**Joint Commercialization Costs**" means, with respect to a particular Product, all costs and expenses incurred by or on behalf of either Party or any of its Affiliates or subcontractors that are directly allocable to (a) the Commercialization of Products in the Shared Territory, including CME Costs, Detail Costs, Distribution Costs, Sales and Marketing Costs and costs associated with Voluntary Phase 4 Clinical Trials, whether prior to or after receipt of Regulatory Approvals, (b) Manufacturing Costs to be treated as Joint Commercialization Costs pursuant to Section 9.4; (c) Third Party Payments to the extent treated as Joint Commercialization Costs pursuant to Section 10.7, including, to the extent not already addressed in the Manufacturing Costs, any royalties or Third Party Payments attributable to Manufacture of ACTR T-cells or SGI Antibodies (as applicable) for Commercialization; (d) costs associated with the defense of Patents within the Program IP to be treated as Joint Commercialization Costs pursuant to Section 12.5; (e) Trademark Costs to be treated as Joint Commercialization Costs pursuant to Section 12.8; and (f) Shared Program Damages from Third Party Claims to be treated as Joint Commercialization Costs pursuant to Section 14.4. However, in all cases, including with respect to clauses (a) through (f) of the previous sentence, Joint Commercialization Costs exclude Research Costs and Development Costs. Joint Commercialization Costs will also exclude costs included as deductions in calculating Net Sales of a Product and each of the following (except to the extent included in Manufacturing Costs): (i) taxes, duties and other governmental charges, including income taxes, sales taxes, value added taxes and import duty, (ii) capital expenditures incurred by either Party to obtain or maintain manufacturing capacity for Products, and (iii) overhead and other indirect cost allocations from either Party.

1.104 "**Joint Commercialization Plan**" has the meaning set forth in Section 8.3(a)(i).

1.105 "**Joint Development Committee**" or "**JDC**" means the committee formed by the Parties as described in Section 4.3(a).

1.106 "**Joint Manufacturing Committee**" or "**JMC**" means the committee formed by the Parties as described in Section 4.5(a).

1.107 "**Joint Program IP**" has the meaning set forth in Section 12.2(c)(i).

1.108 "**Joint Steering Committee**" or "**JSC**" means the committee formed by the Parties as described in Section 4.2(a).

1.109 "**Know-How**" means commercial, technical, scientific and other know-how and information, inventions, discoveries, improvements, trade secrets, knowledge, technology, methods, processes, practices, formulae, instructions, skills, techniques, procedures, experiences, ideas, technical assistance, designs, drawings, assembly procedures, computer programs, specifications, data and results (including biological, chemical, pharmacological, toxicological, pharmaceutical, physical and analytical, pre-clinical, clinical, safety, manufacturing and quality control data and know-how, including study designs and protocols), filings and correspondence (including DMFs); in all cases, (a) that is confidential or proprietary but (b) whether or not, patented or patentable, in written, electronic or any other form, now known or hereafter developed.

1.110 "**Late Clinical Development Plan**" has the meaning set forth in Section 6.2(a)(iii).

1.111 "**Late Clinical Development Program**" means, as to each Development Candidate, the program of Development activities for such Development Candidate in accordance with the associated Late Clinical Development Plan during the Late Clinical Development Term. For clarity, the Late Clinical Development Program will not include activities conducted under the Research Plan or Early Clinical Development Program or relating to Manufacturing.

1.112 "**Late Clinical Development Term**" means, on a Development Candidate-by-Development Candidate basis, the period commencing on the expiration, without exercise, of the Opt-Out Right under Section 3.1 for such Development Candidate and ending upon the launch of the associated Product.

1.113 "**Late Clinical Development Trial Data**" has the meaning set forth in Section 3.2(a).

1.114 "**Late Stage Opt-Out Notice**" means the written notice delivered by a Party to the other Party in accordance with Section 3.2(c), whereby such Party irreversibly exercises its Opt-Out Right with respect to particular Development Candidate and associated Product.

1.115 "**Lead Commercializing Party**" means (a) SGI for the first Product and the third Product for which a Joint Commercialization Plan is approved pursuant to Section 4.2(c) and Section 8.3(a)(ii), and (b) Unum for the second Product for which a Joint Commercialization Plan is approved pursuant to Section 4.2(c) and Section 8.3(a)(ii). For clarity, a Reversion Product will not have a Lead Commercializing Party (and thus will not count as one of the designations of a "Lead Commercializing Party").

1.116 "**Licensed Territory**" means, on a Development Candidate-by-Development Candidate and associated Product-by-Product basis all countries of the world other than the Shared Territory.

1.117 "**Major European Countries**" means any of France, Italy, Germany, Spain and the United Kingdom.

1.118 "**Manufacture**" means, with respect to a Product or component thereof (e.g., ACTR T-cells or SGI Antibodies), those manufacturing-related activities that support the Research, Development, seeking and obtaining of Regulatory Approvals, and Commercialization of such Product, including manufacturing process development and scale-up, validation, qualification and audit of clinical and commercial manufacturing facilities, bulk production and fill/finish work, related quality assurance technical support activities and CMC Activities, and including, in the case of a clinical or commercial supply of such Product, the synthesis, manufacturing, processing, formulating, packaging, labeling, holding, quality control testing and release of such Product. "**Manufacturing**" has a correlative meaning. For clarity, the term "processing" will include all processes from "vein-to-vein" in a patient, including withdrawing cells, transporting cells to and from the manufacturing facility(ies) and reinfusing cells.

1.119 "**Manufacturing Action Plan**" or "**MAP**" has the meaning set forth in Section 9.8(c)(iii).

1.120 "**Manufacturing Costs**" means all costs and expenses incurred by or on behalf of either Party or any of its Affiliates or subcontractors that are directly allocable to (a) Manufacture of ACTR T-cells or SGI Antibodies (as applicable) for use in Research, Development or Commercialization activities,

and (b) FTE costs and out-of-pocket costs incurred by or on behalf of a Party or any of its Affiliates in accordance with this Agreement and directly allocable to Manufacturing activities relating to ACTR T-cells or SGI Antibodies (as applicable) for use in Development or Commercialization activities (excluding those activities covered under clause (a)), including CMC Activities specifically in support of Development or Commercialization of Development Candidates and Products. For clarity, Manufacturing Costs do not include the costs associated with general platform process improvements or scale-up activities with respect to ACTR T-cell technology, SGI Antibodies or SEA Technology that are outside of the activities approved for the Research Candidates, Development Candidates or Products in the applicable Research Plans, Early Clinical Development Plans, Late Clinical Development Plans or Joint Commercialization Plan or Supply Agreements.

For ACTR T-cells or SGI Antibodies (as applicable) manufactured by a Third Party, Manufacturing Costs described in clause (a) above will include: (i) the amount paid to such Third Party, to the extent treated as Manufacturing Costs pursuant to Section 10.7, including the supply price, any up-front payments, royalties, milestone payments or other payments, including payments relating to capital expenditures or the preparation or reservation of manufacturing capacity or equipment, and equipment cost depreciation, if such payments have been capitalized in accordance with GAAP, plus (ii) the relevant manufacturing Party's internal costs and out-of-pocket costs, incurred (including any prepayments) by the manufacturing Party, which costs are reasonably and directly allocable to Manufacturing ACTR T-cells or SGI Antibodies for use in Development or Commercialization activities and include the following types of costs: inventory write-offs, variances, manufacturing process improvements, storage, manufacturing scale-up, manufacturing site qualification, materials, quality assurance and quality control (including testing), supply chain management, capital equipment and similar activities comprising the manufacturing Party's oversight of the manufacturing process, and any value-added tax or similar tax due on such amounts, plus (iii) to the extent applicable, as reasonably determined by the Parties, (1) any royalties attributable to Manufacture of ACTR T-cells or SGI Antibodies (as applicable) due under the Unum Existing In-Licenses, SGI Existing In-License or any In-Licenses, plus (2) Third Party Payments to the extent to be included in Manufacturing Costs under Section 10.7.

For ACTR T-cells or SGI Antibodies (as applicable) Manufactured directly by a Party or its Affiliates, or for Manufacturing Costs incurred after Regulatory Approval of a Product, Manufacturing Costs will consist of (x) the quantity of ACTR T-cells or SGI Antibodies (as applicable) Manufactured times the Actual Unit Cost, plus (y) to the extent applicable, as reasonably determined by the Parties, (A) any royalties attributable to Manufacture of ACTR T-cells or SGI Antibodies (as applicable) due under the Unum Existing In-Licenses, SGI Existing In-License or any In-Licenses, plus (B) Third Party Payments to the extent to be included in Manufacturing Costs under Section 10.7. For the avoidance of doubt, the same element of cost may not be included more than once in computing Actual Unit Cost.

Costs are considered directly allocable to Manufacturing ACTR T-cells or SGI Antibodies for use in Research, Development or Commercialization activities at the point at which they are clearly designated as being intended for use with Research Candidates, Development Candidates or Products (or any component thereof), as applicable; provided that all costs and expenses relating to raw materials, equipment or amounts incurred to obtain, build or maintain production capacity for Research Candidates, Development Candidates or Products (or any component thereof) that are consistent with a Research Plan, Early Clinical Development Plan, Late Clinical Development Plan or Joint Commercialization Plan or any Supply Agreement are chargeable immediately; provided further that the Parties will agree on a true-

up mechanism if such materials, equipment or other amounts are not used for Research Candidates, Development Candidates or Products (or any component thereof). If either Party cannot designate the ACTR T-cells or SGI Antibody being manufactured as being intended for use with a Research Candidate, Development Candidate or Product (or any component thereof), then such Party will accumulate Actual Unit Cost during the manufacturing process and charge the Actual Unit Cost as Development or Commercialization costs when such material has been designated as being intended for use with Research Candidates, Development Candidates or Products (or any component thereof).

1.121 "**Marketing Authorization Application**" or "**MAA**" means an application for Regulatory Approval in a country, territory or possession other than the Shared Territory.

1.122 "**Marks**" has the meaning set forth in Section 12.8.

1.123 "**Materials**" means any tangible chemical or biological materials, including any compounds, SGI Antibodies, ACTR T-cells, and any expression product, progeny, derivative or other improvement thereto, along with any tangible chemical or biological materials or processes or procedures embodying any Know-How; provided, however, that Materials will not include any Research Candidates, Development Candidates or Products.

1.124 "**NDA**" means a New Drug Application or Biologics License Application in the United States, as defined in the FD&C Act or United States Public Health Service Act, as applicable, and applicable regulations promulgated thereunder by the FDA, or any successor application thereto.

1.125 "**Net Sales**" means, with respect to any Product, the gross amounts invoiced by a Party or its Affiliates or sublicensees for sales of, or the performance of any services (including preliminary treatments or follow-up treatments) related to, such Product (or any component thereof) to a Third Party, less:

(a) reasonable credits or allowances, if any, on account of price adjustments, recalls, rejection or return of items previously sold;

(b) import taxes, export taxes, excises, sales taxes, value added taxes, consumption taxes, duties or other taxes imposed upon and paid with respect to such sales (excluding income or franchise taxes of any kind);

(c) trade, quantity and cash discounts actually allowed; and

(d) governmental or commercial rebates, wholesaler fees, administrative fees to managed care, group purchasing and other similar institutions, chargebacks and retroactive price adjustments and any other similar allowances which effectively reduce the selling price.

All as determined from the books and records of a Party or its Affiliate or sublicensee, as applicable, maintained in accordance with GAAP.

Nothing herein will prevent a Party or any of its Affiliates or sublicensees from selling, distributing or invoicing Product at a discounted price for shipments to Third Parties in connection with clinical studies, compassionate sales, or an indigent program or similar bona fide arrangements in which such Party agrees to forego a normal profit margin for good faith business reasons. Except for such discounting, no deduction will be made for any item of cost incurred in Developing or Commercializing Product except as permitted pursuant to clauses (a) through (d) above.

Sale or transfer of Product between a Party and any of its Affiliates or sublicensees will not result in any Net Sales, and Net Sales instead will be based on subsequent sales or distribution to a party other than a Party or its Affiliates, unless such Product is consumed by such Party or its Affiliates or sublicensees. To the extent that a Party or its Affiliates receives consideration other than or in addition to cash upon the sale or distribution of Product, or the performance of any services (including preliminary treatments or follow-up treatments) related to such Product, Net Sales will include the fair market value of such additional consideration.

1.126 "**Notice of Potential Opt-Out**" has the meaning set forth in Section 3.2(b).

1.127 "**NUS Agreement**" has the meaning set forth in Section 10.2(d).

1.128 "**Operating Profit (or Loss)**" means, for a given period of time, Net Sales of Products in the Shared Territory during such period, less Joint Commercialization Costs, incurred during such time period. For clarity, Operating Profit (or Loss) will be determined prior to application of any income taxes, and if such terms are used individually, "**Operating Profit**" will mean a positive Operating Profit, and "**Operating Loss**" will mean a negative Operating Profit.

1.129 "**Opt-Out Party**" means, on a Development Candidate-by-Development Candidate and associated Product-by-Product basis, the Party that opts-out of further Development and Commercialization of such Development Candidate and associated Product pursuant to Section 3.1 or Section 3.2.

1.130 "**Opt-Out Right**" means a Party's right to opt-out of cost sharing with respect to Development of a particular Development Candidate and cost and profit sharing and Co-Promotion in the Shared Territory with respect to the associated Product pursuant to Section 3.1 or Section 3.2.

1.131 "**Participation Agreement**" has the meaning set forth in Section 1.68.

1.132 "**Party**" or "**Parties**" has the meaning set forth in the preamble to this Agreement.

1.133 "**Patent**" means (a) any national, regional or international patent or patent application, including any provisional patent application, (b) any patent application filed either from such a patent, patent application or provisional application or from an application claiming priority from any of these, including any divisional, continuation, continuation-in-part, provisional, converted provisional, and continued prosecution application, (c) any patent that has issued or in the future issues from any of the foregoing patent applications ((a) and (b)), including any utility model, petty patent, design patent and certificate of invention, (d) any extension or restoration by existing or future extension or restoration mechanisms, including any revalidation, reissue, re-examination and extension (including any supplementary protection certificate and the like) of any of the foregoing patents or patent applications ((a), (b) and (c)), and (e) any similar rights, including so-called pipeline protection, or any importation, revalidation, confirmation or introduction patent or registration patent or patent of additions to any such foregoing patent application or patent.

1.134 "**Patent Costs**" means the out-of-pocket costs and expenses paid to outside legal counsel and other Third Parties, and filing and maintenance expenses, incurred in the preparation, filing, prosecution and maintenance, and the defense and enforcement, of Patents, as well as re-examinations, reissues and the like with respect to any Patent, together with the conduct of appeal processes, interferences, inter partes reviews, post-grant reviews, or the defense of oppositions and other similar proceedings with respect to any Patent.

1.135 "**Person**" means an individual, sole proprietorship, partnership, limited partnership, limited liability partnership, corporation, limited liability company, business trust, joint stock company, trust, unincorporated association, joint venture or other similar entity or organization, including a government or political subdivision, department or agency of a government.

1.136 "**Phase 1 Clinical Trial**" means a human clinical trial of a product, the principle purpose of which is a preliminary determination of safety, tolerability, pharmacological activity or pharmacokinetics in healthy individuals or patients or similar clinical trial prescribed by the Regulatory Authorities, including the trials described in 21 C.F.R. 312.21(a) (as amended or any replacement thereof), or a similar clinical study prescribed by the Regulatory Authorities in a foreign country.

1.137 "**Phase 1 Clinical Trial Data**" has the meaning set forth in Section 3.1(a).

1.138 "**Phase 2 Clinical Trial**" means a human clinical trial of a product, the principal purpose of which is the evaluation of the efficacy of such product for a particular indication in the target patient population and a determination of the common side-effects and risks associated with the product, including the trials described in 21 C.F.R. 312.21(b) (as amended or any replacement thereof), or a similar clinical study prescribed by the Regulatory Authorities in a foreign country.

1.139 "**Phase 3 Clinical Trial**" means a human clinical trial of a product on a sufficient number of subjects that is designed to establish that a pharmaceutical product is safe and efficacious for its intended use, and to determine warnings, precautions, and adverse reactions that are associated with such pharmaceutical product in the dosage range to be prescribed, which clinical trial is intended to support Regulatory Approval of such product, as described in 21 C.F.R. 312.21(c) (as amended or any replacement thereof), or a similar clinical study prescribed by the Regulatory Authorities in a foreign country.

1.140 "**Phase 4 Clinical Trial**" means (a) a human clinical trial of a product conducted following commencement of a pivotal clinical trial for such product that is not required for receipt of approval of the NDA or MAA (whether such clinical trial is conducted prior to or after receipt of such approval), but that may be useful in support of the post-approval Exploitation of a product; or (b) a human clinical trial of a Product conducted after Regulatory Approval of such product has been obtained from an appropriate Regulatory Authority due to a request or requirement of such Regulatory Authority.

1.141 "**Pricing Approval**" means the approval, agreement, determination or governmental decision establishing the price or level of reimbursement for a Product, as required in a given jurisdiction prior to sale of such Product in such jurisdiction.

1.142 "**Pricing Matters**" means all issues and decisions regarding (a) price, price terms and other contract terms with respect to Product sales, including discounts, rebates, other price concessions and service fees to payors and purchasers and (b) reimbursement programs applicable to a Product. For clarity, "Pricing Matters" includes all financial issues and financial decisions with respect to contracting with managed care entities, hospitals, pharmacies, group purchasing organizations, pharmacy benefit managers, and government, and specifically includes issues and decisions about the offer of discounts or rebates for formulary placement for Products.

1.143 "**Product(s)**" means any therapeutic compound or product containing a Development Candidate (alone or with other active ingredients) in all presentations, dosage forms, forms of administration, formulations, dosing regimens, preparations and strengths designated by the JSC as a Product pursuant to Section 2.6. For clarity, a Reversion Product will not be considered a Product and instead will be treated in accordance with Section 3.3.

1.144 "**Product Claims**" has the meaning set forth in Section 12.2(a).

1.145 "**Product Specific Patent**" has the meaning set forth in Section 12.5(a)(iii).

1.146 "**Program IP**" means Know-How and Materials, plus all Patents arising therefrom, created or conceived in connection with the activities performed pursuant to this Agreement (whether solely by one Party or jointly by the Parties, in each case optionally with their Affiliates or any (sub)licensees, subcontractors or any other Third Parties or any employees, consultants or agents of any of the foregoing).

1.147 "**Promotional Materials**" means all sales representative training materials and all written, printed, graphic, electronic, audio or video matter, including journal advertisements, sales visual aids, leave-behind items, formulary binders, reprints, direct mail, direct-to-consumer advertising, internet postings and sites and broadcast advertisements intended for use or used by or on behalf of either Party or their respective Affiliates in connection with any promotion of a Product.

1.148 "**Prosecution and Maintenance**" means in relation to any Patents, (a) to prepare and file Patent applications, including re-examinations or re-issues thereof, and represent applicants or assignees before relevant patent offices or other relevant governmental authorities during examination, re-examination and re-issue thereof, in appeal processes, interferences, inter partes reviews, post-grant reviews, or any equivalent proceedings, (b) to defend all such applications against Third Party oppositions, (c) to secure the grant of any Patents arising from such Patent application, (d) to maintain in force any issued Patent (including through payment of any relevant maintenance fees), and (e) to make all decisions with regard to any of the foregoing activities.

1.149 "**Public Company Date**" has the meaning set forth in Section 18.6(a).

1.150 "**Publication**" has the meaning set forth in Section 15.4(c).

1.151 "**Qualifying Phase 1 Clinical Trial**" means a Phase 1 Clinical Trial that is intended to test for safety and [***] of a Development Candidate in a defined indication in that number of patients on which the Parties mutually agree in writing for such Development Candidate and such Phase 1 Clinical Trial (and, absent any such agreement, the number of such patients will be [***] in such Phase 1 Clinical Trial), at a dose and dosing schedule that is [***].

1.152 [***].

1.153 "**Redacted Agreement**" has the meaning set forth in Section 15.3(c).

1.154 "**Registrational Trial**" means, with respect to any Product, a Phase 2 Clinical Trial or a Phase 3 Clinical Trial that, in either case, at the time of Initiation, is expected to be the basis for Regulatory Authorization of such Product.

1.155 "**Regulatory Approval**" means all approvals necessary for the manufacture, marketing, importation and sale of a Product for one or more indications and in a country or regulatory jurisdiction, which may include satisfaction of all applicable regulatory and notification requirements, but which will exclude any pricing and reimbursement approvals. Regulatory Approvals include approvals by Regulatory Authorities of INDs, MAAs or NDAs or the equivalent application to the equivalent Regulatory Authority in any other regulatory jurisdiction.

1.156 "**Regulatory Authority**" means, in a particular country or regulatory jurisdiction, any applicable Governmental Authority involved in granting Regulatory Approval or, to the extent required in such country or regulatory jurisdiction, pricing or reimbursement approval of a Product in such country or regulatory jurisdiction, including (a) the FDA, (b) the EMA and (c) the European Commission or its successor.

1.157 "**Regulatory Exclusivity**" means any exclusive marketing rights or data exclusivity rights conferred by any Regulatory Authority with respect to a Product other than Patents, including, without limitation, rights conferred in the United States under Biologics Price Competition and Innovation Act, or rights similar thereto outside the United States.

1.158 "**Regulatory Materials**" means regulatory applications, submissions, notifications, registrations, or other filings made to or with a Regulatory Authority that are necessary or reasonably desirable in order to Develop, Manufacture, market, sell or otherwise Commercialize a Product in a particular country or regulatory jurisdiction. Regulatory Materials include INDs, MAAs and NDAs (as applications, but not the approvals with respect thereto) and DMFs, or the equivalent applications to the equivalent Regulatory Authority in any other regulatory jurisdiction.

1.159 "**Replacement Antigen**" has the meaning set forth in Section 2.3(a).

1.160 "**Required Phase 4 Clinical Trial**" means a Phase 4 Clinical Trial that is conducted due to a request or requirement of a Regulatory Authority.

1.161 "**Research**" means all in vitro and in vivo studies, including non-human animal studies, preclinical studies and toxicology studies of Research Candidates. For clarity, Research will exclude any Development, Commercialization and Manufacturing activities.

1.162 "**Research Candidate**" means any therapeutic compound or product composed of the combination or co-administration of (a) an SGI Antibody that specifically targets a Collaboration Antigen, and (b) ACTR T-cells, whether administered together, separately, simultaneously, sequentially or otherwise in relation to such SGI Antibody, and that (i) has been designated for Research by the Parties pursuant to a Research Plan, and (ii) has not yet been designated as a Development Candidate or Product hereunder. For clarity, a Reversion Product will not be considered a Research Candidate and instead will be treated in accordance with Section 3.3.

1.163 "**Research Candidate Selection Date**" has the meaning set forth in Section 2.4.

1.164 "**Research Costs**" means (a) all costs and expenses incurred by or on behalf of Unum or any of its Affiliates or subcontractors that are directly allocable to the Research of Research Candidates in the Territory, and (b) Manufacturing Costs for Research Candidates. For clarity, Research Costs exclude any Development Costs and costs of Commercialization.

1.165 "**Research Plan**" has the meaning set forth in Section 5.2(a)(i).

1.166 "**Research Program**" means, as to a particular Collaboration Antigen, the program of Research activities to be undertaken by or on behalf of Unum for Research Candidates directed against such Collaboration Antigen in accordance with the Research Plan during the Research Term. For clarity, the Research Program will not include activities conducted under the Early Clinical Development Program, the Late Clinical Development Program or relating to Manufacturing.

1.167 "**Research Term**" means, on a Collaboration Antigen-by-Collaboration Antigen basis, the period commencing on the Research Candidate Selection Date and ending upon the date of completion of the Research specified in the applicable Research Plan for all applicable Research Candidates.

1.168 "**Reversion Product**" means a Development Candidate and associated Product as to which one Party has exercised an Opt-Out Right and the other Party is continuing to Develop and Commercialize throughout the Territory.

1.169 "**RFP**" has the meaning set forth in Section 9.8(c).

1.170 "**RFP Notice**" has the meaning set forth in Section 9.8(c).

1.171 "**Royalty Term**" has the meaning set forth in Section 11.9(b).

1.172 "**Safety Reasons**" means it is a Party's [***], after [***] and in a [***] with such Party's [***] policies and procedures with respect to such a determination, that there is an [***] for harm in humans based upon: (a) pre-clinical safety data, including data from animal toxicology studies, or (b) the observation of serious adverse effects in humans after a Development Candidate or associated Product has been administered to or taken by humans, such as during a Clinical Trial or after the launch of a Product, in each case ((a) and (b)) so that there is [***] for the Development or Commercialization of such Development Candidate or Product. The determination of the existence of a Safety Reason will take into consideration the known safety profiles for other cell therapies in active development or commercialization by Third Parties.

1.173 "**Sales and Marketing Costs**" means the costs that are directly allocable to the sales and marketing of a Product in the Shared Territory and that are compliant with Applicable Law and applicable industry codes, including the costs of: (a) activities directed to the advertising and marketing of a Product in the Shared Territory; (b) professional education in the Shared Territory for United States-based

professionals (to the extent not performed by sales representatives), including launch meetings; (c) costs of advertising and public relations with respect to a Product in the Shared Territory; (d) peer-to-peer activities with respect to a Product in the Shared Territory, such as 'lunch and learns'; (e) promotional speaker programs with respect to a Product in the Shared Territory, including the training of such speakers; (f) developing, obtaining and providing training with respect to a Product in the Shared Territory, as well as training packages, promotional literature, promotional materials and other selling materials with respect to a Product in the Shared Territory; (g) developing and performing market research with respect to a Product in the Shared Territory and developing branding and communications plans; (h) conducting promotional symposia with respect to a Product in the Shared Territory; (i) developing reimbursement programs with respect to a Product in the Shared Territory; and (j) developing information specifically intended for national accounts, managed care organizations and group purchasing organizations with respect to a Product in the Shared Territory.

1.174 "**SEA Know-How**" means Know-How Controlled by SGI or any of its Affiliates as of the Effective Date or at any time during the Term that claims or covers inhibiting the incorporation of fucose into Antibodies during Manufacturing.

1.175 "**SEA Patents**" means Patents Controlled by SGI or any of its Affiliates as of the Effective Date or at any time during the Term that claims or covers inhibiting the incorporation of fucose into Antibodies during Manufacturing.

1.176 "**SEA Technology**" means SEA Know-How and SEA Patents.

1.177 "**SEC**" means the U.S. Securities and Exchange Commission.

1.178 "**Second Notice of Opt-Out**" has the meaning set forth in Section 3.2(d).

1.179 "**Second Source Manufacturer**" has the meaning set forth in Section 9.8(c).

1.180 "**Segregate**" means, with respect to an Alternative Product, to use diligent efforts to segregate the research, development, manufacture and commercialization activities relating to such Alternative Product from Research, Development, Manufacture and Commercialization with respect to any Research Candidates, Development Candidates or Products under this Agreement, including using diligent efforts to ensure that: (a) no personnel involved in performing the research, development, manufacture or commercialization of such Alternative Product have [***] relating to the Research, Development, Manufacture or Commercialization of any Research Candidates, Development Candidates or Products (provided that [***] may [***] regarding the Research, Development, Manufacture and Commercialization of any Research Candidates, Development Candidates or Products in connection with [***]); and (b) no personnel involved in performing the Research, Development, Manufacture or Commercialization of any Research Candidates, Development Candidates or Products have access to [***] relating to the research, development, manufacture or commercialization of such Alternative Product (provided that [***] may [***] regarding the research, development, manufacture and commercialization of such Alternative Product in connection with [***]).

1.181 "**SGI**" has the meaning set forth in the preamble to this Agreement.

1.182 "**SGI Antibodies Clinical Supply Agreement**" has the meaning set forth in Section 9.3(c)(i).

1.183 "**SGI Antibodies Commercial Supply Agreement**" has the meaning set forth in Section 9.3(d)(i).

1.184 "**SGI Antibodies Manufacturing Services Agreement**" has the meaning set forth in Section 9.3(b)(i).

1.185 "**SGI Antibody**" means (a) an Antibody Controlled by SGI or its Affiliates as of the Effective Date or at any time during the Term, other than any Antibody that is covalently attached to a therapeutic small molecule and (b) is Researched or Developed as a part of a Research Candidate, Development Candidate or Product pursuant this Agreement.

1.186 "**SGI Background Know-How**" means Know-How Controlled by SGI or any of its Affiliates as of the Effective Date or during the Term that is necessary or reasonably useful for the Research, Development or Commercialization of Development Candidates or Products, including SEA Know-How, but excluding any SGI Program IP. For clarity, SGI Background Know-How will include Know-How Controlled by SGI or any of its Affiliates pursuant to the SGI Existing In-Licenses.

1.187 "**SGI Background Patents**" means Patents Controlled by SGI or any of its Affiliates as of the Effective Date or during the Term that are necessary or reasonably useful for the Research, Development or Commercialization of Development Candidates or Products, including any Patents that claim or cover the composition of matter, manufacture or use of one or more Development Candidates or Products or that would otherwise be infringed, absent a license, by Unum's or any of its Affiliates' performance of its activities under this Agreement, including SEA Patents, but excluding any SGI Program IP. For clarity, SGI Background Patents will include Patents Controlled by SGI or any of its Affiliates pursuant to the SGI Existing In-Licenses.

1.188 "**SGI Background Technology**" means the SGI Background Know-How and the SGI Background Patents.

1.189 "**SGI Claims**" has the meaning set forth in Section 14.1.

1.190 "**SGI Core IP**" has the meaning set forth in Section 12.2(a).

1.191 "**SGI Damages**" has the meaning set forth in Section 14.1.

1.192 "**SGI Existing In-Licenses**" means the agreements between SGI and the indicated Third Parties that are set forth on Exhibit B, under which Unum is granted a sublicense under this Agreement as provided in Section 10.1, in each case as amended or restated from time to time.

1.193 "**SGI Indemnitees**" has the meaning set forth in Section 14.1.

1.194 "**SGI Program IP**" has the meaning set forth in Section 12.2(c)(i).

1.195 "**SGI Reversion IP**" has the meaning set forth in Section 3.3(a)(ii).

1.196 "**SGI Sensitive Information**" has the meaning set forth in Section 18.5(c).

1.197 "**Shared Program Activities**" means any activities with respect to a Product conducted by either Party or any of its Affiliates or subcontractors at any time on or after the Effective Date during the Term consisting of (a) the Development for the purpose of, or in support of, obtaining or maintaining Regulatory Approval in the Shared Territory or Commercialization of any Product in the Shared Territory, (b) Commercialization of any Product in the Shared Territory, or (c) the Manufacture of any Product for use in any activities under clause (a) or (b).

1.198 "**Shared Program Damages**" means damages or other amounts payable by either Party (or any of its Indemnified Persons) to any Third Party claimant, as well as any reasonable attorneys' fees and costs of litigation incurred by either Party (or any of its Indemnified Persons) from Third Party claims that arise from or are based on Shared Program Activities, including such damages and other amounts (and attorneys' fees) from claims of infringement of a Third Party's Patent and other intellectual property rights; provided, however, that "Shared Program Damages" will exclude any and all damages and other amounts (including attorneys' fees) for which a Party has an obligation to indemnify pursuant to Section 14.1, Section 14.2 or Section 14.3.

1.199 "**Shared Territory**" means, on a Development Candidate-by-Development Candidate and associated Product-by-Product basis, the United States.

1.200 "**Sole Program IP**" has the meaning set forth in Section 12.2(c)(i).

1.201 "**Supplemental Trial**" is any Clinical Trial (other than any Voluntary Phase 4 Clinical Trial or Required Phase 4 Clinical Trial) for an additional indication or other label expansion for a Product beyond the initial indication contemplated by the Late Clinical Development Plan.

1.202 "**Supply Agreements**" means the supply agreements contemplated in Section 9.3 and Section 9.4.

1.203 "**Supply Discontinuation Notice**" has the meaning set forth in Section 3.3(g)(iii)(B).

1.204 "**Standstill Period**" has the meaning set forth in Section 18.6.

1.205 **"Technical Supply Failure (Unum)"** means that, on a Product-by-Product basis, and on a month-by-month basis for each month of a consecutive [***] period, the failure by Unum or its Third Party manufacturer(s) to perform, in a manner consistent with the applicable operating procedures, the lesser of (a) [***]. For clarity, in the event that patient cells are processed in accordance with the applicable operating procedures, but fail to meet quality release criteria for any reason related to the applicable patient's cells, such failure will not constitute a "Technical Supply Failure (Unum)" under this Agreement.

1.206 "**Technical Supply Failure (SGI)**" means that, on a Product-by-Product basis, and on a month-by-month basis for each month of a consecutive [***]month period, the failure by SGI or its Third Party manufacturer(s) to (a) deliver, in a manner consistent with the applicable operating procedures, at least [***] of the number of unit doses of SGI Antibody required by a binding rolling forecast set by a process to be agreed by the Parties in the SGI Antibody Commercial Supply Agreement, or (b) maintain sufficient inventory so together with clause (a) at least [***] of such forecast would be supplied.

1.207 "**Term**" has the meaning set forth in Section 16.1.

1.208 "**Territory**" means all countries in the world.

1.209 "**Third Party**" means any entity other than Unum or SGI or an Affiliate of either of them.

1.210 "**Third Party Payment**" has the meaning set forth in Section 10.7.

1.211 "**Trademark Costs**" means the fees and expenses paid to outside counsel and other Third Parties, direct costs of in-house counsel and filing and maintenance expenses, in each case incurred in connection with the establishment and maintenance of rights under trademarks applicable to a Product in the Shared Territory, including costs of Shared Territory trademark filing and registration fees, actions to enforce or maintain a Shared Territory trademark and other Shared Territory trademark proceedings.

1.212 "**Transition Agreement**" has the meaning set forth in Section 3.3(g).

1.213 "**United States**" or "**U.S.**" means the United States of America (including all possessions and territories thereof).

1.214 "**Unum**" has the meaning set forth in the preamble to this Agreement.

1.215 "**Unum Background Know-How**" means Know-How Controlled by Unum or any of its Affiliates as of the Effective Date or during the Term that is necessary or reasonably useful for the Research, Development or Commercialization of Development Candidates or Products, but excluding any Unum Program IP. For clarity, Unum Background Know-How will include Know-How Controlled by Unum or any of its Affiliates pursuant to the Unum Existing In-Licenses.

1.216 "**Unum Background Patents**" means Patents Controlled by Unum or any of its Affiliates as of the Effective Date or during the Term that are necessary or reasonably useful for the Research, Development or Commercialization of Development Candidates or Products, including any Patents that claim or cover the composition of matter, manufacture or use of one or more Development Candidates or Products or that would otherwise be infringed, absent a license, by SGI or any of its Affiliates' performance of its activities under this Agreement, but excluding any Unum Program IP. For clarity, Unum Background Patents will include Patents Controlled by Unum or any of its Affiliates pursuant to the Unum Existing In-Licenses.

1.217 "**Unum Background Technology**" means the Unum Background Know-How and the Unum Background Patents.

1.218 "**Unum Claims**" has the meaning set forth in Section 14.2.

1.219 "**Unum Core IP**" has the meaning set forth in Section 12.2(a).

1.220 "**Unum Damages**" has the meaning set forth in Section 14.2.

1.221 "**Unum Existing In-Licenses**" means the agreements between Unum and the indicated Third Parties that are set forth on Exhibit C, under which SGI is granted a sublicense under this Agreement as provided in Section 10.2, in each case as amended or restated from time to time.

1.222 "**Unum Indemnitees**" has the meaning set forth in Section 14.2.

1.223 "**Unum Program IP**" has the meaning set forth in Section 12.2(c)(i).

1.224 "**Unum Reversion IP**" has the meaning set forth in Section 3.3(b)(ii).

1.225 "**Unum Sensitive Information**" has the meaning set forth in Section 18.5(d).

1.226 "**Valid Claim**" means, with respect to a particular country, (a) any claim of an issued and unexpired Patent in such country that (i) has not been held permanently revoked, unenforceable or invalid by a decision of a court or governmental agency of competent jurisdiction, which decision is unappealable or unappealed within the time allowed for appeal and (ii) has not been abandoned, disclaimed, denied or admitted to be invalid or unenforceable through reissue or disclaimer or otherwise in such country, or (b) a claim of a pending Patent application that has been pending for less than [***] from the first substantive examination of such Patent application in the country of such Patent application, which claim is being diligently prosecuted and has not been abandoned or finally disallowed without the possibility of appeal or re-filing of the application.

1.227 "**Valuation Dispute**" has the meaning set forth in Exhibit I.

1.228 "**Voluntary Phase 4 Clinical Trial**" means a Phase 4 Clinical Trial that is not a Required Phase 4 Clinical Trial.

ARTICLE 2
OVERVIEW; NOMINATION RIGHTS

2.1 General. On a Collaboration Antigen-by-Collaboration Antigen basis, the Parties will work together leveraging each Party's expertise to collaborate with respect to the identification, Research, Development, Manufacture and Commercialization of Research Candidates, Development Candidates and Products in the Territory, as and to the extent set forth in this Agreement.

2.2 Nomination of Collaboration Antigens.

(a) SGI has the right to nominate a total of up to three (3) Antigens for use in the Research Program in accordance with this Section 2.2. As of the Effective Date, the A1 Antigen and A2 Antigen are nominated and accepted by the Parties as the first two (2) Antigens.

(b) SGI is hereby granted the option to nominate a third Antigen as set forth in this Section 2.2(b) during the period commencing on the first anniversary of the Effective Date and ending upon the second anniversary of the Effective Date (or such other period of time as the Parties may mutually agree in writing) (the "**A3 Antigen Selection Period**"). In the event that SGI elects to nominate a third Antigen during the A3 Antigen Selection Period, SGI will provide written notice to Unum with a brief written description of the Antigen(s) proposed for inclusion in the Research Program as the A3 Antigen (the "**A3 Antigen Notice**"). Promptly following the A3 Antigen Notice, the Parties' Alliance

Managers will convene a meeting of the JSC (in person or via videoconference) at which meeting the SGI committee members or their designees will present information relating to the Antigen(s) proposed for inclusion in the Research Program as the A3 Antigen. The information presented will include the information set forth on Exhibit A. Within [***] of the A3 Antigen Notice (or such longer period as the JSC may agree), the JSC will determine whether or not an Antigen proposed by SGI (and, if multiple Antigens are proposed, which Antigen) will be included in the Research Program as the A3 Antigen. If the JSC decides that the Antigen(s) proposed will not be included in the Research Program as the A3 Antigen, SGI may issue further A3 Antigen Notices during the remainder of the A3 Antigen Selection Period. If the JSC decides that an Antigen proposed will be included in the Research Program as the A3 Antigen, then, subject to SGI's payment of the A3 Selection Fee as set forth in Section 11.3, (x) such Antigen will be deemed to be the "**A3 Antigen**" for purposes of this Agreement, and (y) the Parties will have all rights and obligations hereunder in connection with the A3 Antigen (including the exclusivity in accordance with Section 10.8) as of the date of SGI's payment of the A3 Selection Fee. In no event will Unum be required to accept as the A3 Antigen any proposed Antigen that (i) is the subject of an active internal research, development or commercialization program by or on behalf of Unum or any of its Affiliates, wherein "active" for this clause (i) means that any biological materials directly related to the particular proposed Antigen has been ordered or otherwise contracted for or their production has been initiated, in each case with an intended therapeutic use, (ii) is the subject of an active, executed written agreement with a Third Party (other than a Third Party subcontractor), (iii) is the subject of active ongoing negotiations with a Third Party (other than a Third Party subcontractor), (iv) in Unum's reasonable discretion, there is a potential safety risk given the proposed A3 Antigen expression when used with ACTR T-cells, (v) it is not reasonably expected that that there will be sufficient cGMP materials for a Qualifying Phase 1 Clinical Trial of a SGI Antibody that specifically targets the proposed A3 Antigen within [***] of such nomination, (vi) is subject to Third Party financial obligations that are more onerous than those of the A1 Antigen or A2 Antigen, (vii) presents material freedom-to-operate concerns, (viii) in Unum's reasonable discretion, there is a potential technical feasibility issue, or (ix) raises an ACTR Matter. If Unum rejects a proposed A3 Antigen for one of the reasons set forth in clauses (iv), (vii), (viii) or (ix), then Unum will provide an explanation for such rejection and, upon SGI's reasonable written request, will meet with SGI to discuss same.

2.3 Collaboration Antigen Exchange.

(a) During the Exchange Period for a particular Collaboration Antigen, SGI has the right to substitute another Antigen in place of such Collaboration Antigen (each a "**Replacement Antigen**"), subject to the nomination and acceptance process described in this Section 2.3 (each, a "**Collaboration Antigen Exchange**"). SGI has the right to conduct a Collaboration Antigen Exchange (i) up to a total [***] across the entire Research Program if the Parties have not selected, or do not select, the A3 Antigen (e.g., SGI may replace [***] Collaboration Antigen [***], or one Collaboration Antigen [***]), or (ii) up to a total of [***] across the entire Research Program if the Parties have selected the A3 Antigen (e.g., SGI may replace each Collaboration Antigen [***], one Collaboration Antigen [***], or one Collaboration Antigen [***]and another Collaboration Antigen [***]. The permitted Collaboration Antigen Exchanges will be conducted free of charge.

(b) In the event that SGI elects to exercise its right to conduct a Collaboration Antigen Exchange during the Exchange Period, SGI will provide written notice to Unum with a brief written description of an Antigen proposed for nomination as the Replacement Antigen (an "**Exchange Notice**").

(c) Promptly following an Exchange Notice, the Parties' Alliance Managers will convene a meeting of the JSC (in person or via videoconference) at which meeting the SGI committee members or their designees will present information relating to the Replacement Antigen(s). The information presented will include the information set forth on Exhibit A. Within [***] of the Exchange Notice (or such longer period as the JSC may agree), the JSC will determine whether or not a Replacement Antigen proposed by SGI (and, if multiple Replacement Antigens are proposed, which Replacement Antigen) will be included in the Research Program as a Collaboration Antigen. If the JSC decides that the Replacement Antigen(s) proposed will not be included in the Research Program as a Collaboration Antigen, SGI may issue further Exchange Notices during the remainder of the Exchange Period. If the JSC decides that a Replacement Antigen proposed will be included in the Research Program as a Collaboration Antigen, (i) such Replacement Antigen will be deemed to be a "**Collaboration Antigen**" hereunder, (ii) the Parties will have all rights and obligations hereunder in connection with such new Collaboration Antigen, and (iii) all of the Parties' rights and obligations hereunder (including the exclusivity provisions under Section 10.8 and obligations under Section 10.9) with respect to the replaced Collaboration Antigen will automatically terminate and, so long as a Party does not use or disclose any Confidential Information, Materials or Program IP of the other Party in breach of this Agreement in connection therewith, each Party will be free on its own, or in collaboration with Third Parties, to develop and/or commercialize products involving Antibodies and/or genetically engineered T-Cells directed to such replaced Collaboration Antigen. In no event will Unum be required to accept as a Collaboration Antigen any proposed Replacement Antigen that (A) is the subject of an active internal research, development or commercialization program by or on behalf of Unum or any of its Affiliates, wherein "[***]" for this clause (A) means that [***] has [***], (B) is the subject of [***] with a [***] (other than a [***]), (C) is the subject of [***] ongoing negotiations with a Third Party (other than a [***]), (D) in Unum's reasonable discretion, there is a [***], (E) it is not reasonably expected that there will be [***] of a [***] that specifically targets the [***] within [***] of such [***], (F) is subject to [***] (e.g., relating to [***] or [***]) that are that are more [***] than those of the [***], (G) presents [***], (H) in Unum's reasonable discretion, there is a [***], or (I) raises an [***]. If Unum rejects a proposed [***] for one of the reasons set forth in clauses [***] or [***], then Unum will provide [***] and, upon [***], will meet with [***] to discuss same.

2.4 Selection of Research Candidates. For each Collaboration Antigen, the JSC will select up to five (5) SGI Antibodies for inclusion in Research Candidates that specifically target such Collaboration Antigen for Research pursuant to the Research Program in accordance with the terms and conditions of this Agreement. For each Collaboration Antigen, the date upon which the JSC selects the applicable Research Candidates will be the "**Research Candidate Selection Date**."

2.5 Selection of Development Candidates. For each Collaboration Antigen, during the Research Term for the applicable Research Candidates and following review of the data from activities under the applicable Research Plan, the JSC will select a Research Candidate that specifically targets such Collaboration Antigen to be a Development Candidate for Development pursuant to an Early Clinical Development Program in accordance with the terms and conditions of this Agreement. For each Collaboration Antigen, the date upon which the JSC selects a Development Candidate will be the "**Development Candidate Selection Date**." If, following the review of data from activities under the

applicable Research Plan, the JSC determines that none of the Research Candidates is appropriate for selection as a Development Candidate, then, unless the JSC agrees otherwise, the Research Program for the relevant Collaboration Antigen will be terminated. Unum will not conduct in vivo animal studies prior to the selection of a Development Candidate unless the Research Plan for the relevant Collaboration Antigen otherwise contemplates such studies or the JSC otherwise determines that such studies should be conducted. In addition, the Parties contemplate that, generally, there will be one Development Candidate per Collaboration Antigen.

2.6 Selection of Products. For each Development Candidate, during the Late Clinical Development Term and following review of the data from activities under the applicable Early Clinical Development Plan and Late Clinical Development Plan, the JSC will decide whether such Development Candidate should be selected as a Product for Commercialization pursuant to a Joint Commercialization Plan in accordance with the terms and conditions of this Agreement. If, following the review of data from activities under the applicable Early Clinical Development Plan and Late Clinical Development Plan, the JSC does not agree whether such Development Candidate is appropriate for selection as a Product, then a Party may exercise its Opt-Out Right with respect to such Development Candidate and associated Product in accordance with Section 3.2.

ARTICLE 3
OPT-OUT RIGHTS AND REVERSION PRODUCTS

3.1 Qualifying Phase 1 Clinical Trial.

(a) On a Development Candidate-by-Development Candidate basis, Unum will promptly provide SGI with all safety and efficacy data generated with respect to such Development Candidate in Phase 1 Clinical Trial(s), including the Qualifying Phase 1 Clinical Trial, and all correspondence to and from any Regulatory Authority regarding such Development Candidate, and, upon SGI's written request, such other relevant information reasonably requested by SGI regarding the Development Candidate in Unum's possession and subject to Third Party confidentiality obligations (collectively, "**Phase 1 Clinical Trial Data**"), following Unum's receipt of same. Unum will in good faith seek to obtain such information and make it available to SGI.

(b) On a Development Candidate-by-Development Candidate basis, no later than [***] following Unum's delivery to SGI of [***], SGI may opt-out of further Development and Commercialization of such Development Candidate and associated Product, by written notice to the other Party ("**End of Phase 1 Opt-Out Notice**"). The End of Phase 1 Opt-Out Notice will clearly identify the applicable Development Candidate and associated Product to be treated as a Reversion Product in accordance with Section 3.3, subject to the Parties' resolution of the payment obligations associated therewith in accordance with Section 3.1(d). For clarity, once delivered an End of Phase 1 Opt-Out Notice will be irreversible.

(c) Notwithstanding that the applicable payment obligations may not have been determined pursuant to Section 3.1(d), on a Development Candidate-by-Development Candidate basis, if SGI provides an End of Phase 1 Opt-Out Notice with respect to a Development Candidate within the time required therefor, SGI will be deemed an Opt-Out Party and will opt out of further Development and Commercialization of the Development Candidate and associated Product effective as of the date of such End of Phase 1 Opt-Out Notice and Unum will be deemed the Continuing Party and will have the right to Research, Develop and Commercialize such Development Candidate as a Reversion Product independently or under a sublicense to a Third Party in the Territory in accordance with Section 3.3.

(d) On a Reversion Product-by-Reversion Product basis, in the event that SGI provides an End of Phase 1 Opt-Out Notice with respect to a Reversion Product, the Parties will commence negotiations in good faith for a period of up to [***] after the date of such End of Phase 1 Opt-Out Notice in order to determine the payment obligations to be paid by Unum as the Continuing Party with respect to the incremental product rights for the Development and Commercialization of such Reversion Product. Such payment obligations will be based on the Parties' respective contributions as of the date of the applicable effective of End of Phase 1 Opt-Out Notice ([***]) and risks assumed.

(i) If the Parties agree on such payment obligations for such Reversion Product during such [***] negotiation period, then the Parties will memorialize such payment obligations for such Reversion Product in a definitive agreement.

(ii) If the Parties are unable to agree on such payment obligations for such Reversion Product during such [***] negotiation period, then either Party may refer the matter to binding arbitration by providing [***] written notice to the other, in which case the Parties will resolve such dispute using the arbitration procedures set forth in Exhibit I; provided that each Party's arbitration proposal must include payment obligations that (i) taken as a whole are at least as favorable to the other Party as such Party's last and best proposal during the [***] negotiation period, and (ii) are structured in amounts and timing in the same or substantially the same manner as such Party's last and best proposal during the [***] negotiation period. An alleged failure of a Party to comply with the foregoing proviso may be raised by the other Party as part of such arbitration. Upon the arbitrator's resolution of any dispute relating to payment obligations for a Reversion Product, the Parties will memorialize such payment obligations for such Reversion Product in a definitive agreement.

(e) On a Development Candidate-by-Development Candidate basis, if SGI does not provide an End of Phase 1 Opt-Out Notice within the time required therefor, [***] for each such Development Candidate as set forth in Section [***].

3.2 Late Clinical Development.

(a) On a Development Candidate-by-Development Candidate basis, each Party will share with the other Party all safety and efficacy data generated with respect to such Development Candidate in all Clinical Trial(s) after the Qualifying Phase 1 Clinical Trial for such Development Candidate, and all correspondence to and from any Regulatory Authority regarding such Development Candidate and, upon either Party's written request, such other relevant information reasonably requested by such Party regarding the Development Candidate in the other Party's possession (but subject to Third Party confidentiality obligations) (collectively, "**Late Clinical Development Trial Data**"), following such Party's receipt of same. Each Party will in good faith seek to obtain such information and make it available to the other Party.

(b) On a Development Candidate-by-Development Candidate basis, during the period commencing [***] and ending [***] after the [***] for such Development Candidate, either Party may provide written notice of its potential interest to opt-out of further Development and Commercialization of such Development Candidate and associated Product to the other Party ("**Notice of Potential Opt-Out**"). The Notice of Potential Opt-Out will clearly identify the applicable Development Candidate and associated Product that may be treated as a Reversion Product in accordance with Section 3.3, subject to the delivery of a Late Stage Opt-Out Notice in accordance with Section 3.2(c).

(c) On a Development Candidate-by-Development Candidate basis, in the event that a Party provides a Notice of Potential Opt-Out with respect to a Development Candidate, the Parties will commence negotiations in good faith for a period of up to [***] after the date of such Notice of Potential Opt-Out in order to determine the payment obligations to be paid by the potential Continuing Party to the potential Opt-Out Party with respect to the incremental product rights for the Development and Commercialization of such proposed Reversion Product. Such payment obligations will be based on the Parties' respective contributions as of the date of the applicable notice ([***]) and risks assumed.

(i) If the Parties agree on such payment obligations for such Development Candidate during such [***] negotiation period, then (A) the Opt-Out Party will deliver a Late Stage Opt-Out Notice to the Continuing Party, (B) such Development Candidate and the associated Product will be considered a Reversion Product as of the date of such delivery, and (C) the Parties will memorialize such payment obligations for such Reversion Product in a definitive agreement. For clarity, once delivered in accordance with this Section 3.2(c), a Late Stage Opt-Out Notice will be irreversible. If a Party provides a Late Stage Opt-Out Notice with respect to a Development Candidate within the time required therefor as provided in this Section 3.2(c), the Party providing the Late Stage Opt-Out Notice will automatically be deemed an Opt-Out Party and will opt out of further Development and Commercialization of the Development Candidate and associated Product effective as of the date of delivery of such Late Stage Opt-Out Notice and the Continuing Party will have the right to Research, Develop, Manufacture and Commercialize such Development Candidate and associated Product as a Reversion Product independently or under a sublicense to a Third Party in the Territory in accordance with this Section 3.3.

(ii) If the Parties are unable to agree on such payment obligations for such Development Candidate during such [***] negotiation period, then the potential Opt-Out Party may either (1) elect, by written notice to the potential Continuing Party before the end of such [***] negotiation period, to terminate this Section 3.2 process, whereupon the applicable Development Candidate and associated Product identified in the Notice of Potential Opt-Out will continue under this Agreement as such and without change, or (2) deliver a Late Stage Opt-Out Notice to the Continuing Party, whereupon the dispute will automatically be referred to binding arbitration, in which case the Parties will resolve such dispute using the arbitration procedures set forth in Exhibit I; provided that each Party's arbitration proposal must include payment obligations that (A) taken as a whole are at least as favorable to the other Party as such Party's last and best proposal during the [***] negotiation period, and (B) are structured in amounts and timing in the same or substantially the same manner as such Party's last and best proposal during the [***] negotiation period. An alleged failure of a Party to comply with the foregoing proviso may be raised by the other Party as part of such arbitration. Upon the delivery of a Late Stage Opt-Out Notice under clause (2) above, the applicable Development Candidate and associated Product will be considered a Reversion Product as of the date of such delivery. The Parties will memorialize such payment obligations for such Reversion Product in a definitive agreement upon the arbitrator's decision.

(d) If a Party has issued a Notice of Potential Opt-Out for a Development Candidate and subsequently terminates the Section 3.2 process with respect to such Development Candidate pursuant to Section 3.2(c)(1), such Party will be permitted to provide, during the period [***] with respect to such Development Candidate pursuant to Section 3.2(c)(1) and ending [***] after the [***] for such Development Candidate, a second written notice of its potential interest to opt-out of further Development and Commercialization of such Development Candidate and associated Product to the other Party ("**Second Notice of Opt-Out**"). If a Second Notice of Opt-Out is delivered the Parties will follow the steps outlined in Section 3.2(c) (*mutatis mutandis*) in order to determine the payment obligations to be paid by the Continuing Party to the Opt-Out Party with respect to the incremental product rights for the Development and Commercialization of such proposed Reversion Product; provided that once delivered in accordance with this Section 3.2(d), a Second Notice of Opt-Out will be irreversible. If a Party provides a Second Notice of Opt-Out with respect to a Development Candidate within the time required [***], the Party providing the Second Notice of Opt-Out will automatically be deemed an Opt-Out Party and will opt out of further Development and Commercialization of the Development Candidate and associated Product [***], and the Continuing Party will have the right to Research, Develop, Manufacture and Commercialize such Development Candidate and associated Product as a Reversion Product independently or under a sublicense to a Third Party in the Territory in accordance with this Section 3.3.

(e) For clarity, this Section 3.2 will not apply to any Reversion Products.

3.3 Reversion Products. The following provisions will apply on a Reversion Product-by-Reversion Product basis:

(a) Licenses if SGI Opts-Out.

(i) The licenses granted to SGI in Article 10 will terminate upon the effective date of SGI's opt-out (whether under Section 3.1 or Section 3.2), and SGI and its Affiliates will have no further rights to use any Unum Background Technology or Unum Program IP in connection with the relevant Reversion Product. SGI and its Affiliates will not continue to Research, Develop, Manufacture or Commercialize such Reversion Product.

(ii) Effective upon the effective date of SGI's opt-out (whether under Section 3.1 or Section 3.2), SGI hereby grants to Unum a worldwide, exclusive (even as to SGI) license, with the right to grant sublicenses (subject to Section 3.3(a)(iii) and Section 3.3(a)(iv)), under the SGI Background Technology and SGI Program IP (along with any other Patents or Know-How Controlled by SGI or its Affiliates that claim or cover such Reversion Product or its method of use or method of manufacture) as such Patents, Know-How and interests in Patents and Know-How exist as of the effective date of SGI's opt-out (collectively, the "**SGI Reversion IP**"), to Research, Develop, Manufacture (but only to the extent permitted pursuant to Section 3.3(g)(iii)) and Commercialize (including to use, import, export, offer for sale and sell) such Reversion Product (and no other drug candidate or product); provided however, if Unum determines that an HSR Filing is required to be made to acquire such Reversion Product, then (A) Unum will notify SGI of its determination prior to the effective date of SGI's opt-out, (B) the Parties will promptly make an HSR Filing in accordance with Section 18.7 and (C) the effective date of the grant of the

license to such Reversion Product will be extended until the HSR Clearance Date. At Unum's written request, the Parties will enter into commercially reasonable agreement addressing patent prosecution, enforcement and defense for the SGI Reversion IP consistent with the principles set forth in Article 11, and Unum will bear the costs of such prosecution, enforcement and defense activities to the extent controlled by Unum. The license granted pursuant to this Section 3.3(a)(ii) will continue with respect to such Reversion Product until the earlier of (a) as no further payments are owed by Unum to SGI for such Reversion Product in such country, (b) such time as Unum provides written notice to SGI of Unum's decision, in its sole discretion, to cease permanently the Research, Development, and Commercialization of such Reversion Product (which notice will be provided within [***] of Unum making such decision), in which event Unum will have no continuing obligation to Research, Develop or Commercialize the Reversion Product (notwithstanding Section 3.3(c)), or (c) such license is terminated pursuant to Section 3.3(j). For clarity, the foregoing license will be limited in all events to the Reversion Product and may not be practiced for any other purpose.

(iii) The license granted under Section 3.3(a)(ii) may be sublicensed by Unum to its Affiliates without any requirement of consent, provided that such sublicense to an Affiliate will immediately terminate if and when such party ceases to be an Affiliate of Unum.

(iv) The license granted under Section 3.3(a)(ii) may be sublicensed through multiple tiers to a Third Party to Develop and Commercialize the Reversion Product. Unum will provide written notice to SGI within [***] of granting the sublicense.

(b) Licenses if Unum Opts-Out.

(i) The licenses granted to Unum in Article 10 (other than pursuant to Section 10.1(e)) will terminate upon the effective date of Unum's opt-out, and Unum and its Affiliates will have no further rights to use any SGI Background Technology or SGI Program IP in connection with the relevant Reversion Product. Unum and its Affiliates will not continue to Research, Develop, or Commercialize such Reversion Product.

(ii) Effective upon the effective date of Unum's opt-out, Unum hereby grants to SGI a worldwide, exclusive (even as to Unum) license with the right to grant sublicenses (subject to Section 3.3(b)(iii) and Section 3.3(b)(iv)), under the Unum Background Technology and Unum Program IP (along with any other Patents or Know-How Controlled by Unum or its Affiliates that claim or cover such Reversion Product or its method of use or method of manufacture) as such Patents, Know-How and interests in Patents and Know-How exist as of the effective date of Unum's opt-out (collectively, the "**Unum Reversion IP**"), to Research, Develop, Manufacture (but only to the extent permitted pursuant to Section 3.3(g)(iii)) and Commercialize (including to use, import, export, offer for sale and sell) such Reversion Product (and no other drug candidate or product); provided however, if SGI determines that an HSR Filing is required to be made to acquire such Reversion Product, then (A) SGI will notify Unum of its determination prior to the effective date of Unum's opt-out, (B) the Parties will promptly make an HSR Filing in accordance with Section 18.7 and (C) the effective date of the grant of the license to such Reversion Product will be extended until the HSR Clearance Date. At SGI's written request, the Parties will enter into commercially reasonable agreement addressing patent prosecution, enforcement and defense for the Unum Reversion IP consistent with the principles

set forth in Article 11, and SGI will bear the costs of such prosecution, enforcement and defense activities to the extent controlled by SGI. The license granted pursuant to this Section 3.3(b)(ii) will continue with respect to such Reversion Product until the earlier of (a) as no further payments are owed by SGI to Unum for such Reversion Product in such country, (b) such time as SGI provides written notice to Unum of SGI's decision, in its sole discretion, to cease permanently the Research, Development and Commercialization of such Reversion Product (which notice will be provided within [***] of SGI making such decision), in which event SGI will have no continuing obligation to Research, Develop or Commercialize the Reversion Product (notwithstanding Section 3.3(c)), or (c) such license is terminated pursuant to Section 3.3(j). For clarity, the foregoing license will be limited in all events to the Reversion Product and may not be practiced for any other purpose.

(iii) The license granted under Section 3.3(b)(ii) may be sublicensed by SGI to its Affiliate without any requirement of consent, provided that such sublicense to an Affiliate will immediately terminate if and when such party ceases to be an Affiliate of SGI.

(iv) The license granted under Section 3.3(b)(ii) may be sublicensed by SGI to a Third Party to Develop and Commercialize the Reversion Product; provided that (A) SGI will notify Unum in writing of the identity of such Third Party at least [***] before granting any such sublicense and SGI may not grant such a sublicense to any Third Party that is (alone or with others) researching, developing, manufacturing or commercializing (or Unum can demonstrate that it has good reason to believe that such Third Party is planning to conduct any such activities alone or with others) genetically-engineered immune cell therapies (including ACTR, CART, T-cell receptor, natural killer (NK) therapies, etc.) unless the proposed sublicensee agrees in writing to terms comparable to Section 18.5(d) to protect Unum Sensitive Information and (B) SGI will have no right to grant sublicenses to Manufacture the Reversion Product except to the extent permitted pursuant to Section 3.3(g)(iii).

(c) Diligence. The Continuing Party will use Commercially Reasonable Efforts to Develop and Commercialize such Reversion Product in the Territory in a timely and effective manner and in compliance in all material respects with Applicable Law and applicable codes of conduct; provided that, for purposes of this Section 3.3(c) only, the definition of "Commercially Reasonable Efforts" will apply to the Reversion Product (in place of Product thereunder) and the clause "in the pharmaceutical industry by a company" will be replaced by "the applicable Continuing Party" and, in addition, the Continuing Party will at all times have the sole discretion to cease permanently to Research, Develop and Commercialize such Reversion Product as provided above.

(d) Exclusivity. The Parties' respective obligations set forth in Section 10.8 will survive and continue to apply to a Reversion Product until the earlier of (i) such time as no further payments are owed by the Continuing Party to the Opt-Out Party for such Reversion Product in such country, (ii) such time as the Continuing Party provides written notice to the Opt-Out Party of its decision, in its sole discretion, to cease permanently the Research, Development and Commercialization of such Reversion Product (which notice will be provided within [***] of the Opt-Out Party making such decision), and (iii) the Opt-Out Party has terminated the Continuing Party's license with respect to such Reversion Product as provided in Section 3.3(j). For clarity, Section 10.9 and Section 18.5(b) through Section 18.5(d) will continue to apply to the Reversion Product.

(e) Marks. The Opt-Out Party will assign to the Continuing Party all right, title and interest in and to those Marks used exclusively with such Reversion Product (excluding ACTR Marks and any such Marks that include, in whole or part, any corporate name or logo). For clarity, Unum will own all ACTR Marks in the Territory.

(f) Regulatory Materials. The Opt-Out Party will grant to the Continuing Party a right of reference under all Regulatory Materials and Regulatory Approvals for such Reversion Product that are Controlled by the Opt-Out Party or its Affiliates (other than Regulatory Materials and Regulatory Approvals for the Manufacture of the ACTR T-cells or the SGI Antibodies, as applicable, which will be retained by Unum or SGI, respectively), unless and until assigned to the Continuing Party pursuant to any Transition Agreement.

(g) Transition Agreement.

(i) *Transition Agreement*. The Parties will enter into a written agreement (the "**Transition Agreement**") that would effectuate the terms and conditions of this Section 3.3(g) and would include other reasonable terms and conditions, including terms allocating costs and expenses, describing the Parties' indemnification obligations, setting forth the Parties' obligations with respect to unauthorized sales, and setting forth other coordination obligations. If, despite such efforts, the Parties are unable to agree upon such terms and conditions within [***] from the effective date of the opt-out, either Party may refer the dispute for resolution by arbitration in accordance with Section 17.1, and the arbitrator has the authority to require the Parties to execute a Transition Agreement in the form approved by the arbitrator.

(ii) *Transition Assistance*. The Transition Agreement will require the Opt-Out Party to, at no cost to the Continuing Party, provide reasonable consultation and assistance for a period of no more than [***] for the purpose of disclosing and providing to the Continuing Party, all the Unum Reversion IP or the SGI Reversion IP (as the case may be) not already in the Continuing Party's possession that is relevant to the Reversion Product, and, at the Continuing Party's request, all then-existing commercial arrangements to the extent relating solely and specifically to the Reversion Product that the Opt-Out Party is able, using reasonable commercial efforts, to disclose and provide to the Continuing Party, in each case, to the extent reasonably necessary or useful for the Continuing Party to commence or continue Researching, Developing, Manufacture (but only to the extent permitted pursuant to Section 3.3(g)(iii)) or Commercializing the Reversion Product. The foregoing will include assigning or sublicensing, upon request of the Continuing Party, any agreements with Third Party vendors to the extent they specifically cover the sale of the Reversion Product to the extent possible. If any such contract between the Opt-Out Party and a Third Party is not assignable to the Continuing Party (whether by such contract's terms or because such contract does not relate specifically to the Reversion Product) but is otherwise reasonably necessary or useful for the Continuing Party to commence or continue Researching, Developing, Manufacture (but only to the extent permitted pursuant to Section 3.3(g)(iii)) or Commercializing the Reversion Product, then the Opt-Out Party will reasonably cooperate with the Continuing Party in the Continuing Party's efforts to obtain from such Third Party the assignment or sublicense of such contract or of that portion of such contract that solely relates to Researching, Developing, Manufacture (but only to the extent permitted pursuant to Section 3.3(g)(iii)) or Commercializing the Reversion Product.

(iii) *Manufacturing*.

(A) The Transition Agreement will require the Opt-Out Party or its Affiliate to enter into a supply and quality agreement to supply or have supplied the applicable SGI Antibody or ACTR T-cells (as the case may be) in the Reversion Product to the Continuing Party until such time as the Continuing Party provides written notice to the Opt-Out Party of its decision, in its sole discretion, to cease permanently the Research, Development, and Commercialization of such Reversion Product. The cost to the Continuing Party for such supply will be the Manufacturing Costs plus a [***] markup for the applicable SGI Antibody or ACTR T-cells (as the case may be) in the Reversion Product.

(B) Notwithstanding the terms of clause (A) above, at any time after the first anniversary of the effective date of the Opt-Out Party's opt-out (whether under Section 3.1 or Section 3.2), the Opt-Out Party will have the right, in its sole discretion, to opt-out of the foregoing supply obligation upon [***] written notice to the Continuing Party (the "**Supply Discontinuation Notice**"). In the event that the Opt-Out Party provides a Supply Discontinuation Notice to the Continuing Party, then (1) the Opt-Out Party will transfer reasonable quantities from the Opt-Out Party's inventory (if any) of the ACTR T-cells or SGI Antibodies (as applicable) to the Continuing Party at a price equal to the Manufacturing Costs plus a [***] for the applicable SGI Antibody or ACTR (as the case may be) in the Reversion Product, and (2) the Continuing Party would have the right to effect and complete a technology transfer to itself or to an Affiliate or a Third Party manufacturer designated by the Continuing Party (and reasonably acceptable to the Opt-Out Party) in order to permit the Continuing Party or such Third Party to Manufacture the ACTR T-cells or SGI Antibodies (as applicable) for incorporation into such Reversion Product. In conducting any transfer of inventory and technology relating to an SGI Antibody, the Parties will take into consideration SGI's continuing need for such SGI Antibody to the extent such Antibody is used in an antibody-drug conjugate program. Such technology transfer will be at the Opt-Out Party's cost and expense and would include the Opt-Out Party (a) making available a copy of all Know-How within the Unum Background Technology and Unum Program IP or SGI Background Technology or SGI Program IP (as applicable) relating to the Manufacture of the ACTR T-cells or SGI Antibodies (as applicable), including copies or samples of relevant documentation, Materials and other embodiments of such Know-How, in each case that is necessary to Manufacture such ACTR T-cells or SGI Antibodies (as applicable) in accordance with the applicable specifications and (b) making available personnel to assist and advise in connection with such technology transfer at the expense of the Opt-Out Party, including, if necessary, providing reasonable training to the Continuing Party or its designated Third Party manufacturer and performing such other technology transfer services as are necessary to permit continuity in the manufacture and supply of the ACTR T-cells or SGI Antibodies (as applicable) provided that if the transfer is not completed within such [***] period, then the Opt-Out Party will continue to provide such manufacturing services for up to an additional [***] period. The Opt-Out Party will only be required to deliver such Know-How in its or its Affiliates or Third Party manufacturer(s)' actual possession and will not be required to produce or create any additional Know-How. Following any such technology transfer, the Continuing Party (and its Third Party manufacturer(s), as applicable) will segregate such any such transferred Know-How from other Know-How within its organization while such Know-How remains Confidential Information of the Opt-Out Party.

(iv) *Regulatory Materials*. The Transition Agreement will require the Opt-Out Party to transfer and assign to the Continuing Party all Regulatory Materials and Regulatory Approvals solely relating to the Reversion Product that are owned or controlled by the Opt-Out Party or its Affiliates (other than Regulatory Materials and Regulatory Approvals for the Manufacture of the ACTR T-cells or the SGI Antibodies, as applicable, which will be retained by ACTR or SGI, respectively). The Transition Agreement will contain terms governing the coordination or transition of the Parties' ongoing regulatory responsibilities with respect to such Reversion Product.

(h) *Payment Obligations for Reversion Products*. On a Reversion Product-by-Reversion Product basis, the Continuing Party will compensate the Opt-Out Party for such Reversion Product as determined in accordance with Section 3.1(d) or 3.2(c), as applicable.

(i) *Costs and Expenses*. In the event that the Opt-Out Party exercises its Opt-Out Rights in accordance with Section 3.2, each Party will also continue to bear its share of all Development Costs incurred during any then-ongoing Clinical Trial, as well as all committed or otherwise non-cancellable Research Costs and Development Costs for any activities agreed to by the Parties under the then-current applicable Research Plan, Early Clinical Development Plan or Late Clinical Development Plan. By way of example, but not limitation, in the event that the Opt-Out Party exercises its Opt-Out Right [***], then [***] with respect to such [***] Clinical Trial until it is concluded.

(j) *Termination*. On a Reversion Product-by-Reversion Product basis, (a) the Opt-Out Party will have the right to terminate this Agreement) in accordance with Sections 16.3(a)(i), 16.3(a)(ii) and 16.3(a)(iii) (but, for clarity, not Section 16.3(a)(iv)) with respect to the applicable Reversion Product, and (b) the Continuing Party will have the right to terminate this Agreement upon written notice to the Opt-Out Party of the Continuing Party's decision, its sole discretion, to cease permanently the Research, Development and Commercialization of such Reversion Product (which notice will be provided within [***] of the Continuing Party making such decision). In the event of a termination of this Agreement with respect to a Reversion Product, then the consequences in Section 16.5(b) will apply. For clarity, any termination of this Agreement with respect to a Reversion Product will result in the termination of the applicable Collaboration Antigen.

(k) *Joint Development Committee*. In accordance with Section 6.6(c), the JDC will act as an information-sharing forum with respect to the Research and Development of each Reversion Product. The Continuing Party will provide such information and data regarding the Development of the Reversion Product as the JDC would customarily receive regarding a Product to the extent that it specifically relates to, if Unum is the Opt-Out Party, ACTR T-cells or the ACTR platform technology and, if SGI is the Opt-Out Party, the applicable SGI Antibody. In addition, the Continuing Party will provide summaries of all other material information and data regarding the Development of such Reversion Product. The Parties acknowledge and agree that the Joint Development Committee will have no decision-making authority or approval rights with respect to a Reversion Product.

(l) *Joint Manufacturing Committee*. The JMC will act as an information-sharing forum with respect to the Manufacture of clinical and commercial supplies of ACTR T-cells and SGI Antibodies for a Reversion Product. The Continuing Party will provide such information and data regarding the Manufacture of the Reversion Product as the JMC would customarily receive regarding a Product to the extent that it specifically relates to, if Unum is the Opt-Out Party, ACTR T-cells or the

ACTR platform technology, and, if SGI is the Opt-Out Party, the applicable SGI Antibody. In addition, the Continuing Party will provide summaries of all other material information and data regarding the Manufacture of such Reversion Product. The Parties acknowledge and agree that the Joint Manufacturing Committee will have no decision-making authority or approval rights with respect to a Reversion Product.

(m) *Commercialization*. By [***] of each calendar year during the Term, the Continuing Party will provide to the other Party a report on the Commercialization of the applicable Reversion Product. Such report will describe in reasonable detail the Commercialization efforts for the preceding calendar year for such Reversion Product (including the past calendar year and projected budgets for such Commercialization). Further, the Continuing Party will provide such additional information regarding the Commercialization of such Reversion Product as the other Party may reasonably request, and further will meet (in person at the Continuing Party's site) with such other Party after providing such report upon such other Party's request to discuss same. Subject to Applicable Law, all Pricing Matters for Reversion Products will be determined by the Continuing Party, except to the extent they constitute an ACTR Matter, in which event such Pricing Matter will be determined by mutual agreement of the JSC, subject to the dispute resolution process set forth in Section 4.5(c). The Parties will comply with Section 7.3 for each Reversion Product, with the Continuing Party being responsible for the global safety database for such Reversion Product.

(n) *Relationship to Other Provisions*. Sections 4.6(b)(ix), 7.2, 10.1(e), 10.1(f), 10.2(d), 10.4(l), 10.5, 10.6, 10.7, 10.9, 11.13, 11.14, 11.15, 11.16, 11.17, 11.18, 11.20, 16.1, 16.7, 16.8, 16.9, 18.2, 18.5(b), 18.5(c), 18.5(d), and 18.8 and Article 1 and Article 17 will continue to apply to the Research, Development, Manufacture and Commercialization of each Reversion Product. For clarity, defined terms (such as "Development") that use the term Research Candidate, Development Candidate or Product but not Reversion Product will be understood to apply to the Reversion Product as the context may require.

ARTICLE 4
GOVERNANCE

4.1 Alliance Manager. Promptly following the Effective Date, each Party will designate an individual to facilitate communication and coordination of the Parties' activities under this Agreement relating to Research Candidates, Development Candidates and Products and to provide support and guidance to the JSC (each, an "**Alliance Manager**"). Each Alliance Manager may also serve as a representative of its respective Party on one or more Committees.

4.2 Joint Steering Committee.

(a) Purpose; Formation. Within [***] after the Effective Date, the Parties will establish a joint steering committee (the "**JSC**") which will monitor and provide strategic oversight of the activities under this Agreement and facilitate communications between the Parties with respect to the Research, Development, Manufacture and Commercialization of Research Candidates, Development Candidates and Products, all in accordance with this Section 4.2.

(b) Composition. Each Party will initially appoint [***] representatives to the JSC, all of whom have sufficient seniority within the applicable Party to make decisions arising within the scope of the JSC's responsibilities. The Parties' initial representatives to the JSC are set forth on

Exhibit D. The JSC may change its size from time to time by mutual consent of its members, provided that the JSC will consist at all times of an equal number of representatives of each of Unum and SGI. Each Party may replace its JSC representatives at any time upon written notice to the other Party. The JSC may invite non-members to participate in the discussions and meetings of the JSC, provided that such participants have no voting authority at the JSC. The JSC will have a chairperson, who will serve for a term of [***], and who will be selected alternately, on an [***] basis, by Unum or SGI. The initial chairperson will be selected by Unum. The role of the chairperson will be to convene and preside at meetings of the JSC. The Alliance Managers will work with the chairperson to prepare and circulate agendas and to ensure the preparation of minutes. The chairperson has no additional powers or rights beyond those held by the other JSC representatives.

(c) Specific Responsibilities. In addition to its overall responsibility for monitoring and providing strategic oversight with respect to the Parties' activities under this Agreement, the JSC will in particular have the following responsibilities, provided, however that the following will not apply with respect to the Development or Commercialization of any Reversion Product (except as otherwise expressly provided):

(i) oversee the activities of the Parties under this Agreement;

(ii) review, discuss and approve the selection of the A3 Antigen and any Replacement Antigen;

(iii) for each Collaboration Antigen, review, discuss and approve the selection of the SGI Antibodies for each Research Candidate;

(iv) for each Collaboration Antigen, review, discuss and approve the selection of the Development Candidate for Development in accordance with Section 2.5;

(v) for each Collaboration Antigen, review, discuss and approve the selection of the Product for Commercialization in accordance with Section 2.6;

(vi) review and discuss the Research, Development and Commercialization of Research Candidates, Development Candidates and Products and any other ongoing activities;

(vii) review and discuss the Manufacture of ACTR T-cells and the SGI Antibodies for use in Research Candidates, Development Candidates and Products, including any applicable Third Party intellectual property;

(viii) review and discuss the supply chain for Research Candidates, Development Candidates and Products;

(ix) subject to Section 10.7, review, discuss and determine whether the planned activities or product features under this Agreement with respect to Research Candidates, Development Candidates and Products may require or benefit from a license under Patents or Know-How of Third Parties;

(x) review, discuss and determine the allocation of any Third Party Payments between the Parties in the Shared Territory; provided that the JSC may determine that such Third Party Payment constitutes Development Costs or Joint Commercialization Costs, as applicable, and should be shared by the Parties pursuant to the profit sharing mechanism under this Agreement;

(xi) facilitate the flow of information between the Parties with respect to Research Candidates, Development Candidates and Products;

(xii) review and discuss reports from the JDC and JCC and provide guidance thereto, direct the activities of such Committees, and approve each Research Plan, Early Clinical Development Plan, Late Clinical Development Plan and Joint Commercialization Plan and, in the case of all plans, amendments thereto;

(xiii) decide whether and when to initiate or discontinue any Voluntary Phase 4 Clinical Trial or Supplemental Trials, provided no Party will be required to include a Supplemental Trial in the Late Clinical Development Plan or a Voluntary Phase 4 Clinical trial in the Joint Commercialization Plan absent JSC agreement (and for clarity without escalation to the Executive Officers or arbitration under Article 17);

(xiv) attempt to resolve issues presented to it by, and disputes within, the JDC or JCC, or any other subcommittee;

(xv) establish such additional joint subcommittees as it deems necessary to achieve the objectives and intent of this Agreement; and

(xvi) perform such other functions as appropriate, and direct each other Committee to perform such other functions as appropriate, to further the purposes of this Agreement, in each case as agreed in writing by the Parties or as expressly provided in this Agreement.

(d) Meetings. The JSC will meet at least [***] during the Term unless the Parties mutually agree in writing to a different frequency. No later than [***] Business Days prior to any meeting of the JSC (or such shorter time period as the Parties may agree), the Alliance Managers will prepare and circulate an agenda for such meeting; provided, however, that either Party may propose additional topics to be included on such agenda, either prior to or in the course of such meeting. Either Party may also call a special meeting of the JSC (by videoconference, teleconference or in person) by providing at least [***] prior written notice to the other Party if such Party reasonably believes that a significant matter must be addressed prior to the next scheduled meeting, in which event such Party will work with the chairperson of the JSC and the Alliance Managers of both Parties to provide the members of the JSC no later than three (3) Business Days prior to the special meeting with an agenda for the meeting and materials reasonably adequate to enable an informed decision on the matters to be considered. The JSC may meet in person, by videoconference or by teleconference. Notwithstanding the foregoing, at least [***] meeting per calendar year will be in person unless the Parties mutually agree in writing to waive such requirement. In-person JSC meetings will be held at locations alternately selected by Unum and by SGI. [***]. Meetings of the JSC will be effective only if at least one (1) representative of each Party (which representative is not such Party's Alliance Manager) is present or participating in

such meeting. The Alliance Managers will be responsible for preparing reasonably detailed written minutes of all JSC meetings that reflect material decisions made and action items identified at such meetings. The Alliance Managers will send draft meeting minutes to each member of the JSC for review and approval within [***] after each JSC meeting. Such minutes will be deemed approved unless one or more members of the JSC objects to the accuracy of such minutes within [***] of receipt. Minutes will be officially endorsed by the JSC at the next JSC meeting, and will be signed by the Alliance Managers.

(e) Decision-Making. In addition to resolving issues specifically delegated to it, the JSC has the authority to resolve disputes within the jurisdiction of the JDC, JCC and any other committees that the Parties may subsequently create to assist in governance of this Agreement, but otherwise has no authority except where expressly specified elsewhere in this Agreement or mutually agreed by the Parties in writing. The representatives from each Party have, collectively, [***] on behalf of that Party, and all decision making will be [***]. Disputes at the JSC will be handled in accordance with Section 4.6.

4.3 Joint Development Committee.

(a) Formation; Composition. Within [***] after the Effective Date, the Parties will establish a committee to oversee the identification, Research and Development of Research Candidates, Development Candidates and Products (but not Reversion Products) in the Territory in accordance with the Research Plan(s), Early Clinical Development Plan(s) and Late Clinical Development Plan(s) for the same and to coordinate the Research and Development activities of the Parties (the "**JDC**"). Each Party will initially appoint [***] representatives to the JDC, with each representative having knowledge and expertise in the Research and Development of compounds and products similar to the Research Candidates, Development Candidates and Products and having sufficient seniority within the applicable Party to make decisions arising within the scope of the JDC's responsibilities. The JDC may change its size from time to time, provided that the JDC will consist at all times of an equal number of representatives of each of Unum and SGI. Each Party may replace its JDC representatives at any time upon written notice to the other Party. The JDC may invite non-members to participate in the discussions and meetings of the JDC, provided that such participants have no voting authority at the JDC. The JDC will have a chairperson, who will serve for a term of [***], and who will be selected alternately, on an annual basis, by Unum or SGI. The initial chairperson will be selected by Unum. The role of the chairperson will be to convene and preside at meetings of the JDC and to ensure the preparation of minutes, but the chairperson has no additional powers or rights beyond those held by the other JDC representatives.

(b) Specific Responsibilities of the JDC. The JDC has the following responsibilities:

(i) oversee and review Research responsibilities for each Research Candidate;

(ii) oversee and review Development responsibilities for each Development Candidate;

(iii) discuss, prepare and approve for submission to the JSC all Research Plans, Early Clinical Development Plans and Late Clinical Development Plans, and all annual and interim amendments to Research Plans, Early Clinical Development Plans and Late Clinical Development Plans for, respectively, Research Candidates and Development Candidates in the Territory;

(iv) oversee the conduct of all Research Plans, Early Clinical Development Plans and Late Clinical Development Plans;

(v) review and recommend for the JSC's consideration modifications to the budget for Development Costs relating to this Agreement;

(vi) create, implement and review the overall strategy for Research and Development, including the design of all Clinical Trials, conducted under all Research Plans, Early Clinical Development Plans and Late Clinical Development Plans, including Required Phase 4 Clinical Trials, but for clarity no Voluntary Phase 4 Clinical Trials or Supplemental Trials;

(vii) recommend to the JSC whether to include any Supplemental Trials in the Late Clinical Development Plan;

(viii) decide whether and when to initiate or discontinue any nonclinical study or Clinical Trial (other than any Voluntary Phase 4 Clinical Trials or Supplemental Trials) under each Research Plan, Early Clinical Development Plan and Late Clinical Development Plan, including Required Phase 4 Clinical Trials, provided that nothing is intended to limit a Party's ability to comply with Applicable Law or manage subject safety;

(ix) allocate budgeted resources and determine priorities for each nonclinical study and Clinical Trial included under each Research Plan, Early Clinical Development Plan and Late Clinical Development Plan, including Required Phase 4 Clinical Trials;

(x) oversee the conduct of any Supplemental Trials and the results thereof;

(xi) allocate budgeted resources and determine priorities for each Supplemental Trial included under the Late Clinical Development Plan;

(xii) oversee the conduct of all nonclinical studies and Clinical Trials included under each Research Plan, Early Clinical Development Plan and Late Clinical Development Plan, including Required Phase 4 Clinical Trials;

(xiii) facilitate the flow of information between the Parties with respect to the Research and Development of Research Candidates and Development Candidates;

(xiv) allocate primary responsibility as between the Parties for tasks relating to the Research and Development of Research Candidates and Development Candidates where not already specified in the Research Plan, Early Clinical Development Plans or Late Clinical Development Plans therefor;

(xv) create, implement and review the overall strategy regarding Regulatory Approval of Products in the Territory;

(xvi) without limitation to clause (xv), review the regulatory strategy with respect to discussions with and commitments to or agreements with Regulatory Authorities (including post-approval commitments) with respect to Product labeling, risk management or Required Phase 4 Clinical Trials;

(xvii) without limitation to clause (xvi), review and approve any material submission to, or any material agreement with or material commitment made to, a Regulatory Authority with respect to a Product, such as any NDA or MAA, or any submission, agreement or commitment with respect to Product labeling, any risk management plans, any Required Phase 4 Clinical Trial or other post-approval commitment for such Product;

(xviii) facilitate the flow of information between the Parties with respect obtaining Regulatory Approval for Products; and

(xix) perform such other functions as may be appropriate to further the purposes of this Agreement, as directed by the JSC in accordance with Section 4.2(c)(xvi) or as expressly provided in this Agreement.

(c) Meetings. The JDC will meet at least [***], unless the Parties mutually agree in writing to a different frequency. No later than [***] Business Days prior to any meeting of the JDC (or such shorter time period as the Parties may agree), the Alliance Managers will prepare and circulate an agenda for such meeting; provided, however, that either Party will be free to propose additional topics to be included on such agenda, either prior to or in the course of such meeting. Either Party may also call a special meeting of the JDC (by videoconference, teleconference or in person) by providing at least [***] Business Days prior written notice to the other Party if such Party reasonably believes that a significant matter must be addressed prior to the next scheduled meeting, in which event such Party will work with the Alliance Manager to provide the members of the JDC no later than [***] Business Days prior to the special meeting with an agenda for the meeting and materials reasonably adequate to enable an informed decision. The JDC may meet in person, or at the request of either Party, by videoconference, or by teleconference. In-person JDC meetings will be held at locations in the United States alternately selected by Unum and by SGI or at any other location mutually agreed by the members of the JDC. Each Party will report to the JDC on all material issues relating to the Research and Development of Research Candidates, Development Candidates and Products for and in the Territory promptly after such issues arise. Each Party will bear the expense of its respective JDC members' participation in JDC meetings. The JDC chairperson will be responsible for preparing reasonably detailed written minutes of JDC meetings that reflect all decisions made and action items identified at such meetings. The JDC chairperson will send meeting minutes to each member of the JDC for review and approval within [***] Business Days after each JDC meeting. Minutes will be deemed approved unless one or more members of the JDC objects to the accuracy of such minutes within [***] Business Days of receipt. Minutes will be officially endorsed by the JDC at the next JDC meeting, and will be signed by the Alliance Managers.

(d) Decision-Making. Subject to the remainder of this Section 4.3(d) and Section 4.6, the [***] act [***]. The representatives from each Party have, collectively, one (1) vote on behalf of that Party. If the JDC cannot [***]on an issue that comes before the JDC [***] of the meeting [***] and over which the JDC has oversight, then the Parties will refer such matter to [***] for resolution in accordance with [***] and [***].

4.4 Joint Commercialization Committee.

(a) General. With respect to Products, no later than completion of the first Phase 2 Clinical Trial for the first Product, the Parties will establish a committee to oversee Commercialization of Products (but not Reversion Products) in the Territory (the "**JCC**").

(b) Formation; Composition. Each Party will initially appoint [***] to the JCC, with each representative having knowledge and expertise in the commercialization of products similar to the Products and having sufficient seniority within the applicable Party to make decisions arising within the scope of the JCC's responsibilities. The JCC may change its size from time to time by mutual consent of its members, provided that the JCC will consist at all times of an equal number of representatives of each of Unum and SGI. Each Party may replace its JCC representatives at any time upon written notice to the other Party. The JCC may invite non-members to participate in the discussions and meetings of the JCC, provided that such participants have no voting authority at the JCC. The JCC will have a chairperson, who will be selected by SGI. The role of the chairperson will be to convene and preside at meetings of the JCC and to ensure the preparation of minutes, but the chairperson has no additional powers or rights beyond those held by the other JCC representatives.

(c) Specific Responsibilities of the JCC. The JCC has the following responsibilities:

(i) discuss, prepare and approve for submission to the JSC the Joint Commercialization Plan for each Product, including, in each case, any amendments thereto;

(ii) oversee implementation of each Joint Commercialization Plan;

(iii) review and discuss Commercialization activities with respect to Products;

(iv) allocate between the Parties primary responsibility for tasks relating to Commercialization of Products in the Shared Territory in a manner consistent with Article 8;

(v) coordinate the Co-Promotion activities of Unum and SGI with respect to Products in the Shared Territory;

(vi) oversee long-range forecasting and market planning with respect to Products;

(vii) review and discuss strategies with respect to Pricing Matters in the Shared Territory and make determinations with respect thereto, to the extent not prohibited by Applicable Law;

(viii) manage Marks as contemplated by Section 12.8;

(ix) oversee the conduct of Voluntary Phase 4 Clinical Trials and the results thereof;

(x) allocate budgeted resources and determine priorities for each Voluntary Phase 4 Clinical Trial included under the Joint Commercialization Plan;

(xi) review, discuss and coordinate the Parties' scientific presentation and publication strategy relating to the Products in the Territory;

(xii) review and facilitate discussion of proposed Publications and resolve disputes with respect thereto taking into consideration the factors set forth in Section 15.4(c); and

(xiii) perform such other functions as appropriate to further the purposes of this Agreement, as directed by the JSC in accordance with Section 4.2(c)(xvi) or as expressly provided in this Agreement.

(d) Meetings. The JCC will meet at least [***], unless the Parties mutually agree in writing to a different frequency. No later than [***] Business Days prior to any meeting of the JCC (or such shorter time period as the Parties may agree), the Alliance Managers will prepare and circulate an agenda for such meeting; provided, however, that either Party will be free to propose additional topics to be included on such agenda, either prior to or in the course of such meeting. Either Party may also call a special meeting of the JCC (by videoconference, teleconference or in person) by providing at least [***] Business Days prior written notice to the other Party if such Party reasonably believes that a significant matter must be addressed prior to the next scheduled meeting, in which event such Party will work with the chairperson of the JCC to provide the members of the JCC no later than [***] Business Days prior to the special meeting with an agenda for the meeting and materials reasonably adequate to enable an informed decision. The JCC may meet in person, by videoconference, or by teleconference. In-person JCC meetings will be held at locations in the United States alternately selected by Unum and by SGI or at any other location mutually agreed by the members of the JCC. Meetings of the JCC will be effective only if at least one (1) representative of each Party is present or participating in such meeting. Each Party will report to the JCC on all material issues relating to the Commercialization of Products promptly after such issues arise. Each Party will bear the expense of its respective JCC members' participation in JCC meetings. The JCC chairperson will be responsible for preparing reasonably detailed written minutes of JCC meetings that reflect all decisions made and action items identified at such meetings. The JCC chairperson will send meeting minutes to each member of the JCC for review and approval within [***] Business Days after each JCC meeting. Minutes will be deemed approved unless one or more members of the JCC objects to the accuracy of such minutes within [***] Business Days of receipt. Minutes will be officially endorsed by the JCC at the next JCC meeting, and will be signed by the Alliance Managers.

(e) Decision-Making. Subject to the remainder of this Section 4.4(e) and Section 4.6, the JCC will act by [***]. The representatives from each Party have, collectively, [***] vote on behalf of that Party. [***] on an issue that comes before the JCC within [***] days of the meeting such issue was raised and over which the JCC has oversight, then the Parties will refer such matter to the JSC for resolution in accordance with Section 4.2(e) and Section 4.5.

4.5 Joint Manufacturing Committee.

(a) Formation; Composition. Within [***] days after the Effective Date, the Parties will establish a committee to discuss and oversee the Manufacturing of clinical and commercial supplies of ACTR T-cells and SGI Antibodies (the "**JMC**"). Each Party will initially appoint [***] representatives to the JMC, with each representative having knowledge and expertise in the manufacturing and having sufficient seniority within the applicable Party to make decisions relating to the Manufacturing of ACTR T-cells and SGI Antibodies, as applicable. The JMC may change its size from

time to time by mutual consent of its members, provided that the JMC will consist at all times of an equal number of representatives of each of Unum and SGI. Each Party may replace its JMC representatives at any time upon written notice to the other Party. The JMC may invite non-members to participate in the discussions and meetings of the JMC, provided that such participants will have no voting authority. The JMC will have a chairperson, who will be selected by Unum. The role of the chairperson will be to convene and preside at meetings of the JMC and to ensure the preparation of minutes, but the chairperson will have no additional powers or rights beyond those held by the other JMC representatives.

(b) Specific Responsibilities of the Joint Manufacturing Committee. Subject to Section 4.5(d), the JMC will be responsible for coordinating and overseeing the Manufacturing activities under this Agreement with respect to Research Candidates, Development Candidates and Products in the Territory in accordance with the Supply Agreements, in particular the JMC will provide a venue for the discussions contemplated by Section 9.6 and Section 9.7. In additions, (i) topics to be discussed will include intellectual property protection and freedom-to-operate concerns for Manufacturing activities and (ii) the JMC may provide Manufacturing updates to the JSC.

(c) Meetings. The JMC will meet at least [***] per calendar quarter, unless the Parties mutually agree in writing to a different frequency. No later than [***] Business Days prior to any meeting of the JMC (or such shorter time period as the Parties may agree), the Alliance Managers will prepare and circulate an agenda for such meeting; provided, however, that either Party will be free to propose additional topics to be included on such agenda, either prior to or in the course of such meeting. Either Party may also call a special meeting of the JMC (by videoconference, teleconference or in person) by providing at least [***] Business Days prior written notice to the other Party if such Party reasonably believes that a significant matter must be addressed prior to the next scheduled meeting, in which event such Party will work with the Alliance Manager to provide the members of the JMC no later than [***] Business Days prior to the special meeting with an agenda for the meeting and materials reasonably adequate to enable an informed decision. The JMC may meet in person, or at the request of either Party, by videoconference, or by teleconference. In-person JMC meetings will be held at locations in the United States alternately selected by Unum and by SGI or at any other location mutually agreed by the members of the JMC. Each Party will report to the JMC on all material issues relating to the Manufacture of ACTR T-cells or SGI Antibodies (as applicable) promptly after such issues arise. The JMC chairperson will be responsible for preparing reasonably detailed written minutes of JMC meetings that reflect all decisions made and action items identified at such meetings. The JMC chairperson will send meeting minutes to each member of the JMC for review and approval within [***] Business Days after each JMC meeting. Minutes will be deemed approved unless one or more members of the JMC objects to the accuracy of such minutes within [***] Business Days of receipt. Minutes will be officially endorsed by the JMC at the next JMC meeting, and will be signed by the Alliance Managers.

(d) Decision-Making. The Parties acknowledge and agree that the JMC is intended to act as a discussion forum, and not a decision-making body, and that the JMC's responsibilities are not subject to the oversight of, or escalation to, the JSC or any other committee in the event of any dispute or disagreement between the Parties. For clarity, (i) all matters regarding the Manufacturing of ACTR T-cells will be decided by Unum, and (ii) all matters regarding the Manufacturing of SGI Antibodies will be decided by SGI; and, in each case for clauses (i) or (ii), without escalation to the Executive Officers or arbitration under Article 17.

4.6 Resolution of Committee Disputes.

(a) Within Operating Committees. All decisions within the JDC and JCC will be [***] and all decisions within the other committees, other than the JSC, where the decision relates to Products in the Shared Territory [***]. If a dispute arises which cannot be resolved within [***]or such [***], then if such dispute relates to a matter within the jurisdiction of the [***], the representatives of either Party may cause such matter to [***] for [***] as provided in [***].

(b) Within the JSC. Subject to the exceptions specified below in this Section 4.6(b), all decisions within the JSC (whether originating there, or referred to it by an operating Committee) will be made by unanimous agreement. If a matter is referred by an operating [***], the [***] will use good faith efforts, in compliance with [***], to resolve promptly such matter. If the [***] is unable to reach unanimous agreement on any issue for which it is responsible, other than those addressed [***], within [***] after a Party affirmatively states that a decision needs to be made, either Party may elect to submit such issue to [***]in accordance with [***]. Notwithstanding the foregoing:

(i) Unum will not be required to [***] for any of the reasons enumerated in Section 2.2 and Section 2.3; provided, for clarity, that (A) the extent and scope of any Arbitral Matter regarding the application of such Sections may be referred to dispute resolution in accordance with Article 17 (for clarity, [***], in each case will not be treated as an Arbitral Matter and will be determined by Unum as provided in such Sections, and ACTR Matters under such Sections will be subject to the following clause (iv)); and (B) SGI will have the tie-breaking vote with respect to the nomination of the A3 Antigen or any Replacement Antigen in all other cases;

(ii) the selection of a Development Candidate for Development in accordance with Section 2.5 will be made only by [***], and, for clarity, [***] on the foregoing matter, then the Research Program for the relevant Collaboration Antigen will be terminated in accordance with Section 2.5 (and for clarity without escalation to the Executive Officers or arbitration under Article 17);

(iii) the selection of the Product for Commercialization in accordance with Section 2.6 will be made only [***], and, for clarity, if there is [***] of the JSC on the foregoing matter, then a Party may exercise its Opt-Out Right with respect to such Development Candidate and associated Product in accordance with Section 3.2 (and for clarity without escalation to the Executive Officers or arbitration under Article 17);

(iv) all ACTR Matters will be determined by Unum, provided that if the JSC is unable to agree on the existence or scope of an ACTR Matter and if after submission to the Executive Officers pursuant to Section 4.6(c) an agreement has not been reached, then the existence and scope of an ACTR Matter may be referred to dispute resolution in accordance with Article 17;

(v) no dispute to the extent pertaining to a Party's request to allocate any Development Costs (including costs associated with Supplemental Trials), costs associated with Voluntary Phase 4 Clinical Trials, or other costs that SGI expects or plans to incur with respect to the Licensed Territory in whole or in part to the Shared Territory in accordance with Section 6.2(a)(vi) or Section 8.3(a)(iii) that are not resolved by the JSC or following submission to the Executive Officers pursuant to Section 4.6(c) may be submitted to arbitration in accordance with Article 17, and, for clarity, should there be no resolution of the foregoing matter, then there will be no such allocation of Development Costs or other costs to the Shared Territory;

(vi) all matters to the extent pertaining to the Development and Commercialization of Development Candidates and associated Products in the Licensed Territory (other than ACTR Matters, the discontinuation of a Clinical Trial that is contemplated by the then-current Late Clinical Development Plan for reasons other than safety, or the initiation of any Supplemental Trials or Voluntary Phase 4 Clinical Trials) will be decided by SGI without escalation to the Executive Officers or arbitration under Article 17; for clarity, decision-making regarding the initiation of Supplemental Trials or Voluntary Phase 4 Clinical Trials is addressed in Section 6.2(a) or Section 8.3(a), respectively;

(vii) all matters to the extent pertaining to the Manufacture of the ACTR T-cells will be decided by Unum in accordance with Section 4.5(d);

(viii) all matters to the extent pertaining to the Manufacture of the SGI Antibodies will be decided by SGI in accordance with Section 4.5(d); and

(ix) all matters to the extent pertaining to the Research, Development or Commercialization of Reversion Products (other than ACTR Matters and Manufacturing) will be decided by the Continuing Party without escalation to the Executive Officers or arbitration under Article 17; provided that (A) all ACTR Matters will be determined pursuant to Section 4.6(b)(iv) and (B) all matters to the extent pertaining to Manufacturing will be determined pursuant to Sections 4.6(b)(vii) and 4.6(b)(viii).

(c) Referral to Executive Officers. If a Party makes an election under Section 4.6(b) to refer a matter to the Executive Officers, the JSC will submit in writing the respective positions of the Parties to their respective Executive Officers. Such Executive Officers will use good faith efforts, in compliance with this Section 4.6(c), to resolve promptly such matter, which good faith efforts will include at least one in-person meeting between such Executive Officers within [***] Business Days after the JSC's submission of such matter to them. If the Executive Officers are unable to reach unanimous agreement on any such matter, the matter may be referred to dispute resolution in accordance with Article 17.

(d) Good Faith. In conducting themselves on committees, and in exercising their rights under this Section 4.6, all representatives of both Parties will consider diligently, reasonably and in good faith all input received from the other Party, and will use reasonable efforts to [***] all matters before them. In exercising any decision-making authority granted to it under this Article 4, each Party will act based on its good faith judgment taking into consideration the best interests of the Products and this Agreement.

4.7 General Committee Authority. Each Committee has solely the powers expressly assigned to it in this Article 4 and elsewhere in this Agreement. No Committee will have any power to amend, modify, or waive compliance with this Agreement. It is expressly understood and agreed that the control of decision-making authority by Unum or SGI, as applicable, pursuant to Section 4.6, so as to resolve a disagreement or deadlock on a Committee for any matter will not authorize either Party to perform any function or exercise any decision-making right not delegated to a Committee or such Party, and that neither Unum nor SGI has any right to unilaterally modify or amend, or waive its own compliance with, the terms of this Agreement.

4.8 Commercialization Pending Resolution of Disputes. In the event of a dispute relating to Commercialization in the Shared Territory with respect to a Product, and in an effort to avoid economic harm to such Product, the Lead Commercializing Party will be entitled to exercise tie-breaking decision authority pending the resolution of the applicable dispute in accordance with this Article 4; provided that (a) in exercising such authority the Lead Commercializing Party will take into consideration the temporary nature of such authority, (b) this Section 4.8 will not apply to Pricing Matters, and (c) this Section 4.8 will not apply if the dispute relates to any ACTR Matter.

ARTICLE 5
RESEARCH CANDIDATES

5.1 Overview. Subject to the oversight of the JSC and the JDC, on a Collaboration Antigen-by-Collaboration Antigen basis, Unum will be primarily responsible for Research of the Research Candidates in accordance with this Agreement and the Research Plan for such Research Candidates during the Research Term.

5.2 Research Plans.

(a) General.

(i) On a Collaboration Antigen-by-Collaboration Antigen basis, all Research of the Research Candidates during the Research Term will be conducted pursuant to a research plan and budget (such plan, a "**Research Plan**" with respect to each Collaboration Antigen) that describes (A) the proposed overall program of Research for the applicable Research Candidates, including nonclinical studies, (B) the anticipated start dates and data availability dates of such nonclinical studies, (C) the respective roles and responsibilities of each Party in connection with such activities, and (D) a detailed budget for all such activities in the Territory. In the event of any inconsistency between a Research Plan and this Agreement, the terms of this Agreement will prevail.

(ii) On a Collaboration Antigen-by-Collaboration Antigen basis, within [***] days after the first Research Candidate Selection Date for such Collaboration Antigen, the Parties will finalize a Research Plan for the Research Candidates in the Territory, which Research Plan will be approved by the JSC. An initial draft of the Research Plan for the A1 Antigen is

attached as Exhibit E-1, and an initial draft of the Research Plan for the A2 Antigen is attached as Exhibit E-2. The budget for the Research Plan for the A1 Antigen and the Research Plan for the A2 Antigen will be agreed by the Parties within [***] days after the Effective Date; provided that the Parties will commence activities notwithstanding the fact that the applicable budget will not be determined for such [***]-day period.

(b) Amendments to the Research Plan. On an annual basis, or more often as the Parties deem appropriate, the JDC will prepare amendments to each then-current Research Plan for each Collaboration Antigen for approval of the JSC. Each such amended Research Plan will specify the items described in Section 5.2(a)(i). Such amended Research Plan will cover the next calendar year (and additional periods as reasonably determined by the Parties). Such updated and amended Research Plan will reflect any changes, re-prioritization of studies within, reallocation of resources with respect to, or additions to, respectively, the then-current Research Plan. In addition, the JDC may prepare amendments for approval by the JSC to the Research Plan, as appropriate, from time to time during the calendar year in order to reflect changes in such plans or budget for such calendar year, in each case, in accordance with the foregoing. Once approved by the JSC, the amended annual Research Plan will become effective for the applicable period on the date approved by the JSC (or such other date as the JSC will specify). Any JSC-approved amended Research Plan will supersede, respectively, the previous Research Plan for the Collaboration Antigen for the applicable period.

5.3 Diligence; Standards of Conduct. With respect to each Collaboration Antigen, Unum (itself or through its Affiliates or by permitted subcontracting pursuant to Section 5.9) agrees to use Commercially Reasonable Efforts to Develop Research Candidates in the Territory, and to carry out the tasks specified under the Research Plan, in a timely and effective manner, and agrees to conduct its activities under the Research Plan in a good scientific manner and in compliance in all material respects with Applicable Law. SGI will cooperate with and provide reasonable support to Unum (especially in connection with the SGI Antibodies included in such Research Candidates) in connection with Unum's performance of its responsibilities under the Research Plan. The Parties acknowledge and agree, however, that no outcome or success is or can be assured and that failure to achieve desired results will not in and of itself constitute a breach or default of any obligation in this Agreement (notwithstanding the focus of the Research Program described above).

5.4 Research Decision-Making. Except as otherwise expressly provided in this Agreement, all matters regarding the Research Program will be decided by unanimous agreement by the JDC, other than the selection of the Research Candidates, which will be selected by the JSC in accordance with Section 2.4.

5.5 Research Costs. During the Research Term, SGI will reimburse Unum for [***] of all Research Costs for all Research Candidates actually incurred for the Territory pursuant to the Research Plan, in accordance with Section 11.5. For clarity, [***].

5.6 Research Reports. Unum will keep the JDC fully informed regarding the progress and results of Research activities for Research Candidates in the Territory during the Research Term, including an annual review of results versus goals (as such goals are set forth in the Research Plans).

5.7 Research Records. Unum will maintain complete and accurate records (in the form of electronic files where appropriate) of all work conducted by it under the Research Plans. Such records will reflect all work done and results achieved in the performance of the Research Plans in sufficient detail and in good scientific manner appropriate for patent and regulatory purposes. SGI has the right to receive copies of such records maintained by Unum, including in electronic format if maintained in such format, at reasonable times to the extent reasonably necessary to perform obligations or exercise rights under this Agreement.

5.8 Materials.

(a) SGI will, during the Research Term, as a matter of course as described in the Research Plan or upon Unum's reasonable written request, furnish to Unum samples of Materials that are in SGI's Control (including SGI Antibodies included in such Research Candidates) and are necessary for Unum to carry out its responsibilities under the Research Plan. If agreed by the Parties, Unum may furnish to SGI samples of Materials that are in Unum's Control and are necessary for SGI to carry out those responsibilities on which the Parties may agree.

(b) Each Party will use those Materials furnished by the other Party only in accordance with the Research Plan and otherwise in accordance with the terms and conditions of this Agreement and any instructions provided by the furnishing Party. Except with the prior written consent of the furnishing Party (such consent not to be unreasonably withheld, conditioned, or delayed), such Party receiving Materials will not distribute or otherwise allow the release of Materials to any Third Party, except for subcontracting as permitted hereunder. All Materials so delivered will remain the sole property of the furnishing Party and will be used in compliance with all Applicable Law. The Materials supplied under this Agreement will be used with prudence and appropriate caution in any experimental work because not all of their characteristics may be known.

5.9 Subcontracts. Unum may perform any of its Research obligations under this Article 5 through one or more subcontractors or consultants, provided that (a) Unum remains responsible for the work allocated to such subcontractors and consultants to the same extent it would if it had done such work itself; (b) the subcontractor or consultant undertakes in writing commercially reasonable obligations of confidentiality and non-use regarding Confidential Information, that are substantially the same as those undertaken by Unum with respect to Confidential Information pursuant to Article 15; and (c) the subcontractor or consultant undertakes in writing to assign or exclusively license back (with the right to sublicense) all intellectual property with respect to Research Candidates developed in the course of performing any such work to Unum. Unum may also subcontract Research work on terms other than those set forth in this Section 5.9 with the prior approval of the JDC.

ARTICLE 6
DEVELOPMENT CANDIDATES

6.1 Overview. Subject to the oversight of the JSC and the JDC, on a Development Candidate-by-Development Candidate basis:

(a) Unum will be primarily responsible for Development of each Development Candidate in accordance with this Agreement and the Early Clinical Development Plan for such Development Candidate during the Early Clinical Development Term.

(b) Unless either Party (or both Parties) exercise(s) its Opt-Out Right, (i) SGI and Unum will collaborate on further Development activities of such Development Candidate and associated Product in accordance with this Agreement and the Late Clinical Development Plan for such Development Candidate and associated Product in the Shared Territory, and (ii) SGI will be primarily responsible for further Development activities of such Development Candidate and associated Product in accordance with this Agreement and the Late Clinical Development Plan for such Development Candidate and associated Product in the Licensed Territory.

6.2 Clinical Development Plans.

(a) Content and Adoption.

(i) All Development of any given Development Candidate during the Early Clinical Development Term will be conducted pursuant to a development plan and budget (such plan, an "**Early Clinical Development Plan**" with respect to each Development Candidate) that describes (A) the proposed overall program of Development for the applicable Development Candidate, including Phase 1 Clinical Trials in particular, at least one (1) Qualifying Phase 1 Clinical Trial, (B) the anticipated start dates and data availability dates of Phase 1 Clinical Trials, (C) the respective roles and responsibilities of each Party in connection with such activities, and (D) a detailed budget for all such activities in the Territory. In the event of any inconsistency between an initial Early Clinical Development Plan and this Agreement, the terms of this Agreement will prevail.

(ii) On a Development Candidate-by-Development Candidate basis, within [***] days after the Development Candidate Selection Date, the Parties will prepare and recommend for approval to the JSC an Early Clinical Development Plan for each Development Candidate in the Territory, which Early Clinical Development Plan will be approved by the JSC.

(iii) During the Late Clinical Development Term for a Development Candidate, all Development of such Development Candidate and associated Product pursuant to this Agreement and activities to support and obtain Regulatory Approvals for such Development Candidate and associated Product in the Territory will be conducted pursuant to a development plan and budget (such plan, a "**Late Clinical Development Plan**" with respect to each Development Candidate) that describes (A) the proposed overall program of Development for the applicable Development Candidate, including all Clinical Trials, in the Territory, (B) the anticipated start dates and data availability dates of such Clinical Trials, (C) the proposed activities to support and obtain Regulatory Approvals for such Development Candidate and associated Product in the Territory, (D) the respective roles and responsibilities of each Party in connection with such activities, and (E) a detailed budget for all such activities in the Territory. In the event of any inconsistency between a Late Clinical Development Plan and this Agreement, the terms of this Agreement will prevail.

(iv) On a Development Candidate-by-Development Candidate basis, within [***] days after the JSC meeting to consider the Phase 1 Clinical Data, the Parties will prepare and recommend for approval to the JSC an initial Late Clinical Development Plan for such Development Candidate in the Territory, which Late Clinical Development Plan will be approved by the JSC.

(v) Either Party's representatives on the JDC may propose a Supplemental Trial. If the JDC does not recommend such Supplemental Trial to the JSC (or the JSC does not approve it) for inclusion in the Late Clinical Development Plan, the proposing Party will have the right to conduct such Supplemental Trial, at its sole expense, even if not included in the Late Clinical Development Plan by the JSC, unless the other Party reasonably believes that any such Supplemental Trial would present unreasonable safety risk or would materially harm the commercial potential of the Product or, in the case of Unum, may result in an ACTR Matter. Each Party will notify the other Party, and provide such information as the other Party may request, regarding any proposed Supplemental Trial before taking any steps to initiate same.

(vi) If SGI reasonably believes that a Supplemental Trial that SGI is conducting at its sole expense for the Licensed Territory will also reasonably benefit the Shared Territory, SGI may propose to Unum that a portion or all of the Development Costs attributable to such Supplemental Trial be included in the [***] allocation set forth in Section 6.5(c), and Unum will consider that request reasonably and in good faith. Alternatively, Unum may request by written notice to SGI that any Supplemental Clinical Trial that SGI is conducting at its sole expense pursuant to the preceding sentence be included in the Late Clinical Development Plan and the Development Costs attributable to such Supplemental Trial be allocated on the terms set forth in this Section 6.2(a)(vi), including the applicable premium. No such Development Cost may be allocated in whole or in part without the express written consent of Unum and for clarity will not be subject to decision within the JDC or JSC (it being understood that each of the Parties will be deemed to have consented expressly in writing that any such Development Costs included as part of the applicable Late Clinical Development Plan be allocated to the Shared Territory to the extent appearing in such plan). Further, such an allocation of such Development Costs incurred with respect to such Supplemental Trial may be made retrospectively (i.e., after the relevant activity has been performed); provided that if (a) the allocation is made after the acceptance in the Shared Territory of an application for Regulatory Approval that includes information or data generated by such Supplemental Trial but before Regulatory Approval is granted, Unum will, in addition to paying the share allocated to it for Development Costs already incurred in accordance with Section 6.5(c), pay to SGI a premium equal to [***] of Unum's share of the amount allocated for incurred costs only and (b) the allocation is made after Regulatory Approval is granted, Unum will, in addition to paying the share allocated to it for Development Costs already incurred in accordance with Section 6.5(c), pay to SGI a premium equal to [***] of Unum's share of the amount allocated for incurred costs only. For purposes of the immediately preceding sentence, the date of Unum's request for allocation will be treated as the date on which such allocation is made. Notwithstanding the forgoing, Unum will not use information or data generated by such Supplemental Trial in the Shared Territory prior to agreement by the Parties to include the data from such Supplemental Trial (unless such use is at the request of a Regulatory Authority or required by Applicable Law).

(vii) If Unum reasonably believes that a Supplemental Trial that Unum is conducting at its sole expense for the Shared Territory will also reasonably benefit the Licensed Territory, Unum may propose to SGI that a portion or all of the Development Costs attributable to such Supplemental Trial be included in the [***] allocation set forth in Section 6.5(c), and SGI will consider that request reasonably and in good faith. Alternatively, SGI may request by written notice to Unum that any Supplemental Clinical Trial that Unum is conducting at its sole

expense pursuant to the preceding sentence be included in the Late Clinical Development Plan and the Development Costs attributable to such Supplemental Trial be allocated on the terms set forth in this Section 6.2(a)(vii), including the applicable premium. No such Development Cost may be allocated in whole or in part without the express written consent of SGI and for clarity will not be subject to decision within the JDC or JSC (it being understood that each of the Parties will be deemed to have consented expressly in writing that any such Development Costs included as part of the applicable Late Clinical Development Plan be allocated to the Shared Territory to the extent appearing in such plan). Further, such an allocation of such Development Costs incurred with respect to such Supplemental Trial may be made retrospectively (i.e., after the relevant activity has been performed); provided that if (a) the allocation is made after the acceptance in the Shared Territory of an application for Regulatory Approval that includes information or data generated by such Supplemental Trial but before Regulatory Approval is granted, SGI will, in addition to paying the share allocated to it for Development Costs already incurred in accordance with Section 6.5(c), pay to Unum a premium equal to [***] of SGI's share of the amount allocated for incurred costs only and (b) the allocation is made after Regulatory Approval is granted, SGI will, in addition to the amount allocated for Development Costs already incurred, pay to Unum a premium equal to [***] of SGI's share of the amount allocated for incurred costs only. For purposes of the immediately preceding sentence, the date of SGI's request for allocation will be treated as the date on which such allocation is made. Notwithstanding the forgoing, SGI will not use information or data generated by such Supplemental Trial in the Licensed Territory prior to agreement by the Parties to include the data from such Supplemental Trial (unless such use is at the request of a Regulatory Authority or required by Applicable Law).

(b) Amendments to the Development Plans. On an annual basis, or more often as the Parties deem appropriate, the JDC will prepare amendments to each then-current Early Clinical Development Plan or Late Clinical Development Plan for each Development Candidate for approval of the JSC. Each such amended Early Clinical Development Plan or Late Clinical Development Plan will specify the items described in Section 6.2(a)(i) or Section 6.2(a)(iii) as appropriate. Such amended Early Clinical Development Plan or Late Clinical Development Plan will cover the next calendar year (and additional periods as reasonably determined by the Parties). Such updated and amended Early Clinical Development Plan or Late Clinical Development Plan will reflect any changes, re-prioritization of studies within, reallocation of resources with respect to, or additions to, respectively, the then-current Early Clinical Development Plan or Late Clinical Development Plan. In addition, the JDC may prepare amendments for approval by the JSC to the Early Clinical Development Plan or Late Clinical Development Plan, as appropriate, from time to time during the calendar year in order to reflect changes in such plans or budget for such calendar year, in each case, in accordance with the foregoing. Once approved by the JSC, the amended annual Early Clinical Development Plan or Late Clinical Development Plan will become effective for the applicable period on the date approved by the JSC (or such other date as the JSC will specify). Any JSC-approved amended Early Clinical Development Plan or Late Clinical Development Plan will supersede, respectively, the previous Early Clinical Development Plan or Late Clinical Development Plan for the Development Candidate for the applicable period.

6.3 Diligence; Standards of Conduct.

(a) With respect to each Collaboration Antigen, Unum (itself or through its Affiliates or by permitted subcontracting pursuant to Section 6.9) agrees to use Commercially Reasonable Efforts to Develop the applicable Development Candidate in the Shared Territory, and to carry out the tasks specified under the Early Clinical Development Plan, in a timely and effective manner, and agrees to conduct its activities under the Early Clinical Development Plan in a good scientific manner and in compliance in all material respects with Applicable Law. SGI will cooperate with and provide reasonable support to Unum (especially in connection with the SGI Antibodies included in such Development Candidate) in connection with Unum's performance of its responsibilities under the Early Clinical Development Plan. The Parties acknowledge and agree, however, that no outcome or success is or can be assured and that failure to achieve desired results will not in and of itself constitute a breach or default of any obligation in this Agreement (notwithstanding the focus of the Early Clinical Development Plan described above).

(b) On a Development Candidate-by-Development Candidate basis, each Party (itself or through its Affiliates or by permitted subcontracting pursuant to Section 6.9) agrees to use Commercially Reasonable Efforts to Develop and seek Regulatory Approval for the Development Candidate and associated Product in the Shared Territory, and to carry out the tasks specified under the Late Clinical Development Plan, in a timely and effective manner and in a good scientific manner and in compliance in all material respects with Applicable Law. Each Party will cooperate with and provide reasonable support to the other Party (especially in connection with, in the case of support by Unum, the ACTR T-cells, and in the case of support by SGI, the SGI Antibodies, in each case included in such Development Candidate) in connection with the other Party's performance of its responsibilities under the Late Clinical Development Plan.

(c) On a Development Candidate-by-Development Candidate basis, SGI (itself or through its Affiliates or by permitted subcontracting pursuant to Section 6.9) agrees to use Commercially Reasonable Efforts to Develop and seek Regulatory Approval for the Development Candidate and associated Product in the Licensed Territory, and to carry out the tasks specified under the Late Clinical Development Plan, in a timely and effective manner and in a good scientific manner and in compliance in all material respects with Applicable Law. Unum will cooperate with and provide reasonable support to SGI (especially in connection with, the ACTR T-cells included in such Development Candidate) in connection with Unum's performance of its responsibilities under the Late Clinical Development Plan.

6.4 Development Decision-Making. Except as otherwise expressly provided in this Agreement, all matters regarding the Early Clinical Development Program and the Late Clinical Development Program will be decided by unanimous agreement by the JDC.

6.5 Development Costs.

(a) During the Early Clinical Development Term, SGI will reimburse Unum for [***] of all Development Costs for all Development Candidates actually incurred for the Territory pursuant to the Early Clinical Development Plan, in accordance with Section 11.5, subject to the following sentence. Notwithstanding the amounts allocated to Development activities in the Shared Territory in the applicable Early Clinical Development Plan budget, for any calendar year, Unum will only be permitted to recover Development Costs with respect to Development activities that have been

allocated to Unum under the Early Clinical Development Plan and related budget in excess of the amount allocated therein (i) by up to [***] of the amount so allocated, or (ii) with the unanimous approval of the JDC, which approval may be granted either in advance of such costs being incurred or retroactively. For clarity, during the Early Clinical Development Term, Unum will not be required to incur any Development Costs for any Development Candidates for which SGI will not reimburse Unum, and SGI will not be required to reimburse Unum for any Development Costs not approved by SGI as and to the extent required under this Agreement.

(b) Subject to Section 6.2(a)(iv), during the Late Clinical Development Term, SGI will be responsible for [***] of all Development Costs for each Development Candidate and associated Product incurred in the Licensed Territory pursuant to the Late Clinical Development Plan. In the event that Unum performs any Development activities for which SGI is solely responsible for the costs and expenses hereunder, Unum will invoice SGI for such expenses and SGI will reimburse Unum for such costs and expenses in accordance with Section 11.5.

(c) During the Late Clinical Development Term, Unum will be responsible [***] and SGI will be responsible for [***] of all Development Costs for each Development Candidate and associated Product actually incurred for the Shared Territory pursuant to the Late Clinical Development Plan, subject to the following sentence. Notwithstanding the amounts allocated to Development activities in the Shared Territory in the applicable Late Clinical Development Plan budget, for any calendar year, each Party will only be permitted to recover Development Costs with respect to Development activities that have been allocated to such Party under the Late Clinical Development Plan and related budget in excess of the amount allocated therein (i) by up to [***] of the amount so allocated, or (ii) with the unanimous approval of the JDC, which approval may be granted either in advance of such costs being incurred or retroactively. The Parties will reconcile the Development Costs they have actually incurred to reflect the foregoing allocation of Development Costs according to the procedures in Section 11.5 or Section 11.6, as applicable.

6.6 Development Reports.

(a) During the Early Clinical Development Term Unum will keep the JDC fully informed regarding the progress and results of Development activities for Development Candidates in the Territory, including an annual review of results versus goals (as such goals are set forth in the Early Clinical Development Plan(s)).

(b) During the Late Clinical Development Term, each Party will keep the JDC fully informed regarding the progress and results of Development activities for Development Candidates and associated Products in the Territory (including any Supplemental Trials), including an annual review of results versus goals (as such goals are set forth in the Late Clinical Development Plan(s)).

(c) With respect to any Reversion Product, the Continuing Party will update the Opt-Out Party, through the JDC, regarding the progress of Development of such Reversion Product, on no less than an annual basis.

6.7 Development Records. Each Party will maintain complete and accurate records (in the form of electronic files where appropriate) of all work conducted by it under the Early Clinical Development Plan or Late Clinical Development Plan for each Development Candidate. Such records

will fully and properly reflect all work done and results achieved in the performance of the Early Clinical Development Plan or Late Clinical Development Plan in sufficient detail and in good scientific manner appropriate for Patent and regulatory purposes. Each Party has the right to receive copies of such records maintained by the other Party, including in electronic format if maintained in such format, at reasonable times to the extent reasonably necessary to perform obligations or exercise rights under this Agreement.

6.8 Materials.

(a) SGI will, during the Early Clinical Development Term, as a matter of course as described in the Early Clinical Development Plan or upon Unum's reasonable written request, furnish to Unum samples of Materials that are in SGI's Control (including SGI Antibodies included in such Development Candidates) and are necessary for Unum to carry out its responsibilities under the Early Clinical Development Plan. If agreed by the Parties, Unum may furnish to SGI samples of Materials that are in Unum's Control and are necessary for SGI to carry out those responsibilities on which the Parties may agree.

(b) Each Party will use those Materials furnished by the other Party only in accordance with the Early Clinical Development Plan and otherwise in accordance with the terms and conditions of this Agreement and any instructions provided by the furnishing Party. Except with the prior written consent of the furnishing Party (such consent not to be unreasonably withheld, conditioned or delayed), such Party receiving Materials will not distribute or otherwise allow the release of Materials to any Third Party, except for subcontracting as permitted hereunder. All Materials so delivered will remain the sole property of the furnishing Party and will be used in compliance with all Applicable Law. The Materials supplied under this Agreement will be used with prudence and appropriate caution in any experimental work because not all of their characteristics may be known.

(c) Each Party will as a matter of course as described in the Early Clinical Development Plan or Late Clinical Development Plan or upon the other Party's reasonable written request, furnish to each other samples of Materials that are in such Party's Control (including, in the case of SGI, SGI Antibodies and, in the case of Unum, ACTR included in such Development Candidates) and are necessary for the other Party to carry out its responsibilities under the Early Clinical Development Plan or Late Clinical Development Plan.

(d) Each Party will use such Materials only in accordance with the Early Clinical Development Plan or Late Clinical Development Plan and otherwise in accordance with the terms and conditions of this Agreement and any instructions provided by the Party furnishing the Materials. Except with the prior written consent of the supplying Party (such consent not to be unreasonably withheld, conditioned or delayed), the Party receiving any Materials will not distribute or otherwise allow the release of Materials to any Affiliate (other than wholly-owned subsidiaries) or Third Party, except for subcontracting as permitted hereunder. All Materials delivered to the receiving Party will remain the sole property of the supplying Party and will be used in compliance with all Applicable Law. The Materials supplied under this Agreement will be used with prudence and appropriate caution in any experimental work because not all of their characteristics may be known.

6.9 Subcontracts. Each Party may perform any of its Development obligations under this Article 6 through one or more subcontractors or consultants, provided that (a) such Party remains responsible for the work allocated to such subcontractors and consultants to the same extent it would if it had done such work itself; (b) the subcontractor or consultant undertakes in writing commercially reasonable obligations of confidentiality and non-use regarding Confidential Information, that are substantially the same as those undertaken by the Parties with respect to Confidential Information pursuant to Article 15 hereof; and (c) the subcontractor or consultant undertakes in writing to assign or exclusively license back (with the right to sublicense) all intellectual property with respect to Development Candidates developed in the course of performing any such work to such Party. Each Party may also subcontract Development work on terms other than those set forth in this Section 6.9 with the prior approval of the JDC.

ARTICLE 7
REGULATORY MATTERS

7.1 Regulatory Filings and Approvals.

(a) In General. The Parties intend that each Early Clinical Development Plan and Late Clinical Development Plan will set forth the regulatory strategy for seeking Regulatory Approvals (including any pricing and reimbursement approvals) in the Territory for all Development Candidates and Products. All decisions regarding regulatory issues will be made in accordance with the decision-making rules set forth in Article 2.

(b) Rights and Obligations.

(i) Unum has operational responsibility for preparing and filing all Regulatory Materials with respect to a Clinical Trial or other regulatory matter in the Shared Territory, and has primary operational responsibility for interactions with Regulatory Authorities in the Shared Territory, including taking the lead role at all meetings with Regulatory Authorities in the Shared Territory, subject to the right of SGI to participate in such activities and provide input (or consent, as may be required pursuant to the other terms of this Agreement). With respect to regulatory activities conducted in any country in support of Regulatory Approvals in the Shared Territory, the scope of this right of participation includes all regulatory activities, including development of regulatory strategy and advance review of regulatory submissions, attendance at all meetings with Regulatory Authorities that may potentially impact the Early Clinical Development Program or Late Clinical Development Program or registration package for a particular Development Candidate or Product, and review of outcomes of such meetings (including the rights set forth in Section 7.1(c)(ii)).

(ii) SGI has operational responsibility for preparing and filing all Regulatory Materials with respect to a Clinical Trial or other regulatory matter in the Licensed Territory, and has primary operational responsibility for interactions with Regulatory Authorities in the Licensed Territory, including taking the lead role at all meetings with Regulatory Authorities in the Licensed Territory, subject to the right of Unum to participate in such activities and provide input (or consent, as may be required pursuant to the other terms of this Agreement), excluding any Drug Master Files maintained by or on behalf of Unum, which will be and remain Unum's sole responsibility. With respect to regulatory activities conducted in any country in support of Regulatory Approvals in the Licensed Territory, the scope of this right of participation includes all regulatory activities, including development of regulatory strategy and advance review of regulatory submissions, attendance at all meetings with Regulatory Authorities that may potentially impact the Early Clinical Development Program or Late Clinical Development Program or registration package for a particular Development Candidate or Product, and review of outcomes of such meetings (including the rights set forth in Section 7.1(c)(ii)).

(c) Reporting and Review.

(i) The JDC will develop and implement procedures for drafting and review of Regulatory Materials for Development Candidates and Products in the Territory, which procedures will provide sufficient time for each Party to provide substantive comments prior to the filing of such Regulatory Materials. Such procedures will provide each Party with full and complete access, on a real-time basis, to all Regulatory Materials and Regulatory Approvals as such materials are being drafted, and, after those materials have been submitted to a Regulatory Authority, will permit each Party to obtain copies of all such materials, including in electronic format, at reasonable times. Such procedures and related timelines will accommodate each Party's reasonable requests to obtain the feedback of Regulatory Authorities with respect to potential submissions in order to permit each Party to ensure that submissions and Regulatory Approvals for Products throughout the Territory are reasonably consistent.

(ii) With respect to regulatory matters in support of Regulatory Approvals for Development Candidates and Products in the Shared Territory, Unum will promptly notify SGI of all Regulatory Materials that Unum submits for such Development Candidates and Products and will promptly provide SGI with a copy (which may be wholly or partly in electronic form) of such Regulatory Materials. Unum will provide SGI with reasonable advance notice of any scheduled meeting with respect to such matter with any Regulatory Authority in the Shared Territory, and SGI has the right to participate in any such meeting, to the extent permitted by Applicable Law. Representatives of Unum will be the primary spokespeople at all meetings with Regulatory Authorities in the Shared Territory with regard to such matter. Unum also will promptly furnish SGI with copies of all material correspondence to or from, and minutes of all such meetings with, any Regulatory Authority in the Shared Territory.

(iii) With respect to regulatory matters in support of Regulatory Approvals for Development Candidates and Products in the Licensed Territory, SGI will promptly notify Unum of all Regulatory Materials that SGI submits for such Development Candidates and Products and will promptly provide Unum with a copy (which may be wholly or partly in electronic form) of such Regulatory Materials. SGI will provide Unum with reasonable advance notice of any scheduled meeting with respect to such matter with any Regulatory Authority in the Licensed Territory, and Unum has the right to participate in any such meeting, to the extent permitted by Applicable Law. Representatives of SGI will be the primary spokespeople at all meetings with Regulatory Authorities in the Licensed Territory with regard to such matter. SGI also will promptly furnish Unum with copies of all material correspondence to or from, and minutes of all such meetings with, any Regulatory Authority in the Licensed Territory.

(d) Ownership of Regulatory Materials and Regulatory Approvals; Rights of Reference.

(i) All Regulatory Materials, including INDs and NDAs, relating to any Development Candidates and Products in the Shared Territory will be owned by, and will be the sole property of, Unum. All such Regulatory Materials and Regulatory Approvals in the Shared Territory will be filed and held in the name of Unum.

(ii) All Regulatory Materials, including INDs and NDAs, relating to any Development Candidates and Products in the Licensed Territory will be owned by, and will be the sole property of, SGI, excluding any Drug Master Files maintained by or on behalf of Unum, which will be and remain Unum's sole responsibility. All such Regulatory Materials and Regulatory Approvals in the Licensed Territory will be filed and held in the name of SGI, excluding any Drug Master Files maintained by or on behalf of Unum, which will be and remain Unum's sole responsibility.

(iii) Unum, either directly or through a Third Party supplier, will submit and maintain a Drug Master File for ACTR T-cells to the applicable Regulatory Authorities in all countries in the Licensed Territory where SGI or any of its Affiliates submits, or intends to submit, a Regulatory Approval, as well as all other countries in the Territory where the ACTR T-cells are Manufactured or as otherwise required by Applicable Law. Prior to any such submission, Unum will provide a copy of the open portion of such Drug Master File to SGI for its review and comment (which comments will be considered by Unum in good faith). Any communications from the Regulatory Authorities to SGI relating to the Drug Master File will promptly be referred to Unum, and Unum will be solely responsible for responding to any such communications and resolving any issues with the Regulatory Authorities, in each case to the extent permitted by Applicable Law. Unum, either directly or through a Third Party supplier, will file and maintain the Drug Master File in compliance with all Applicable Laws as well as any Regulatory Approval for the Products in the Licensed Territory, and will notify SGI of any significant communications with the Regulatory Authorities relating to the potential discontinuance and/or withdrawal of the DMF or any Regulatory Approval for the Products in the Licensed Territory, or any safety, efficacy or potency concern relating to the ACTR T-cells. SGI will cooperate with Unum as reasonably necessary to support Unum's performance of its obligations under this Section 7.1(c)(iii).

(iv) Each Party has the right to cross-reference (in redacted form), file or incorporate by reference any Regulatory Materials and any Regulatory Approval and all data and other Know-How included or referenced therein or filed in support of any such Regulatory Materials or Regulatory Approvals, including any Drug Master File (and any data and other Know-How therein) for any Development Candidate or Product in any country in the Territory, which Regulatory Materials or Regulatory Approval is Controlled by the other Party or any of its Affiliates (and in the case of a drug master file, any of its subcontractors), in order to support regulatory submissions that such Party is permitted to make under this Agreement for any Product and to otherwise enable such Party to fulfill its obligations or exercise its rights hereunder.

(v) Each Party will duly execute and deliver, or cause to be duly executed and delivered, such instruments and will do and cause to be done such reasonable acts and things, as may be necessary under, or as the other Party may reasonably request, to effectuate the transfers, assignments and rights of reference contemplated in this Section 7.1.

7.2 Product Withdrawals and Recalls. If (a) any Regulatory Authority threatens, initiates or advises any action to remove any Product from the market in the Territory or requires or advises Unum, SGI, or any of their respective Affiliates to distribute a "Dear Doctor" letter or its equivalent regarding use of such Product in the Territory, or (b) either Party determines that an event, incident, or circumstance has occurred that may result in the need for a recall or market withdrawal in the Territory, then in each case ((a) or (b)) Unum or SGI, as applicable, will, to the extent practicable, notify the other Party of such event or determination immediately, and in any event within twenty-four (24) hours (or sooner if required by law) after such Party becomes aware of the event or makes such determination. Each Party will, to the extent practicable, endeavor to discuss and agree with the other Party upon whether to recall or withdraw the Product in the Territory; provided, however, that if such discussion is not practicable or if the Parties fail to agree within an appropriate time period (recognizing the exigencies of the situation), then (i) Unum will decide whether to recall or withdraw such Product in the Shared Territory; and (ii) SGI will decide whether to recall or withdraw such Product in the Licensed Territory. The Parties will be jointly responsible for conducting any recalls or taking such other necessary remedial action with respect to Products in the Shared Territory, except to the extent that the recall or withdrawal is attributable to the negligence, breach or intentional misconduct of the other Party or any of its Affiliates or subcontractors, in which event the other Party will bear such costs to the extent of its or its Affiliate's or subcontractor's responsibility. SGI will be responsible, at its sole expense, for conducting any recalls or taking such other necessary remedial action with respect to Products in the Licensed Territory, except to the extent that the recall or withdrawal is attributable to the negligence, breach or intentional misconduct of Unum or any of its Affiliates or subcontractors, in which event Unum will bear such costs to the extent of its or its Affiliate's or subcontractor's responsibility.

7.3 Safety Agreements. Promptly after the Effective Date, but in any event no later than the date of Initiation of the first Clinical Trial of a Development Candidate in the Territory, the Parties will enter into one or more safety agreement(s) requiring (a) Unum to be responsible for the global safety database that are specific to the ACTR T-cells within the Development Candidates and Products, (b) SGI to be responsible for the global safety database that are specific to the SGI Antibodies within the Development Candidates and Products, and (c) either Unum or SGI to be responsible for the global safety database for Development Candidates and Products, such Party to be determined by the JSC by reference to any requirements under Applicable Law (if any), whether the expected safety needs of the applicable Development Candidate and Product are more likely attributable to the applicable ACTR T-cells or the SGI Antibody, prior experiences in interacting with Regulatory Authorities regarding those applicable ACTR T-cells and SGI Antibody, and other relevant factors. The safety agreement(s) will govern the responsibilities of the Parties and include (i) safety data exchange procedures governing the coordination of collection, investigation, reporting and exchange of information concerning any adverse experiences, and any product quality and product complaints associated with adverse experiences, related to such Development Candidates and Products sufficient to enable each Party to comply with its legal and regulatory obligations, and (ii) obligations on the Party responsible for such global safety database for Development Candidates and Products to make such database readily available to the other Party in such format and in a timely manner as the other Party may reasonably request and any in event in a manner sufficient for such other Party to comply with any other product safety requirements, including those required by Applicable Law. In addition, as appropriate, such safety agreement(s) will include the safety data exchange procedures governing the exchange of information affecting the class (e.g., serious adverse events, emerging safety issues).

ARTICLE 8
COMMERCIALIZATION

8.1 Overview. On a Product-by-Product basis (but not including a Reversion Product), subject to the oversight of the JSC and JCC, (a) the Parties will participate in the planning of Commercialization activities with respect to, and the Co-Promotion of, such Product in accordance with this Agreement and the Joint Commercialization Plan for such Product in the Shared Territory, and (b) SGI will be solely responsible, at its expense, for all Commercialization activities relating to such Product in accordance with this Agreement for such Product in the Licensed Territory.

8.2 Commercialization Standards of Conduct.

(a) On a Product-by-Product basis, each Party will use Commercially Reasonable Efforts to Commercialize such Product in the Shared Territory, and to carry out the tasks specified under the Joint Commercialization Plan in a timely and effective manner and in compliance in all material respects with Applicable Law and applicable codes of conduct.

(b) On a Product-by-Product basis, SGI will use Commercially Reasonable Efforts to Commercialize such Product in the Licensed Territory, and to carry out appropriate Commercialization activities in a timely and effective manner and in compliance in all material respects with Applicable Law and applicable codes of conduct.

8.3 Commercialization of Products.

(a) Joint Commercialization Plan.

(i) As further described in this Section 8.3, the tactics and strategy for the Commercialization of each Product in the Territory will be described in a comprehensive plan (each such plan, a "**Joint Commercialization Plan**") that describes the pre-launch, launch and subsequent Commercialization of such Product in the Shared Territory (including anticipated activities relating to messaging, branding, Pricing Matters (to the extent not prohibited by Applicable Law), advertising, planning, marketing, sales force training and allocation, detailing, and Distribution Matters), key tactics and strategies for implementing those activities and the associated budget for such activities (each such included budget, a "**Joint Commercialization Budget**").

(ii) Either Party's representatives on the JCC may propose a Voluntary Phase 4 Clinical Trial. If the JCC does not recommend such Voluntary Phase 4 Clinical Trial to the JSC (or the JSC does not approve it) for inclusion in the Joint Commercialization Plan, the proposing Party will have the right to conduct such Voluntary Phase 4 Clinical Trial, at its sole expense, even if not included in the Joint Commercialization Plan by the JSC, unless the other Party reasonably believes that any such Voluntary Phase 4 Clinical Trial would present unreasonable safety risk or would materially harm the commercial potential of the Product or, in the case of Unum, may result in an ACTR Matter. Each Party will notify the other Party, and provide such information as the other Party may request, regarding any proposed Voluntary Phase 4 Clinical Trial before taking any steps to initiate same.

(iii) If SGI reasonably believes that a Voluntary Phase 4 Clinical Trial that SGI is conducting at its sole expense for the Licensed Territory will also reasonably benefit the Shared Territory, SGI may propose to Unum that a portion or all of the costs attributable to such Voluntary Phase 4 Clinical Trial be included in the [***] allocation set forth in Section 8.3(b), and Unum will consider that request reasonably and in good faith. Alternatively, Unum may request by written notice to SGI that any Voluntary Phase 4 Clinical Trial that SGI is conducting at its sole expense pursuant to the preceding sentence be included in the Joint Commercialization Plan and the Joint Commercialization Costs attributable to such Voluntary Phase 4 Clinical Trial be allocated on the terms set forth in this Section 8.3(a)(iii), including the applicable premium. No such costs may be allocated in whole or in part without the express written consent of Unum and for clarity will not be subject to decision within the JDC or JSC (it being understood that each of the Parties will be deemed to have consented expressly in writing that any such costs included as part of the Joint Commercialization Plan be so allocated to the extent appearing in such plan). Further, such an allocation of such costs incurred with respect to such Voluntary Phase 4 Clinical Trial may be made retrospectively (i.e., after the relevant activity has been performed); provided that if (a) the allocation is made after the acceptance in the Shared Territory of an application for Regulatory Approval that includes information or data generated by such Voluntary Phase 4 Clinical Trial but before Regulatory Approval is granted, Unum will, in addition to paying the share allocated to it for Development Costs already incurred in accordance with Section 8.3(b), pay to SGI a premium equal to [***] of Unum's share of such amount allocated for incurred costs only and (b) the allocation is made after Regulatory Approval is granted, Unum will, in addition to paying the share allocated to it for Development Costs already incurred in accordance with Section 8.3(b), pay to SGI a premium equal to [***] of Unum's share of the amount allocated for incurred costs only. For purposes of the immediately preceding sentence, the date of Unum's request for allocation will be treated as the date on which such allocation is made. Notwithstanding the forgoing, Unum will not use information or data generated by such Voluntary Phase 4 Clinical Trial in the Shared Territory prior to agreement by the parties to include the data from such Voluntary Phase 4 Clinical Trial (unless such use is at the request of a Regulatory Authority or required by Applicable Law).

(iv) If Unum reasonably believes that a Voluntary Phase 4 Clinical Trial that Unum is conducting at its sole expense for the Shared Territory will also reasonably benefit the Licensed Territory, Unum may propose to SGI that a portion or all of the Joint Commercialization Costs attributable to such Voluntary Phase 4 Clinical Trial be included in the [***] allocation set forth in Section 8.3(b), and SGI will consider that request reasonably and in good faith. Alternatively, SGI may request by written notice to Unum that any Voluntary Phase 4 Clinical Trial that Unum is conducting at its sole expense pursuant to the preceding sentence be included in the Joint Commercialization Plan and the Joint Commercialization Costs attributable to such Voluntary Phase 4 Clinical Trial be allocated on the terms set forth in this Section 8.3(a)(iv), including the applicable premium. No such Joint Commercialization Costs may be allocated in whole or in part without the express written consent of SGI and for clarity will not be subject to decision within the JDC or JSC (it being understood that each of the Parties will be deemed to have consented expressly in writing that any such Joint Commercialization Costs included as part of the applicable Joint Commercialization Plan be so allocated to the extent appearing in such plan). Further, such an allocation of such Joint Commercialization Costs incurred with respect to such Voluntary Phase 4 Clinical Trial may be made retrospectively (i.e.,

after the relevant activity has been performed); provided that if (a) the allocation is made after the acceptance in the Licensed Territory of an application for Regulatory Approval that includes information or data generated by such Voluntary Phase 4 Clinical Trial but before Regulatory Approval is granted, SGI will, in addition to paying the share allocated to it for Development Costs already incurred in accordance with Section 8.3(b), pay to Unum a premium equal to [***] of SGI's share of such amount allocated for incurred costs only and (b) the allocation is made after Regulatory Approval is granted, SGI will, in addition to paying the share allocated to it for Development Costs already incurred in accordance with Section 8.3(b), pay to Unum a premium equal to [***] of SGI's share of the amount allocated for incurred costs only. For purposes of the immediately preceding sentence, the date of SGI's request for allocation will be treated as the date on which such allocation is made. Notwithstanding the forgoing, SGI will not use information or data generated by such Voluntary Phase 4 Clinical Trial in the Licensed Territory prior to agreement by the parties to include the data from such Voluntary Phase 4 Clinical Trial (unless such use is at the request of a Regulatory Authority or required by Applicable Law).

(v) No later than [***] prior to the projected NDA filing date for a Product in the Shared Territory, the JCC will prepare and recommend to the JSC for approval an initial Joint Commercialization Plan for each Product (including the initial Joint Commercialization Budget). Subject to Section 8.3(c), each Joint Commercialization Plan will allocate the Co-Promotion responsibilities of the Parties in an equitable fashion taking into account the Parties' respective capabilities. For clarity, SGI will be responsible for all Commercialization activities in the Licensed Territory, and such activities will not be included in the Joint Commercialization Plan. All Joint Commercialization Plans, including the corresponding Joint Commercialization Budgets, with respect to each Product in the Shared Territory and subsequent revisions thereto will contain such information as the JCC believes necessary for the successful Commercialization of such Product in the Shared Territory, both pre- and post-launch, and will generally conform to the level of detail utilized by the Lead Commercializing Party in preparation of its own product Commercialization plans. On an annual basis, or more often as the Parties deem appropriate, the JCC will prepare amendments to the then-current Joint Commercialization Plan(s), including the corresponding Joint Commercialization Budgets. In the event of any inconsistency between a Joint Commercialization Plan and this Agreement, the terms of this Agreement will prevail. Each Party will conduct its activities under the Joint Commercialization Plan(s) in compliance in all material respects with Applicable Law.

(b) Commercialization Costs.

(i) The Parties will share the Joint Commercialization Costs fifty percent/fifty percent, provided that if any information or data generated by any Voluntary Phase 4 Clinical Trial approved by the JSC and included in the Joint Commercialization Plan is used in the Licensed Territory, Unum will be responsible for [***] and SGI will be responsible for [***] of all Joint Commercialization Costs associated with such Voluntary Phase 4 Clinical Trial and, for clarity, as between the Parties, SGI may freely use such information or data in the Licensed Territory. Notwithstanding the amounts allocated to Commercialization activities in the Shared Territory in the applicable Joint Commercialization Budget, for any calendar year, each Party will only be permitted to recover Joint Commercialization Costs with respect to Commercialization activities that have been allocated to such Party under the Joint Commercialization Plan and

related Joint Commercialization Budget in excess of the amount allocated therein (A) by up to [***] of the amount so allocated, or (B) with the unanimous approval of the JCC, which approval may be granted either in advance of such costs being incurred or retroactively. SGI and Unum will reconcile Joint Commercialization Costs incurred by each Party through the procedures in Section 11.5 or Section 11.6, as applicable.

(ii) Subject to Section 8.3(a)(ii), SGI will be solely responsible for all costs and expenses incurred by or on behalf of SGI in the Commercialization of Products in the Licensed Territory.

(c) Co-Promotion of Products in Shared Territory.

(i) Co-Promotion. The Parties intend that the Parties will share equally in the Co-Promotion of Products in the Shared Territory on the terms and conditions set forth in this Section 8.3(c).

(ii) Co-Promotion Agreement. No later than [***] prior to the projected NDA filing date for each Product in the Shared Territory, the Parties will enter into a co-promotion agreement (the "**Co-Promotion Agreement**") setting forth the terms and conditions of the Parties' Co-Promotion of the Product. The Co-Promotion Agreement will be consistent with this Section 8.3(c) and Section 8.3(d), and will contain additional reasonable and customary terms and conditions, including an equitable allocation of responsibilities for the co-promotion of the Product and the detailing effort in the Shared Territory. The Parties may commence negotiating the terms and conditions of the Co-Promotion Agreement at any time after the Effective Date.

(iii) Co-Promotion Budget. The amount budgeted for each Party's Co-Promotion activities in each Joint Commercialization Budget will be consistent with the Co-Promotion activities assigned to such Party pursuant to the Joint Commercialization Plan.

(d) Co-Promotion Terms. Each Co-Promotion Agreement entered into pursuant to Section 8.3(c) will reflect the principles set forth in this Section 8.3(d), unless otherwise expressly agreed by the Parties.

(i) Governance. Subject to Article 2, the Parties' Co-Promotion activities for any Product in the Shared Territory will be overseen by the JCC and governed by the Joint Commercialization Plan. The JCC will use reasonable and good faith efforts to allocate the Co-Promotion activities in a manner to give effect to the sales and marketing strategy described in the Joint Commercialization Plan and in the best interests of such Product. The Joint Commercialization Plan will not allocate Co-Promotional activities in a manner that results in sales representatives of both Parties detailing Product to the same prescribers.

(ii) Advertising and Promotional Materials. Subject to Applicable Law, and applicable industry codes of conduct, all Promotional Materials for any Product will include, with equal prominence, the names and logos of both Parties.

(iii) Uniform Training. For training purposes, the Parties will treat the Unum and SGI sales representatives as a combined sales force and will cooperate to provide the Unum and SGI sales representatives with the same training, support, and assistance.

(iv) Costs; Authority over Sales Forces. Subject to the right of each Party to have its Detail Costs incurred under the applicable Joint Commercialization Plan included in Joint Commercialization Costs, each Party will be responsible for all costs and expenses in connection with their respective sales representatives, including salaries, incentive compensation, travel expenses and other expenses, providing benefits, deducting federal, state and local payroll taxes, Federal Insurance Contribution Act taxes, unemployment insurance taxes, and any similar taxes and paying workers' compensation premiums, unemployment insurance contributions and any other payments required by Applicable Law to be made on behalf of employees. Nothing in this Agreement or the Co-Promotion Agreement will be construed to conclude that any of Unum's sales representatives or any other agents or employees of Unum are agents or employees of SGI or subject to SGI's direction and control. Unum has sole authority over the terms and conditions of employment of Unum's sales representatives, including their selection, management, compensation (including incentive plans) and discharge. Nothing in this Agreement or the Co-Promotion Agreement will be construed to conclude that any of SGI's sales representatives or any other agents or employees of SGI are agents or employees of Unum or subject to Unum's direction and control. SGI has sole authority over the terms and conditions of employment of SGI's sales representatives, including their selection, management compensation (including incentive plans) and discharge.

8.4 Commercialization Reports. Each Party will keep the JCC fully informed regarding the progress and results of Commercialization activities for Products in the Shared Territory, including an annual review of results versus goals (as such goals are set forth in the Joint Commercialization Plan(s)). SGI will provide on a quarterly basis a rolling annual forecast of projected sales for Products in the Licensed Territory. The Parties will work together to provide such forecast for Products in the Shared Territory. With respect to any Reversion Product, the Continuing Party will update the Opt-Out Party, through the JCC, regarding the progress of Commercialization of such Reversion Product, on no less than an annual basis.

8.5 Sales and Distribution.

(a) The Lead Commercializing Party will be solely responsible for handling all returns, recalls, order processing, invoicing and collection, booking of sales, inventory and receivables, and, subject to the good faith consideration by the Lead Commercializing Party of input from the other Party, and Distribution Matters relating to the applicable Product in the Shared Territory. The other Party will not accept orders for Products or make sales for its own account or for the Lead Commercializing Party's account, and if the other Party receives any order for Products in the Shared Territory, it will refer such orders to the Lead Commercializing Party for acceptance or rejection. The Lead Commercializing Party will be the lead Party for managed care, government pricing programs, and medical affairs, in the Shared Territory, including the negotiation of managed care arrangements.

(b) SGI will be solely responsible for handling all returns, recalls, order processing, invoicing and collection, booking of sales, inventory and receivables, and, subject to the good faith consideration by SGI of input from Unum, Distribution Matters relating to all Products in the Licensed

Territory. Unum will not accept orders for Products or make sales for its own account or for SGI's account, and if Unum receives any order for Products in the Licensed Territory, it will refer such orders to SGI for acceptance or rejection. SGI will be solely responsible for managed, government pricing programs and medical affairs in the Licensed Territory, including the negotiation of managed care arrangements.

(c) Subject to Applicable Law, all Pricing Matters for Products in the Shared Territory will be determined by mutual agreement of the JCC, subject to the dispute resolution process set forth in Section 4.6. Subject to Applicable Law, all Pricing Matters for Products in the Licensed Territory will be determined by SGI, except to the extent they constitute an ACTR Matter (in which event such Pricing Matter will be determined by mutual agreement of the JCC, subject to the dispute resolution process set forth in Section 4.6).

(d) Except as expressly assigned to one Party or another, or jointly to both Parties (e.g., Co-Promotion), all other Commercialization activities for a Product in the Shared Territory will be the responsibility of the Lead Commercializing Party.

(e) The Lead Commercializing Party will be responsible for booking sales for Products hereunder, and will be responsible for preparing and maintaining a patient registry of all patients that receive any services (including preliminary treatments or follow-up treatments) related to any Development Candidate or associated Product (or any component thereof, including the ACTR T-cells or SGI Antibodies). The Parties acknowledge and agree that all sales of, or any services relating to, any Product, ACTR T-cells or SGI Antibodies (whether administered together, separately, simultaneously, sequentially or otherwise) for any patient in such patient registry will be included for the purposes of calculating Joint Commercialization Costs, Net Sales and Operating Profit (or Loss) hereunder, as applicable.

(f) In the event that SGI or any of its Affiliates is asked to sell ACTR T-cells to, or perform services relating to ACTR T-cells for, any patient for use with an Antibody other than the SGI Antibody identified in the applicable patient registry for a Product, then SGI will use commercially reasonable efforts to refer such patient and such sale or applicable services to Unum or its designee. Neither SGI nor any of its Affiliates will directly or indirectly Research, Develop or Commercialize ACTR T-cells (i) except with an applicable Product as permitted pursuant to this Agreement, or (ii) in a manner that is inconsistent with the label obtained for such applicable Product.

8.6 Subcontracts.

(a) *Shared Territory*. For [***] after commercial launch of a Product in the Shared Territory, each Party may perform any of its Commercialization obligations under the Joint Commercialization Plan through one or more subcontractors, provided (i) such Party remains responsible for the work allocated to, and payment to, such subcontractors to the same extent it would if it had done such work itself; (ii) the subcontractor undertakes in writing commercially reasonable obligations of confidentiality and non-use regarding Confidential Information that are substantially the same as those undertaken by the Parties with respect to Confidential Information pursuant to Article 15 hereof; and (iii) the subcontractor undertakes in writing to assign or exclusively license back (with the right to sublicense) all intellectual property with respect to Products developed in the course of performing any such work under the Joint Commercialization Plan to the Party retaining such subcontractor. [***], either Party may continue to use any such subcontractors only if the other Party and its Affiliates is not able and willing to take on those previously subcontracted obligations under the Joint Commercialization Plan.

(b) *Licensed Territory*. SGI may perform Commercialization activities through one or more subcontractors without the prior written consent of Unum; provided that (i) SGI remains responsible for the work allocated to, and payment to, such subcontractors to the same extent it would if it had done such work itself; (ii) the subcontractor undertakes in writing commercially reasonable obligations of confidentiality and non-use regarding Confidential Information that are substantially the same as those undertaken by the Parties with respect to Confidential Information pursuant to Article 15 hereof; and (iii) the subcontractor undertakes in writing to assign or exclusively license back (with the right to sublicense) to SGI all intellectual property with respect to Products developed in the course of performing any such work .

8.7 Coordination between Licensed Territory and Shared Territory. The Parties agree to coordinate activities, including Pricing Matters (to the extent not prohibited by Applicable Law), Distribution Matters and branding in the Licensed Territory. Consequently, SGI's members of the JCC will provide an update regarding Commercialization activities at each meeting of the JCC.

ARTICLE 9
MANUFACTURE AND SUPPLY

9.1 Joint Manufacturing Plan. All Manufacturing of ACTR T-cells and SGI Antibodies in the Territory will be conducted pursuant to a joint manufacturing plan to be prepared as follows: (a) SGI will be responsible for preparing the portions of the joint manufacturing plan relating to SGI Antibodies, and (b) Unum will be responsible for preparing the portions of the joint manufacturing plan relating to ACTR T-cells.

9.2 Manufacturing Responsibilities for ACTR T-cells.

(a) *Responsibility*. Subject to Section 9.8(a), Unum has the sole responsibility for the Manufacture of ACTR T-cells in the Territory. Unum will use commercially reasonable efforts to invest in and develop sufficient manufacturing capacity to meet a binding rolling forecast for production of ACTR T-cells set by a process to be agreed by the Parties in a manner that is reasonably cost efficient and reasonably competitive with Third Party comparable cell processing services.

(b) *Research Candidates*. SGI will pay to Unum one hundred percent (100%) of all Manufacturing Costs relating to ACTR T-cells incurred by Unum to support Research of Research Candidates in accordance with the Research Plan as Research Costs pursuant to Section 5.5.

(c) *Development Candidates; Early Clinical Development Plan*. SGI will pay to Unum one hundred percent (100%) of all Manufacturing Costs relating to ACTR T-cells incurred by Unum to support Development of Development Candidates in accordance with the Early Clinical Development Plan as Development Costs pursuant to Section 6.5(b).

(d) Development Candidates; Late Clinical Development Plan.

(i) The terms under which Unum will supply clinical supplies of ACTR T-cells to SGI for use as part of the Development Candidates in the Territory will be set forth in a supply agreement to be entered into between the Parties no later than [***] days prior to the date of Initiation of a Clinical Trial of the first Development Candidate in the Territory (the "**ACTR T-cell Clinical Supply Agreement**"). Such ACTR T-cell Clinical Supply Agreement will contain customary terms and conditions, including quality, and otherwise be consistent with this Agreement.

(ii) The Parties will share all Manufacturing Costs relating to ACTR T-cells incurred by Unum to support Development of Development Candidates in the Shared Territory in accordance with the Late Clinical Development Plan as Development Costs pursuant to Section 6.5(c).

(iii) SGI will pay to Unum [***] of all Manufacturing Costs relating to ACTR T-cells incurred by Unum to support Development of Development Candidates in the Licensed Territory in accordance with the Late Clinical Development Plan as Development Costs pursuant to Section 6.5(b).

(e) *Products*.

(i) The terms under which Unum will supply commercial supplies of ACTR T-cells to SGI for use as part of the Products in the Territory will be set forth in a supply agreement to be entered into between the Parties no later than [***] days before the expected filing of the first Regulatory Approval of the first Development Candidate or associated Product in the Territory (the "**ACTR T-cell Commercial Supply Agreement**"). Such ACTR T-cell Commercial Supply Agreement will contain customary terms and conditions, including quality and indemnity, and otherwise be consistent with this Agreement.

(ii) The Parties will share all Manufacturing Costs relating to ACTR T-cells incurred by Unum to support Commercialization of Products for sale in the Shared Territory as Joint Commercialization Costs pursuant to Section 8.3(b).

(iii) The cost for commercial supply of ACTR T-cells for Commercialization of Products in the Licensed Territory will equal [***] of Unum's Actual Unit Costs [***], unless otherwise agreed in writing by the Parties. SGI will pay to Unum [***] of all such Actual Unit Costs [***] relating to ACTR T-cells to support Commercialization of Products in the Licensed Territory.

9.3 Manufacturing Responsibilities for SGI Antibodies.

(a) *Responsibility*. Subject to Section 9.8(b), SGI has the sole responsibility for the Manufacture of SGI Antibodies in the Territory.

(b) *Research Plan and Early Clinical Development Plan*.

(i) The terms under which SGI will supply Research and clinical supplies of SGI Antibodies to Unum for use as part of the Research Candidates and Development Candidates in the Territory under the Research Plan and Early Clinical Development Plan will be set forth in a supply agreement to be entered into between the Parties no later than [***] days after the Effective Date (the "**SGI Antibodies Manufacturing Services Agreement**"). Such SGI Antibodies Manufacturing Services Agreement will contain terms and conditions that are consistent with this Agreement.

(ii) All Manufacturing Costs relating to SGI Antibodies to support Research and Development of Research Candidates and Development Candidates in the Territory under the Research Plan and Early Clinical Development Plan will be borne solely by SGI.

(c) *Late Clinical Development Plan.*

(i) The terms under which SGI will supply clinical supplies of SGI Antibodies to Unum for use as part of the Development Candidates in the Territory under the Late Clinical Development Plan will be set forth in a supply agreement to be entered into between the Parties no later than [***] days prior to the date of initiation of a Clinical Trial of the first Development Candidate in the Territory (the "**SGI Antibodies Clinical Supply Agreement**"). Such SGI Antibodies Clinical Supply Agreement will contain terms and conditions that are consistent with this Agreement.

(ii) The Parties will share all Manufacturing Costs relating to SGI Antibodies incurred by SGI to support Development of Development Candidates in the Shared Territory in accordance with the Late Clinical Development Plan as Development Costs pursuant to Section 6.5(c).

(iii) All Manufacturing Costs relating to SGI Antibodies incurred by SGI to support Development of Development Candidates and receipt of Regulatory Approvals in the Licensed Territory will be borne solely by SGI.

(d) *Products*.

(i) The terms under which SGI will supply commercial supplies of SGI Antibodies to Unum for use as part of the Products in the Shared Territory will be set forth in a supply agreement to be entered into between the Parties no later than [***] days before the expected filing of the first Regulatory Approval of the first Development Candidate or associated Product in the Territory (the "**SGI Antibodies Commercial Supply Agreement**"). Such SGI Antibodies Commercial Supply Agreement will contain customary terms and conditions, including quality and indemnity, and otherwise be consistent with this Agreement.

(ii) The Parties will share all Manufacturing Costs relating to SGI Antibodies incurred by SGI to support Commercialization of Products for sale in the Shared Territory as Joint Commercialization Costs pursuant to Section 8.3(b).

(iii) All Manufacturing Costs relating to SGI Antibodies incurred by SGI to support Commercialization of Products in the Licensed Territory will be borne solely by SGI.

9.4 Reconciliation of Development Costs and/or Joint Commercialization Costs. The Parties will reconcile the Development Costs and Joint Commercialization Costs they have incurred for Manufacturing work under this Agreement according to the procedures set forth in Section 11.5 and Section 11.6, as applicable.

9.5 Supply Chain Management. Unless otherwise determined by the Parties, (a) Unum will assume primary responsibility for the ACTR T-cell supply chain for clinical and commercial supply of Research Candidates, Development Candidates, and Products in the Territory, and (b) SGI will assume primary responsibility for the SGI Antibody supply chain for clinical and commercial supply of Research Candidates, Development Candidates, and Products in the Territory.

9.6 Manufacturing Problems. The Parties will inform each other promptly after it becomes aware of any problems or delays of any nature in performing their contractual obligations that have the potential to adversely affect the Manufacturing of the ACTR T-cells or SGI Antibodies, as the case may be. Each Party will inform the other Party of the reason for such delay and of the expected duration of its inability to Manufacture and deliver the ACTR T-cells or SGI Antibodies, as the case may be, and will keep the other Party informed on a timely basis of any developments during any such period of time.

9.7 Continuous Improvements. The Parties will discuss in good faith value-added activity and improvement in the Manufacturing process on a continuing basis and, unless the Parties otherwise agree SGI will bear [***] of any costs associated with improvements to the Manufacturing process for the SGI Antibodies and Unum will bear [***] of any costs associated with improvements to the Manufacturing process for the ACTR T-cells.

9.8 Second Source.

(a) *ACTR T-cells*. On a Product-by-Product basis, in the event of a Technical Supply Failure (Unum) with respect to ACTR T-cells for such Product, SGI would have the right to effect a technology transfer to itself or to an Affiliate or a Third Party manufacturer designated by SGI (and reasonably acceptable to Unum) in order to permit SGI or such Third Party to Manufacture such ACTR T-cells for incorporation into such Product. Such technology transfer will be at Unum's cost and expense and would include Unum (i) making available a copy of all Know-How within the Unum Background Technology and Unum Program IP relating to the Manufacture of the ACTR T-cells, including copies or samples of relevant documentation, Materials and other embodiments of such Know-How, in each case that is necessary to Manufacture such ACTR T-cells in accordance with the applicable specifications and (ii) making available personnel to assist and advise in connection with such technology transfer at the expense of Unum, including, if necessary, providing reasonable training to SGI or its designated Third Party manufacturer and performing such other technology transfer services as are necessary to permit continuity in the manufacture and supply of the ACTR T-cells, and (iii) granting such licenses as may be required to effect the foregoing. Unum will only be required to deliver such Know-How in its or its Affiliates or Third Party manufacturer(s)' actual possession and will not be required to produce or create any additional Know-How. Following any such technology transfer, SGI (and its Third Party manufacturer(s), as applicable) will segregate such any such transferred Know-How from other Know-How within its organization. Notwithstanding anything herein to the contrary, SGI will not practice (or

allow any Affiliates or sublicensees to practice) any of the licenses to Manufacture granted by Unum set forth in Section 10.2, except (A) with respect to Commercialization, only as provided in this Section 9.8(a) or to the extent permitted pursuant to Section 3.3(g)(iii), and (B) with respect to Research and Development, if and only if, and only for so long as, ACTR T-Cells are not supplied on a reasonable basis as contemplated by this Agreement or the applicable Supply Agreement.

(b) *SGI Antibodies*. On a Product-by-Product basis, in the event of a Technical Supply Failure (SGI) with respect to SGI Antibodies for such Product, Unum would have the right to effect a technology transfer to itself or to an Affiliate or a Third Party manufacturer designated by Unum (and reasonably acceptable to SGI) in order to permit Unum or such Third Party to Manufacture such SGI Antibodies for incorporation into such Product. Such technology transfer will be at SGI's cost and expense and would include SGI (i) making available a copy of all Know-How within the SGI Background Technology and SGI Program IP relating to the Manufacture of the SGI Antibodies, including copies or samples of relevant documentation, Materials and other embodiments of such Know-How, in each case that is necessary to Manufacture such SGI Antibodies in accordance with the applicable specifications and (ii) making available personnel to assist and advise in connection with such technology transfer at the expense of SGI, including, if necessary, providing reasonable training to Unum or its designated Third Party manufacturer and performing such other technology transfer services as are necessary to permit continuity in the manufacture and supply of the SGI Antibodies, and (iii) granting such licenses as may be required to effect the foregoing. SGI will only be required to deliver such Know-How in its or its Affiliates or Third Party manufacturer(s)' actual possession and will not be required to produce or create any additional Know-How. Following any such technology transfer, Unum (and its Third Party manufacturer(s), as applicable) will segregate such any such transferred Know-How from other Know-How within its organization. Notwithstanding anything herein to the contrary, Unum will not practice (or allow any Affiliates or sublicensees to practice) any of the licenses to Manufacture granted by SGI set forth in Section 10.1, except (A) with respect to Commercialization, only as provided in this Section 9.8(b) or to the extent permitted pursuant to Section 3.3(g)(iii), and (B) with respect to Research and Development, if and only if, and only for so long as, SGI Antibodies are not supplied on a reasonable basis as contemplated by this Agreement or the applicable Supply Agreement.

(c) At any time after completion of Phase 2 Clinical Trial of a Development Candidate or a Reversion Product, SGI may by written notice ("**RFP Notice**") require that the Unum conduct a customary request for proposal ("**RFP**") process to identify one or more qualified, established and reputable Third Party contract manufacturing organizations ("**CMOs**") (as opposed to pharmaceutical companies) with the potential in all or part of the Licensed Territory or, in the case of a Reversion Product, the Territory to be second source Manufacturers of raw materials for ACTR T-cells ("**Second Source Manufacturer**") to support SGI's Commercialization activities. SGI may require an RFP process on a country-by-country or region-by-region basis; provided that it may not require an RFP process in the same country or region more than once unless such country or region is incorporated in a larger region. If SGI provides an RFP Notice, the following will apply:

(i) Within [***] days after receiving the RFP Notice, Unum will provide SGI with a draft RFP document and the identity of the potential Second Source Manufacturers. The RFP will provide that any response may be shared with SGI. SGI will have [***] days to provide comments on the content of the RFP, which comments Unum will consider in good faith, and to add the names of any additional potential Second Source Manufacturers to the RFP. Promptly following the expiration of such [***] day period, Unum will distribute the RFP to the identified potential Second Source Manufacturers.

(ii) Unum will provide SGI with copies of all responses to the RFP promptly following receipt. Following receipt of responses from all or substantially all of the potential Second Source Manufacturers, the Parties will schedule a meeting of the JSC to discuss the responses.

(iii) If, based on the responses to the RFP, it appears that there is a potential to achieve cost savings in excess of [***] without a loss of quality or reliability, Unum will either (a) agree to the transfer of primary responsibility for Manufacturing of raw materials for ACTR T-cells to one or more of the identified Second Source Manufacturers pursuant to Section 9.8(a) or (b) provide SGI with a written description of the steps that Unum intends to take in order to meet or exceed the performance of the identified Second Source Manufacturers in the applicable country or region and the applicable time-frame ("**Manufacturing Action Plan**" or "**MAP**"). If Unum provides a MAP, SGI will have [***] days to provide comments on the content (including time-frame) of the MAP, which comments Unum will consider in good faith. Unum will use Commercially Reasonable Efforts to implement any applicable MAP, and the Parties agree that time is of the essence to a MAP. If, notwithstanding Unum's Commercially Reasonable Efforts, Unum is unable to achieve the cost savings specified in the MAP within [***] after beginning implementation of the MAP, then SGI will have the right, in the exercise of its reasonable discretion, to select and utilize a Second Source Manufacturer as the primary source for Manufacturing of raw materials for ACTR T-cells. SGI will be responsible for all costs and expenses relating to any change in manufacturers, including all costs and expenses relating to any necessary research or development activities (e.g., equivalence studies) and technology transfer costs.

(iv) For clarity, a breach of this Section 9.8(c) will be a material breach of this Agreement subject to Section 16.4(a)(i) through (iv).

9.9 Subcontractors; Affiliates.

(a) Each Party may perform any of its Manufacturing and supply obligations under this Agreement through one or more Third Parties, provided that (i) such Party remains responsible for the work allocated to, and payment to, such Third Party to the same extent it would if it had done such work itself; (ii) the Third Party undertakes in writing commercially reasonable obligations of confidentiality and non-use regarding Confidential Information that are substantially the same as those undertaken by the Parties with respect to Confidential Information pursuant to Article 15 hereof; and (iii) the Third Party undertakes in writing to assign or exclusively license back (with the right to sublicense) all intellectual property with respect to Research Candidates, Development Candidates and Products developed in the course of performing any such Manufacturing to such Party. In addition to the foregoing, in each agreement with a Third Party relating to Manufacturing or supply obligations that relates solely to such Research Candidate, Development Candidate or Product and not to other products, SGI will use commercially reasonable efforts to ensure that such agreement is freely assignable to Unum if this Agreement terminates. Each Party may also subcontract Manufacturing work on terms other than those set forth in this Section 9.9(a), with the prior approval of the JSC.

(b) Each Party may perform any of its manufacturing and supply obligations under this Agreement through one or more Affiliates, provided that Manufacturing Costs will be calculated in accordance with the definition provided in the Agreement.

ARTICLE 10
LICENSES AND EXCLUSIVITY

10.1 Licenses to Unum.

(a) *Research Candidates*. Subject to the terms and conditions of this Agreement, on a Collaboration Antigen-by-Collaboration Antigen basis, effective as of the date on which such Collaboration Antigen becomes a "Collaboration Antigen" under this Agreement, during the Research Term, SGI hereby grants to Unum an exclusive, sublicensable (solely as permitted in accordance with Section 10.4), royalty-free, fully-paid, worldwide license, under the SGI Background Technology and SGI Program IP, to Research and pre-clinically Develop Research Candidates (and Manufacture same but only for such purpose and only as provided in this Agreement), save that SGI will retain such rights as are necessary to perform any activities that the Parties may mutually agree that SGI will perform under this Agreement.

(b) *Early Clinical Development*. Subject to the terms and conditions of this Agreement, on a Development Candidate-by-Development Candidate basis, effective as of the date on which the Collaboration Antigen of such Development Candidate becomes a "Collaboration Antigen" under this Agreement, during the Early Clinical Development Term, SGI hereby grants to Unum an exclusive, sublicensable (solely as permitted in accordance with Section 10.4), royalty-free, fully-paid, worldwide license, under the SGI Background Technology and SGI Program IP, to clinically Develop such Development Candidate (and Manufacture same but only for such purpose and only as provided in this Agreement), all in accordance with the Early Clinical Development Plan, save that SGI will retain such rights as are necessary to perform any activities that the Parties may agree that SGI will perform under this Agreement.

(c) *Late Clinical Development*. Subject to the terms and conditions of this Agreement, on a Development Candidate-by-Development Candidate basis, effective as of the date on which the Collaboration Antigen of such Development Candidate becomes a "Collaboration Antigen" under this Agreement, during the Late Clinical Development Term, SGI hereby grants to Unum a co-exclusive (with SGI), sublicensable (solely as permitted in accordance with Section 10.4), worldwide license, under the SGI Background Technology and SGI Program IP, to clinically Develop such Development Candidate (and Manufacture same but only for such purpose and only as provided in this Agreement), all in accordance with the Late Clinical Development Plan; provided that such license will automatically terminate, and be of no further force or effect, with respect to any Development Candidate for which Unum has exercised its Opt-Out Right.

(d) *Products*. Subject to the terms and conditions of this Agreement, on a Product-by-Product basis, effective as of the date on which the Collaboration Antigen of such Product becomes a "Collaboration Antigen" under this Agreement, SGI hereby grants to Unum a co-exclusive (with SGI), sublicensable (solely as permitted in accordance with Section 10.4), license, under the SGI Background Technology and SGI Program IP, to Commercialize the Product in the Shared Territory (and Manufacture same but only for such purpose and only as provided in this Agreement); provided that such licenses will automatically terminate, and be of no further force or effect, with respect to any Development Candidate and associated Product for which Unum has exercised its Opt-Out Right.

(e) *ACTR Data*. Subject to the terms and conditions of this Agreement, and in addition to and not in lieu of any other license grants contained herein, SGI hereby grants to Unum a non-exclusive, sublicensable (through multiple tiers), royalty-free, fully-paid, perpetual, irrevocable, worldwide license, to use the ACTR Data (including to include same in submissions to Regulatory Authorities), to support the research, development, manufacture and commercialization of any ACTR T-cells or any compounds or products containing or otherwise involving any ACTR T-cells (whether administered together, separately, simultaneously, sequentially or otherwise in relation to any Antibody or other therapeutic agent contained in any such product), provided that such use is limited to advancing ACTR T-cells and such products and their manufacture or use (and not any SGI Antibody contained in any Research Candidate, Development Candidate, Product or Reversion Product) and such products are not Alternative Products. SGI will use commercially reasonable efforts to provide copies and access to any such ACTR Data in a manner and on a time frame as Unum may reasonably request, and in any event in a manner consistent with Applicable Law. The foregoing license grant (but not the obligation of SGI) will survive any expiration or termination for any reason of this Agreement in full. For purposes of this Agreement, "**ACTR Data**" means (a) any and all Know-How or data arising from any preclinical or clinical use of any Research Candidate, Development Candidate, Product, Reversion Product or ACTR T-cells by or on behalf of SGI or any of its Affiliates, (sub)licensees, distributors and subcontractors under this Agreement, and (b) any and all Know-How or data submitted to any Regulatory Authorities by or on behalf of SGI or any of its Affiliates, (sub)licensees, distributors and subcontractors for any Research Candidate, Development Candidate, Product, Reversion Product or otherwise in connection with ACTR T-cells under this Agreement, including all applicable Regulatory Materials but excluding any data relating only to an SGI Antibody.

(f) *In-Licenses*. The licenses granted to Unum by SGI under the SGI Background IP will be subject to the terms and conditions of the SGI Existing In-Licenses or any In-Licenses for which SGI is the contracting party, as applicable. Without limiting the generality of the foregoing, Unum hereby agrees to comply with the terms and conditions of any SGI Existing In-Licenses or In-Licenses for which SGI is the contracting party as a sublicensee thereunder, and any breach by Unum of any SGI Existing In-Licenses or In-Licenses for which SGI is the contracting party will be treated as a breach of this Agreement by Unum, and further any such breach by Unum of any SGI Existing In-Licenses or In-Licenses for which SGI is the contracting party that could result in a termination of such SGI Existing In-License or In-Licenses for which SGI is the contracting party will give SGI the right to terminate this Agreement under Section 16.3(a)(i) with the consequences set forth in Section 16.5(b) (and without application of Section 16.3(a)(ii) or Section 16.3(a)(iii)) or to invoke immediately Section 16.3(a)(iv).

10.2 Licenses to SGI.

(a) *Research Candidates*. Subject to the terms and conditions of this Agreement, on a Collaboration Antigen-by-Collaboration Antigen basis, effective as of the date on which such Collaboration Antigen becomes a "Collaboration Antigen" under this Agreement, Unum hereby grants to SGI a non-exclusive, royalty-free, fully-paid, worldwide license, under the Unum Background Technology and Unum Program IP, solely for the purpose of allowing SGI to perform any Research activities that the Parties may mutually agree that SGI will perform under this Agreement.

(b) *Development Candidates*. Subject to the terms and conditions of this Agreement, on a Development Candidate-by-Development Candidate basis, effective as of the date on which the Collaboration Antigen of such Development Candidate becomes a "Collaboration Antigen" under this Agreement, Unum hereby grants to SGI a co-exclusive (with Unum), sublicensable (solely as permitted in accordance with Section 10.4), worldwide license, under the Unum Background Technology and Unum Program IP, to clinically Develop Development Candidates, all in accordance with the Late Clinical Development Plan provided that such license will automatically terminate, and be of no further force or effect, with respect to any Development Candidate and associated Product for which SGI has exercised its Opt-Out Right.

(c) *Products*. Subject to the terms and conditions of this Agreement, on a Product-by-Product basis, effective as of the date on which the Collaboration Antigen of such Product becomes a "Collaboration Antigen" under this Agreement, Unum hereby grants to SGI a (i) co-exclusive (with Unum), sublicensable (solely as permitted in accordance with Section 10.4), license, under the Unum Background Technology and Unum Program IP, to Commercialize the Product in the Shared Territory, and (ii) exclusive, sublicensable (solely as permitted in accordance with Section 10.4), license, under the Unum Background Technology and Unum Program IP, to Commercialize the Product in the Licensed Territory; provided that the licenses will terminate and be of no further force and effective for any Development Candidate and associated Product which a Party has exercised its Opt-Out Right.

(d) *In-Licenses*. The licenses granted to SGI by Unum under the Unum Background IP will be subject to the terms and conditions of the Unum Existing In-Licenses or any In-Licenses for which Unum is the contracting party, as applicable. Without limiting the generality of the foregoing, SGI hereby agrees to comply with the terms and conditions of any Unum Existing In-Licenses or In-Licenses for which Unum is the contracting party as a sublicensee thereunder, and any breach by SGI of any Unum Existing In-Licenses or In-Licenses for which Unum is the contracting party will be treated as a breach of this Agreement by SGI, and further any such breach by SGI of any Unum Existing In-Licenses or In-Licenses for which Unum is the contracting party that could result in a termination of such Unum Existing In-License or In-Licenses for which Unum is the contracting party will give Unum the right to terminate this Agreement under Section 16.3(a)(i), with the consequences set forth in Section 16.5(b) (and without application of Section 16.3(a)(ii) or Section 16.3(a)(iii)) or to invoke immediately Section 16.3(a)(iv). Upon SGI's written request, so long as SGI is not in breach or default of this Agreement, Unum will use commercially reasonable efforts on a one-time basis (which efforts, for clarity, will not require further payment by Unum to the National University of Singapore) to have that certain Exclusive License Agreement by and between the National University of Singapore, dated August 1, 2014 (as such agreement may be amended or restated in the future, the "**NUS Agreement**") amended to (i) allow SGI to grant further sublicense(s) in accordance with this Agreement and (ii) provide for the grant of a direct license to SGI in the event of the termination of the NUS Agreement during the Term of this Agreement. So long as Unum uses commercially reasonable efforts pursuant to the preceding sentence, any failure to obtain any changes to the NUS Agreement will not be deemed to be a breach of this Agreement.

10.3 Retained Rights. Subject to Section 10.8 and the remainder of this Agreement, each Party retains all right, title and interest in and to, in the case of Unum, all ACTR T-cells and, in the case of SGI, all SGI Antibodies except to the extent expressly granted hereunder, including the right to use, in the case of Unum and its Affiliates, all ACTR T-cells and, in the case of SGI and its Affiliates, all SGI Antibodies for internal, non-clinical research purposes.

10.4 Scope of Permissible Sublicensing.

(a) The licenses granted under Section 10.1 and Section 10.2 may be sublicensed by a Party to its Affiliate without any requirement of consent, provided that such sublicense to an Affiliate will immediately terminate if and when such party ceases to be an Affiliate of such Party.

(b) Unum may use one or more Third Party subcontractors to perform Unum's assigned obligations and responsibilities under this Agreement or any Research Plan, Early Clinical Development Plan, Late Clinical Development Plan or Joint Commercialization Plan, provided that such agreements will comply with Section 5.9, Section 6.9, or Section 8.6, as applicable. Under the licenses granted by Unum under Section 10.2, Unum retains the right to have its Affiliates (for so long as such party continues as an Affiliate of Unum) and Third Party subcontractors perform Unum's assigned obligations and responsibilities and exercise its rights under this Agreement or any Research Plan, Early Clinical Development Plan, Late Clinical Development Plan or Joint Commercialization Plan, provided that such agreements will comply with Section 5.9, Section 6.9, or Section 8.6, as applicable. In addition, unless the relevant subcontractor is contemplated by the Research Plan, Early Clinical Development Plan, Late Clinical Development Plan or Joint Commercialization Plan (as applicable), Unum will provide written notice to SGI within [***] days of engaging such subcontractor.

(c) SGI may use one or more Third Party subcontractors to perform SGI's assigned obligations and responsibilities under this Agreement or any Research Plan, Early Clinical Development Plan, Late Clinical Development Plan or Joint Commercialization Plan, provided that such agreements will comply with Section 5.9, Section 6.9, or Section 8.6, as applicable. Under the licenses granted by SGI under Section 10.1, SGI retains the right to have its Affiliates (for so long as such party continues as an Affiliate of SGI) and third party subcontractors to perform SGI's assigned obligations and responsibilities and exercise its rights under this Agreement or any Research Plan, Early Clinical Development Plan, Late Clinical Development Plan or Joint Commercialization Plan, provided that such agreements will comply with Section 5.9, Section 6.9, or Section 8.6, as applicable. In addition, unless the relevant subcontractor is contemplated by the Research Plan, Early Clinical Development Plan, Late Clinical Development Plan or Joint Commercialization Plan (as applicable), SGI will provide written notice to Unum within [***] days of engaging such subcontractor.

(d) Subject to Section 10.4(g), the licenses granted to SGI under Section 10.2(b) may be sublicensed by SGI in one or more countries in the Licensed Territory (excluding the Europe Union, Switzerland and Canada (and for clarity the Shared Territory)) to a Third Party with respect to Development activities, with Unum's prior written consent, such consent not to be unreasonably withheld, conditioned or delayed.

(e) Subject to Section 10.4(g), the licenses granted to SGI under Section 10.2(b) may not be sublicensed by SGI in the Europe Union, Switzerland or Canada to a Third Party with respect to Development activities, except upon Unum's prior written consent, and such consent may be withheld in Unum's sole discretion.

(f) Subject to Section 10.4(g), the licenses granted to SGI under Section 10.2(c) clause (ii) (but not Section 10.2(c) clause (i)) may be sublicensed by SGI in one or more countries in the Licensed Territory to a Third Party with respect to Commercialization activities, with Unum's prior written consent, such consent not to be unreasonably withheld, conditioned or delayed.

(g) If SGI wishes to grant a sublicense pursuant to Section 10.4(d), 10.4(e) or 10.4(f), SGI will notify Unum in writing of the identity of such Third Party at least [***] days before granting any such sublicense and SGI may not grant such a sublicense to any Third Party that is (alone or with others) researching, developing, manufacturing or commercializing (or Unum can demonstrate that it has good reason to believe that such Third Party is planning to conduct any such activities alone or with others) genetically-engineered immune cell therapies (including ACTR, CART, T-cell receptor, natural killer (NK) therapies, etc.) unless the proposed sublicensee agrees in writing to terms comparable to Section 18.5(d) to protect Unum Sensitive Information.

(h) The licenses granted to SGI under Section 10.2(a), 10.2(b) and Section 10.2(c) clause (i) in the Shared Territory may not be sublicensed by SGI to a Third Party, except upon Unum's prior written consent, and such consent may be withheld in Unum's sole discretion. For clarity, this Section 10.4(h) is in addition to, and not in lieu of, Sections 10.4(d), 10.4(e) and 10.4(f).

(i) The licenses granted to Unum under Section 10.1(a), 10.1(b), 10.1(c), and 10.1(d) in the Shared Territory may not be sublicensed by Unum to a Third Party, except upon SGI's prior written consent, and such consent may be withheld in SGI's sole discretion.

(j) The license granted to Unum under Section 10.1(e) may be sublicensed as provided in such Section.

(k) For clarity, the Parties agree that the hospital or other facility at which the Product is administered will not require a sublicense for the administration of the Product to a patient.

(l) Each sublicense granted by a Party to an Affiliate or Third Party pursuant to this Section 10.4 or pursuant to Section 3.3 will: (a) be in writing; (b) be subject and subordinate to, and consistent with, the terms and conditions of this Agreement; and (c) require the applicable sublicensee to comply with all applicable terms of this Agreement. The sublicensing Party (i.e., Unum or SGI, as applicable) will provide the other Party with a copy of each agreement containing any such sublicense granted to any non-Affiliate sublicensee within [***] days of execution of such agreement, and to the extent that redaction is not prohibited by any Unum Existing In-Licenses, SGI Existing In-Licenses and In-Licenses, if and as applicable, such sublicense agreement may be redacted as necessary to protect commercially sensitive information but any such redactions will not pertain to any provision that is necessary for the non-sublicensing Party to confirm the sublicensing Party's compliance with this Agreement. No sublicense will diminish, reduce or eliminate any obligation of the sublicensing Party under this Agreement, and the sublicensing Party will remain responsible for its obligations under this Agreement and will be responsible for the performance of all of its sublicensees as if any such sublicensee were the sublicensing Party hereunder. Each sublicense granted by a Party under any license granted by the other Party to such Party hereunder will terminate immediately upon the termination of such license from such other Party. For purposes of this Section, an option or other right to receive a sublicense will be treated as a sublicense.

10.5 Negative Covenant. Each Party covenants that it will not knowingly use or practice any of the other Party's intellectual property rights licensed to it under this Article 10 in a manner that would constitute infringement or misappropriation of such intellectual property rights except for the purposes expressly permitted in the applicable license grant.

10.6 No Implied Licenses. Except as explicitly set forth in this Agreement, neither Party grants to the other Party any license or other right, express or implied, under its intellectual property rights by implication, estoppel or otherwise.

10.7 Third Party Payments. The Parties acknowledge that during the Term, the JSC may determine that planned activities or product features under this Agreement with respect to Research Candidates, Development Candidates or Products may require or benefit from a license under additional Patents, Know-How or Materials of Third Parties (an "**In-License**"); provided that (a) Unum will be solely responsible for entering into any In-Licenses relating solely to ACTR T-cells, (b) SGI will be solely responsible for entering into any In-Licenses relating solely to the SGI Antibodies and (c) the Parties will discuss which Party is the most appropriate with respect to any other In-License, including any In-License relating to the combination of ACTR T-cells and the SGI Antibodies. The Parties agree that all payments to any Third Party in respect of any In-License, Unum Existing In-Licenses and SGI Existing In-License will be deemed a "**Third Party Payment**" and subject to this Section 10.7. Responsibility for In-Licenses, Unum Existing In-Licenses, SGI Existing In-License and Third Party Payments will be as follows:

(a) Unum will be responsible for all upfront, milestone and other Third Party Payments under the Unum Existing In-Licenses; provided that (i) any royalties due under such Unum Existing In-Licenses will be included in the Research Costs, Development Costs, Joint Commercialization Costs or Manufacturing Costs (as applicable) for ACTR T-cells for the Shared Territory, (ii) any royalties due under such Unum Existing In-Licenses will be reimbursed by SGI for sales of Product in the Licensed Territory when invoiced, and (iii) if SGI is the Continuing Party for any Reversion Product, any royalties due under the Unum Existing In-Licenses will be reimbursed in connection with any payment obligations paid by SGI pursuant to Section 3.2(c).

(b) SGI will be responsible for all upfront, milestone and other Third Party Payments under the SGI Existing In-Licenses; provided that (i) any royalties due under such SGI Existing In-Licenses will be included in the Research Costs, Development Costs, Joint Commercialization Costs or Manufacturing Costs (as applicable) for SGI Antibodies, and (ii) if Unum is the Continuing Party for any Reversion Product, any royalties due under the SGI Existing In-Licenses will be reimbursed in connection with any payment obligations paid by Unum pursuant to Sections 3.1(d) or 3.2(c).

(c) Any Third Party Payment (other than Third Party Payments covered in Section 10.7(a) and Section 10.7(b)) owed under an In-License entered into after the Effective Date will be determined as follows.

(i) If a Party acquires any new In-License after the Effective Date, such Party will bring such In-License to the attention of the JSC. If a potential In-License is brought to the attention of the JSC pursuant to this Section 10.7(c), the Parties will, through the JSC, discuss in good faith whether such In-License should be made available for use by the Parties pursuant to this Agreement for the Research, Development, Manufacture or Commercialization of Research Candidates, Development Candidates or Products. The Party to the In-License will propose, through the JSC, an equitable allocation of any non-product specific upfront payments, milestone payments or similar payments payable under the In-License (including, for example, an upfront payment to access technology, milestone payments that are not product specific or are payable upon the first product to achieve the applicable milestone event, etc.). Any upfront payments,

milestone payments or similar payments that are specific to the Research Candidates, Development Candidates or Products will be allocated [***] to the corresponding Research Candidates, Development Candidates or Products. The JSC will discuss the rationale of including the In-License and the proposed economics associated with doing so (including related royalty obligations). For any In-License that the Parties agree should be made available for use by the Parties pursuant to this Agreement, (i) the Patents, Know-How and Materials in-licensed under such In-License will be deemed "Controlled" under this Agreement as Unum Background Technology or SGI Background Technology (as applicable), (ii) any allocated payments that are non-territory specific or for the Shared Territory will be allocated as Development Costs, and (iii) subject to Section 10.7(c)(ii), any allocated payments for the Licensed Territory will be borne [***] by SGI or, if Unum is the Continuing Party, Unum. If the Parties conclude that such In-License should not be made available for use by the Parties pursuant to this Agreement or the Parties cannot agree on the economic terms for allocation of any payments due thereunder, then (A) the Patents, Know-How and Materials in-licensed under such In-License will not be deemed Unum Background Technology or SGI Background Technology (as applicable) and will not be deemed "Controlled" for purposes of this Agreement, and (B) the Parties will not use any Patents, Know-How or Materials in-licensed under such In-License in connection with the performance of this Agreement.

(ii) With regard to clause (iii) of Section 10.7(c)(i), on a calendar quarter-by-calendar quarter and country-by-country basis, SGI or Unum if Unum is the Continuing Party (as applicable) will be entitled to offset [***] of the amount of any royalties payable to the applicable Third Party under the applicable In-License for Patent licenses that are required in order to practice the SGI Background Technology or the Unum Background Technology (as applicable) with respect to a Product or a Reversion Product against the amount of the royalties that would otherwise be payable to Unum or SGI pursuant to this Agreement for such Product or Reversion Product. Notwithstanding anything to the contrary in this Section 10.7(c)(ii), in no event will the royalty due and payable to pursuant to this Agreement with respect to a Product or a Reversion Product in any calendar quarter and country be reduced by more than [***] in any tier.

10.8 Exclusivity.

(a) During the Term and subject to the terms of this Agreement, including Section 18.5, on a Collaboration Antigen-by-Collaboration Antigen basis, neither Unum nor any of its Affiliates (nor any Third Party(ies) on behalf of or with, or under license, sublicense, covenant not to sue or other similar right from, Unum or any of such Affiliates) will directly or indirectly research, develop, manufacture or commercialize any Alternative Product that specifically targets such Collaboration Antigen other than as part of this Agreement. Notwithstanding the foregoing, nothing in this Agreement will prevent Unum or its Affiliates from conducting any research, development, manufacture or commercialization on any antibody that targets an Antigen that is not Collaboration Antigen, with or without any genetically-engineered immune-cell therapies (including ACTR, CART, T-cell receptor, natural killer (NK) therapies, etc.), to the extent (and only to the extent) cells are modified ex-vivo, whether administered together, separately, simultaneously, sequentially or otherwise in relation to such antibody, internally or with one or more Affiliates or Third Party collaborators, licensors, licensees or partners. In addition, subject to this Section 10.8, Unum retains the right to research, develop, manufacture and commercialize ACTR T-cells.

(b) During the Term and subject to the terms of this Agreement, including Section 18.5, on a Collaboration Antigen-by-Collaboration Antigen basis, neither SGI nor any of its Affiliates (nor any Third Party(ies) on behalf of or with, or under license, sublicense, covenant not to sue or other similar right from, SGI or any its Affiliates) will directly or indirectly research, develop, manufacture or commercialize any Alternative Product that specifically targets such Collaboration Antigen other than as part of this Agreement.

10.9 Acquisition of Alternative Product Rights.

(a) Notwithstanding the provisions of Section 10.8, if, during the Term, (i) a Party or any of its Affiliates (the "**Acquiring Party**") acquires or otherwise obtains rights to research, develop, manufacture or commercialize any Alternative Product as the result of any license, merger, acquisition, reorganization, consolidation or combination with or of a Third Party or a Business Combination (each, an "**Acquisition Transaction**", and the Third Party involved in such transaction, the "**Acquisition Third Party**") and (ii) on the date of the closing of such Acquisition Transaction, such Alternative Product is being researched, developed, manufactured or commercialized or such research, development, manufacture or commercialization may reasonably be considered to, but for the provisions of this Section 10.9, constitute a breach of Section 10.8, then the Acquiring Party will, within [***] days after the closing of such Acquisition Transaction provide written notice to the other Party that the Acquiring Party has so acquired rights to research, develop, manufacture or commercialize an Alternative Product as a result of an Acquisition Transaction ("**Alternative Product Notice**").

(b) During the period of [***] days after the receipt of such Alternative Product Notice, the other Party may elect, effective upon [***] days' prior written notice, to require the Acquiring Party to elect one of the following options: (i) to Divest its rights to such Alternative Product, or (ii) to cease the research, development, manufacture and commercialization of such Alternative Product. Alternatively, the Parties may, upon mutual written agreement, elect to include such Alternative Product as if it were a "Research Candidate," "Development Candidate" or "Product" for all purposes of this Agreement (including determination of Research Costs, Development Costs, Joint Commercialization Costs, Net Sales, milestone payments and other payments, consistent with the terms of this Agreement, provided that any such payments will be payable on such Alternative Product in addition to being payable on all Products), which election will be effective retroactively to the date of the closing of such Acquisition Transaction. If the Acquiring Party provides notice of its election to proceed as described in clause (i) above, the Acquiring Party and its Affiliates, if applicable, will Divest such Alternative Product within one (1) year after receipt of the other Party's notice, and if the Acquiring Party provides notice of its election to proceed as described in clause (ii) above, the Acquiring Party will cease the research, development, manufacture and commercialization of such Alternative Product as soon as reasonably practicable, giving due consideration to ethical concerns and requirements under Applicable Law and any agreements with Third Parties. Notwithstanding the forgoing, the Acquiring Party will at all applicable times Segregate the Alternative Product.

(c) The foregoing obligations will not apply to either Party with respect to (i) any Collaboration Antigen that has been replaced pursuant to Section 2.3, or (ii) any Development Candidate or associated Product as to which both Parties have exercised their Opt-Out Rights under Section 3.1 or Section 3.2. This Section 10.9 will no longer apply to a Party or any of its Affiliates after the first Industry Transaction for such Party or its Affiliates.

ARTICLE 11
FINANCIALS

11.1 License Fee. No later than ten (10) Business Days after the Effective Date, SGI will pay to Unum a license fee of Twenty Five Million Dollars ($25,000,000), which fee will be non-refundable, non-creditable and not subject to set-off.

11.2 Equity Investment. SGI will make the investments as contemplated in the Equity Agreements.

11.3 A3 Antigen Selection Fee. No later than [***] Business Days after date of the selection of the A3 Antigen, SGI will pay to Unum a license fee of [***] (the "**A3 Antigen Selection Fee**"), which fee will be non-refundable, non-creditable and not subject to set-off.

11.4 [***] Clinical Trial Fee. Subject to Section 3.1, on a Product-by-Product basis, SGI will pay to Unum a fee equal to [***] (the "[***] **Fee**") within [***] Business Days after [***], which fee will be non-refundable, non-creditable and not subject to set-off.

11.5 Research Costs and Development Costs.

(a) Within [***] days after the end of each calendar quarter prior to the calendar quarter in which the First Commercial Sale of each Product occurs in the Shared Territory, Unum and SGI will submit to a finance officer designated by Unum and a finance officer designated by SGI (the "**Finance Officers**") a report setting forth the Research Costs, Development Costs and Joint Commercialization Costs it incurred in such calendar quarter with respect to each Research Candidate, Development Candidate and Product. Each such report will specify in reasonable detail all such costs, and, if requested by Unum or SGI, any invoices or other supporting documentation for any payments to a Third Party that individually exceed [***] or with respect to which documentation is otherwise reasonably requested will be promptly provided. Within [***] Business Days after receipt of such reports, the Finance Officers will confer and agree in writing on whether a reconciliation payment is due from Unum to SGI or SGI to Unum, and if so, the amount of such reconciliation payment, so that Unum and SGI share Research Costs, Development Costs and Joint Commercialization Costs in accordance with this Agreement. Unum or SGI, as applicable, if required to pay such reconciliation payment, will submit such payment to SGI or Unum, respectively, as applicable, within [***] days of receipt of the other Party's invoice for such amount; provided, however, that in the event of any disagreement with respect to the calculation of such reconciliation payment, any undisputed portion of such reconciliation payment will be paid in accordance with the foregoing timetable and the remaining, disputed portion will be paid within [***] Business Days after the date on which Unum and SGI, using good faith efforts, resolve the dispute. In addition, each Party will consider in good faith other reasonable procedures proposed by the other Party for sharing financial information in order to permit each Party to close its books periodically in a timely manner. For the avoidance of doubt, no cost or expense will be counted more than once in calculating Research Costs, Development Costs and Joint Commercialization Costs, even if such cost or expense falls into more than one of the cost categories that comprise Research Costs, Development Costs and Joint Commercialization Costs.

(b) Any expenses incurred by a Party for Research or Development activities related to a Research Candidate, Development Candidate or associated Product that do not fall within the definitions of Research Costs or Development Costs (as the case may be) will be borne solely by such Party unless the JDC determines otherwise. In addition, any expenditure or cost that exceeds the amount set forth in the applicable Research Plan, Early Clinical Development Plan or Late Clinical Development Plan by more than [***] for a calendar year or any unbudgeted cost that is incurred by either Party will be borne by such Party; provided that the JDC will have the discretion to review such expenditures or costs and propose to the JSC that they be designated as Research Costs or Development Costs (as the case may be).

11.6 Profit Sharing in the Shared Territory Following Commercialization. The terms and conditions of this Section 11.6 will govern the rights and obligations of Unum and SGI with respect to Operating Profits (or Losses) relating to each Product in the Shared Territory. For clarity, Unum has no right to share Operating Profits, and no obligation to bear any Operating Losses, with respect to any Product in the Licensed Territory, and Unum will instead be entitled to receive from SGI royalties pursuant to Section 11.9.

(a) Share of Operating Profits and Operating Losses. For so long as a Product is being sold in the Shared Territory, Unum and SGI will share all Operating Profits and all Operating Losses (as applicable) for each Product in the Shared Territory on the basis of fifty percent (50%) to SGI and fifty percent (50%) to Unum.

(b) Calculation and Payment. Within [***] days after the end of each calendar quarter beginning with the calendar quarter in which the First Commercial Sale of a Product occurs in the Shared Territory, Unum will report to the Finance Officers its Net Sales, and Unum and SGI will each report to the Finance Officers its Development Costs and Joint Commercialization Costs incurred by it in such calendar quarter for each Product. Each such report will specify in reasonable detail all deductions allowed in the calculation of such Net Sales and all expenses included in Development Costs and Joint Commercialization Costs, and, if requested by Unum or SGI, any invoices or other supporting documentation for any payments to a Third Party that individually exceed [***] or with respect to which documentation is otherwise reasonably requested will be promptly provided. Within [***] Business Days after receipt of such reports, the Finance Officers will confer and agree upon in writing a consolidated financial statement setting forth the Operating Profit or Operating Loss for such calendar quarter for such Product in the Shared Territory and calculating each Party's share of such Operating Profit or Operating Loss. Within [***] days after receipt of the other Party's invoice, Unum or SGI, as applicable, will make a payment to SGI or Unum respectively, as applicable, so that each of Unum and SGI has been compensated for its respective share of such Operating Profits, or has borne its respective share of such Operating Loss, as applicable, after giving effect to the Net Sales invoiced by SGI and the Development Costs and Joint Commercialization Costs incurred by Unum and SGI with respect to such Product in such calendar quarter; provided, however, that in the event of any disagreement with respect to the calculation of such payment, any undisputed portion of such payment will be paid in accordance with the foregoing timetable and the remaining, disputed portion will be paid within [***] days after the date on which Unum and SGI, using good faith efforts, resolve the dispute. In addition, following the Effective Date, each Party will consider in good faith other reasonable procedures proposed by the other Party for sharing financial information in order to permit each Party to close its books periodically in a timely manner. For the avoidance of doubt, no cost or expense will be counted more than once in calculating Development Costs and Joint Commercialization Costs, even if such cost or expense falls into more than one of the cost categories that comprise Development Costs and Joint Commercialization Costs.

(c) Consistency with Accounting Treatment. All calculations of Research Costs, Development Costs, Joint Commercialization Costs, Operating Profit and Operating Loss hereunder will be made in accordance with GAAP, including the provisions thereof regarding expense recognition, as applied by Unum and SGI consistently with their application in their respective financial reporting.

(d) Joint Commercialization Plan. Any expenses incurred by a Party for Commercialization activities in the Shared Territory related to a Product that do not fall within the definitions of Joint Commercialization Costs will be borne solely by such Party unless the JCC determines otherwise. In addition, any expenditure or cost that exceeds the amount set forth in the applicable Joint Commercialization Plan by more than [***] for a calendar year or any unbudgeted cost that is incurred by either Party will be borne by such Party; provided that the JCC will have the discretion to review such expenditures or costs and propose to the JSC that they be designated as Joint Commercialization Costs.

11.7 Development and Regulatory Milestone Payments.

(a) On a Product-by-Product basis, SGI will make one-time only milestone payments to Unum based on the first achievement of the development and regulatory milestone events as set forth in this Section 11.7 for each Product.

Milestone Event	**Payment**
[***] or other [***] for each Product	[***]
First [***]in the [***]	[***]
For each[***], the earlier of (i) the [***] of such [***] through the [***] process, whereupon the full $[***] (or any amount not already paid pursuant to the following clause (ii)) will then be due and payable, or (ii) [***] in the first [***], whereupon [***] will then be due and payable upon [***] in each of such [***] (and for clarity, such [***] payments under this clause (ii) will be payable upon [***] in each of such [***], and will not be deferred until all [***] such [***] have been achieved).	Total of up to [***], payable as provided in the column to the immediate left

(b) Notice; Payment. SGI will notify and pay to Unum the amounts set forth in this Section 11.7 within [***] Business Days after the achievement of the applicable milestone event in the [***]. Unum will notify SGI of the achievement of the applicable milestone event in the [***] and provide an invoice to SGI, and SGI will pay to Unum the amounts set forth in this Section 11.7 within [***] Business Days after receipt of the applicable invoice. Each such payment will be made by wire transfer of immediately available funds into an account designated by Unum. Each such payment is nonrefundable, non-creditable and not subject to set-off.

11.8 Sales Milestone Payments.

(a) Events. On a Product-by-Product basis, SGI will make one-time payments of each of the sales milestone payments indicated below to Unum when aggregate annual Net Sales of such Product in the Territory in a given calendar year first reach the dollar values indicated below during the Term.

Aggregate Net Sales in a Given Calendar Year of each Product	**Payment**
[***]	[***]
[***]	[***]
[***]	[***]

(b) Notice; Payment. SGI will notify and pay to Unum the amounts set forth in this Section 11.8 within [***] days after the end of the calendar quarter during which the applicable milestone event has been achieved. Each such payment will be made by wire transfer of immediately available funds into an account designated by Unum. Each such payment is nonrefundable, non-creditable and not subject to set-off.

11.9 Royalties.

(a) Licensed Territory. SGI will pay to Unum non-refundable, non-creditable royalties on the amount of aggregate Net Sales of each Product, on a Product-by-Product basis in the Licensed Territory in each calendar year, as calculated by multiplying the applicable royalty rates set forth below by the corresponding amount of incremental Net Sales in the Licensed Territory of such Product in such calendar year.

Net Sales in the Licensed Territory (Per Product)	**Royalty Rate**
Portion less than or equal to [***]	[***]
Portion greater than [***] and less than or equal to [***]	[***]
Portion greater than [***] and less than or equal to [***]	[***]
Portion greater than [***]	[***]

By way of example, but not limitation, if the aggregate Net Sales of a Product in the Licensed Territory in a particular calendar year is [***], the amount of royalties payable under this Section 11.9(a) will be as follows: [***] x [***]%) + ([***] x [***]%) + [***] x [***]%) + ($[***] x [***]%) = $[***].

(b) Royalty Term. Royalties under Section 11.9(a) will be payable, on a Product-by-Product and country-by-country basis, on the Net Sales of any Product in the Licensed Territory if at least one of the following three (3) conditions applies ("**Royalty Term**"):

A. if one or more Valid Claims within any of the Unum Background Patents, SGI Background Patents or Patents within the Unum Program IP or SGI Program IP would be, but for the licenses granted herein or ownership interest with respect thereto, infringed by the manufacture, use, sale, offer for sale or importation of such Product in such country;

B. if one or more Regulatory Exclusivity periods apply to the manufacture, use, sale, offer for sale or importation of such Product in such country; or

C. if the Net Sale takes place within [***] from the First Commercial Sale of such Product in such country;

Provided that, if on a Product-by-Product and country-by-country basis, the only basis for the Royalty Term is one or more of the SGI Background Patents or Patents within the SGI Program IP under clause (A), and not any one or more of clause (B) or clause (C) or one or more of the Unum Background Patents or Patents within the Unum Program IP under clause (A), then for Net Sales accrued for such period of the Royalty Term for such Product in such country, the royalty rates applicable to Net Sales of such Product in such country will be reduced by two percentage points from the weighted average royalty rate otherwise applicable to all Net Sales for such Products throughout the Licensed Territory. For clarity, all royalty obligations in a country will cease with respect to a Product when none of the above three (3) conditions applies to such Product in such country.

(c) Reduction for Generic Competition. On a country-by-country basis, and on a Product-by-Product basis, provided that the Royalty Term is still in effect, the royalties due to Unum under this Section 11.9 for the immediately following calendar quarter for the relevant Product and country in the Licensed Territory will be reduced if there is "Generic Competition" resulting in loss in market share (by units sold) of each component of such Product in such country in the Licensed Territory according to the following scale:

Market Share of each component of Biosimilar Products (by units sold)	**Percentage Reduction of Royalty Rate**
[***]%	[***]% reduction
Greater than [***]%	[***]% reduction

For purposes hereof, "**Generic Competition**" means, on a country-by-country and Product-by-Product basis, the unit volume of each component of a Biosimilar Product(s) sold in such country in the Licensed Territory by one (1) or more Third Party(ies) in a calendar quarter achieves a market share equal to or higher than [***] of the unit volume of each component of the relevant Product sold in such country by SGI, its Affiliates and (sub)licensees. By way of example, but not limitation, for Generic Competition for a Product to satisfy the definition hereunder, (i) the applicable Biosimilar Product must meet the definition of Biosimilar Product for each of component of the relevant Product (i.e., there must be a Biosimilar Product for both (A) the applicable SGI Antibody that specifically targets a Collaboration Antigen in the relevant Product, and (B) the ACTR T-cells), and (ii) the unit volume of each component of such Biosimilar Product sold in the country the Licensed Territory by one (1) or more Third Party(ies) in a calendar quarter must achieve a market share equal to or higher than [***] of the unit volume of each component of the relevant Product sold in such country by SGI, its Affiliates and (sub)licensees. Unless otherwise agreed by the Parties, the unit volumes of each component of each Biosimilar Product sold during a calendar quarter will be as reported by IMS America Ltd. of Plymouth Meeting, Pennsylvania ("**IMS**") or any successor to IMS or any other independent sales auditing firm reasonably agreed upon by the Parties.

(d) Additional Royalty Provisions. The royalties payable under Section 11.9(a) will be subject to the following:

A. only one (1) royalty will be payable hereunder with respect to each Product unit;

B. royalties when owed or paid hereunder will be non-refundable, non-creditable and not subject to set-off;

C. if a particular Product is sold or distributed in one country with the intention of the selling Party for use in one or more other countries, those other countries of intended use as well as such country of sale will be treated as the countries of sale for purposes of this Section 11.9; and

D. on a Product-by-Product basis, in no event will the aggregate reductions to royalties under this Agreement reduce the royalties payable hereunder by more than [***] in any calendar quarter.

11.10 Royalty Payments and Reports; True-Up; Adjustments.

(a) All amounts payable to Unum pursuant to Section 11.9 will be paid in U.S. dollars within [***] days after the end of each calendar quarter with respect to Net Sales in such calendar quarter. Each payment of royalties due to Unum will be accompanied by a statement, on a country-by-country basis, of the amount of gross sales of Products in the Licensed Territory, as applicable, during the applicable calendar quarter, Net Sales in the Licensed Territory with respect to Products showing with reasonable specificity the aggregate deductions from gross sales provided for in the definition of Net Sales during such calendar quarter, and a calculation of the amount of royalty payment due on such sales for such calendar quarter.

(b) On a calendar quarterly basis during the Royalty Term, and to be reflected in such statement, SGI will perform a “true up” reconciliation (and will provide Unum with a written report of such reconciliation) of the deductions outlined in the definition of “Net Sales.” The reconciliation will be based on actual cash paid or credits issued plus an estimate for any remaining liabilities incurred related to the Products, but not yet paid. If the foregoing reconciliation report shows either an underpayment or an overpayment between the Parties, the Party owing payment to the other Party will pay the amount of the difference to the other Party within [***] days after the date of delivery of such report.

(c) Within [***] days after the expiration of the Royalty Term, SGI will perform a “true-up” reconciliation (and will provide Unum with a written report of such reconciliation) of the items comprising deductions from Net Sales. If the foregoing reconciliation report shows either an underpayment or an overpayment between the Parties, the Party owing payment to the other Party will pay the amount of the difference to the other Party within [***] days after the date of delivery of such report.

11.11 Following Royalty Term. Upon expiration of the Royalty Term with respect to a Product in a country, the license granted to SGI with respect to the Product in such country will become non-exclusive, fully paid-up, perpetual, and irrevocable, and no royalties will be due thereafter with respect to Net Sales of the Product in such country.

11.12 Other Amounts Payable. Within [***] days after the end of each calendar quarter, each Party will invoice the other Party for any amounts owed by the other Party under this Agreement that are not otherwise accounted for in this Article 11, including Manufacturing Costs pursuant to Article 9 and Third Party Payments that are the responsibility of one Party or the other pursuant to Section 10.7. The owing Party will pay any undisputed amounts that have not been so offset within [***] days of receipt of the invoice, and any disputed amounts owed by a Party will be paid within [***] days of resolution of the dispute.

11.13 Taxes.

(a) Taxes on Income. Each Party will be solely responsible for the payment of all taxes imposed on its share of income arising directly or indirectly from the collaborative efforts of the Parties under this Agreement.

(b) Tax Cooperation. The Parties agree to cooperate with one another and use reasonable efforts to minimize tax withholding or similar obligations in respect of royalties, milestone payments, and other payments made by one Party to the other Party under this Agreement. Without limiting the generality of the foregoing, the withholding Party will provide the paying Party any tax forms and other information that may be reasonably necessary in order for to lawfully avoid tax withholding. Each Party will provide the other with reasonable assistance to enable the recovery, as permitted by Applicable Law, of withholding taxes, value added taxes, or similar obligations resulting from payments made under this Agreement, such recovery to be for the benefit of the Party bearing such withholding tax or value added tax.

(c) Payment of Tax. To the extent a Party is required by Applicable Law to deduct and withhold taxes on any payment made to the other Party, the withholding Party will pay the amounts of such taxes to the proper Governmental Authority in a timely manner and promptly transmit to the paying Party an official tax certificate or other evidence of such withholding sufficient to enable the paying Party to claim such payment of taxes.

11.14 Blocked Currency. In each country where the local currency is blocked and cannot be removed from the country, royalties accrued on Net Sales in that country will be paid in the equivalent amount in U.S. dollars.

11.15 Foreign Exchange. In the case of Net Sales made or expenses incurred by a Party and its Affiliates in currencies other than U.S. dollars, the rate of exchange to be used in computing the amount of U.S. dollars due will be as reported in The Wall Street Journal, Eastern Edition. The rate of exchange to be used in computing the amount of currency equivalent in U.S. dollars of Net Sales invoiced in other currencies will be calculated based on currency exchange rates for the calendar quarter for which

remittance is made for royalties. For each month and each currency, such exchange rate will equal the rate of exchange used by the paying Party to calculate net sales in such Party's external financial statements, in accordance with GAAP consistently applied during such calendar quarter. For purposes of calculating the Net Sales thresholds set forth in Section 11.8 and Section 11.9, the aggregate Net Sales with respect to each calendar quarter within a calendar year will be calculated based on the currency exchange rates for the calendar quarter in which such Net Sales occurred, in a manner consistent with the exchange rate procedures set forth in this Section 11.15.

11.16 Late Payments. If a Party does not receive payment of any sum due to it on or before the due date therefor, simple interest will thereafter accrue on the sum due to such Party from the due date until the date of payment at a per-annum rate of [***] above the prime rate as reported in The Wall Street Journal, Eastern Edition, or the maximum rate allowable by Applicable Law, whichever is less.

11.17 Financial Records; Audits. Each Party will maintain complete and accurate records in sufficient detail to permit the other Party to confirm the accuracy of the amount to be reimbursed, pursuant to this Article 11, with respect to Research Costs, Development Costs, Joint Commercialization Costs or other amounts to be reimbursed or shared hereunder incurred or generated (as applicable) by such Party, achievement of sales milestones, royalty payments and other compensation or reimbursement payable under this Agreement. Upon reasonable prior notice, such records will be open during regular business hours for a period of [***] from the creation of individual records for examination at the auditing Party's expense, and not more often than once each calendar year, by an independent certified public accountant selected by the auditing Party and reasonably acceptable to the audited Party for the sole purpose of verifying for the auditing Party the accuracy of the financial statements or reports or sales milestone notices furnished by the audited Party pursuant to this Agreement or of any payments made, or required to be made, by or to the audited Party to the other pursuant to this Agreement. A Party may not audit the same period more than once. Any such auditor will not disclose the audited Party's confidential information to the auditing Party, except to the extent such disclosure is necessary to verify the accuracy of the financial reports furnished by the audited Party or the amount of payments due by the audited Party under this Agreement. Any amounts shown to be owed but unpaid, or overpaid and in need of reimbursement, will be paid or refunded (as the case may be) within [***] days after the accountant's report, plus interest (as set forth in Section 11.16) from the original due date (unless challenged in good faith by the audited Party, in which case any undisputed portion will be paid in accordance with the foregoing timetable, any dispute with respect to such challenge will be resolved in accordance with Article 17, any remaining disputed portion will be paid within [***] days after resolution of the dispute, and interest will not accrue with respect to the disputed portion during the period of time the dispute is being resolved). The auditing Party will bear the full cost of such audit unless such audit reveals an overpayment to, or an underpayment by, the audited Party that resulted from a discrepancy in a report that the audited Party provided to the other Party during the applicable audit period, which underpayment or overpayment was more than [***] of the amount set forth in such report, in which case the audited Party will bear the full cost of such audit.

11.18 Manner and Place of Payment. All payments owed under this Agreement will be made by wire transfer in immediately available funds to a bank and account designated in writing by Unum or SGI (as applicable), unless otherwise specified in writing by such Party.

11.19 Rights Regarding Consolidation of Unum Financial Data. If, at any time during the Term of this Agreement, compliance with any term or condition of this Agreement would, in SGI's reasonable opinion and with the concurrence of SGI's independent auditors, require SGI to consolidate Unum within SGI's financial statements in order to comply with GAAP, then upon SGI's request, subject to SGI's obligations under Article 15 regarding Unum Confidential Information, Unum will provide to SGI Unum's unaudited quarterly consolidated financial statements, prepared in accordance with GAAP (i.e., balance sheet, income statement and statement of cash flows) within [***] days (or up to forty-five (45) days if extended pursuant to Section 11.10) after the end of each calendar quarter. In the event of any such consolidation, SGI will notify Unum in writing and will provide to Unum such information as Unum may require to comply with its accounting and reporting obligations under GAAP and Applicable Law arising from any such consolidation.

11.20 Cooperation. From time to time, representatives from the Parties respective finance departments will meet to discuss possible changes to the reporting processes described in this Article 11, including adjustments to applicable time-frames for reporting, necessary to allow each Party to comply with its external reporting obligations and Applicable Law. Each Party will consider the requests of the other Party in good faith.

ARTICLE 12
INTELLECTUAL PROPERTY

12.1 Background Technology. As between the Parties, (a) Unum will own all right, title and interest in and to the Unum Background Technology, and (b) SGI will own all right, title and interest in and to the SGI Background Technology.

12.2 Ownership and Inventorship.

(a) *New Unum Core IP*. As between the Parties, Unum will solely own all right, title and interest in and to any Program IP that constitutes inventions, discoveries, developments, improvements, modifications or enhancements relating to (i) Unum Background Technology, (ii) ACTR, ACTR T-cells and related technology (including [***] (including such claims that claim a [***], and claims for making and using the same, collectively "**Product Claims**") (for clarity Product Claims include Product Specific Patents (as defined below)), and (iii) Product Specific Patents, and all right, title and interest thereto will automatically vest solely in Unum (collectively referred to herein as "**Unum Core IP**"). SGI, for itself and on behalf of its Affiliates and subcontractors, and employees, contractors, consultants and agents of any of the foregoing, hereby assigns (and to the extent such assignment can only be made in the future hereby agrees to assign), to Unum all right, title and interest in and to such Unum Core IP (unless already owned by Unum). SGI will cooperate, and will cause the foregoing persons and entities to cooperate, with Unum to effectuate and perfect the foregoing ownership, including by promptly executing and recording assignments and other documents consistent with such ownership.

(b) *New SGI Core IP*. As between the Parties, SGI will solely own all right, title and interest in and to any Program IP that constitutes inventions, discoveries, developments, improvements, modifications or enhancements relating (i) SGI Background Technology, (ii) the SGI Antibodies (other than Product Claims), (iii) SGI Background Know-How relating to tumor-specific Collaboration Antigens, and (iv) the SEA Technology, and all right, title and interest thereto will automatically vest solely in SGI (collectively referred to herein as "**SGI Core IP**"). Unum, for itself and on behalf of its Affiliates and subcontractors, and employees, contractors, consultants and agents of any of the foregoing, hereby assigns (and to the extent such assignment can only be made in the future hereby agrees to assign),

to SGI all right, title and interest in and to such SGI Core IP (unless already owned by SGI). Unum will cooperate, and will cause the foregoing persons and entities to cooperate, with SGI to effectuate and perfect the foregoing ownership, including by promptly executing and recording assignments and other documents consistent with such ownership.

(c) *Program IP*.

(i) Except as otherwise provided in Section 12.2(a) or Section 12.2(a), ownership of any Program IP created or conceived solely by or on behalf of a Party will be solely owned by such Party (together with rights owned by such Party pursuant to Section 12.2(a) or Section 12.2(a), rights described in this Section 12.2(c) are referred to herein as "**Sole Program IP**" for each Party), and if created or conceived jointly by or on behalf of the Parties will be jointly owned by the Parties (referred to herein as "**Joint Program IP**"). For clarity, Unum Core IP and SGI Core IP are not within the definition of Sole Program IP or Joint Program IP. Any Unum Core IP, or Sole Program IP or Joint Program IP in which Unum has an ownership interest will be "**Unum Program IP**", and any SGI Core IP, or Sole Program IP or Joint Program IP in which SGI has an ownership interest, will be "**SGI Program IP**", in each case regardless of any inventive contribution made by either Party, its Affiliates or subcontractors and their respective employees, consultants, contractors and agents.

(ii) Each Party has an undivided one-half interest in and to Joint Program IP. Each Party will exercise its ownership rights in and to such Joint Program IP, including the right to license and sublicense or otherwise to exploit, transfer or encumber its ownership interest, without an accounting or obligation to, or consent required from, the other Party, but subject to the licenses hereunder and the other terms and conditions of this Agreement. At the reasonable written request of a Party, the other Party will in writing grant such consents and confirm that no such accounting is required to effect the foregoing regarding Joint Program IP. Each Party, for itself and on behalf of its Affiliates, licensees and sublicensees, and employees, subcontractors, consultants and agents of any of the foregoing, hereby assigns (and to the extent such assignment can only be made in the future hereby agrees to assign), to the other Party a joint and undivided interest in and to all Joint Program IP.

(iii) Subject to the terms and conditions of this Agreement (including Section 12.5 and Section 12.6):

(A) Each Party will be solely responsible for the Prosecution and Maintenance, and the enforcement and defense, of any Patents within its Sole Program IP, and the other Party has no rights with respect thereto; and

(B) The Prosecution and Maintenance, and the enforcement and defense, of any Patents within Joint Program IP will be jointly managed by the Parties on mutually agreeable terms to be entered into by the Parties at the time any such Patents are first filed, and all recoveries and out-of-pocket costs and expenses arising from those activities, absent further agreement, will be (i) calculated as Development Costs in the Shared Territory, and (ii) will be shared equally in the Licensed Territory.

(d) *Inventorship*. Inventorship determination for all Patents worldwide arising from any Program IP will be made in accordance with applicable United States patent laws.

12.3 Disclosure of Program IP. During the Term, Unum will promptly (and at least on a calendar quarterly basis) disclose to SGI any Unum Program IP created or conceived by or on behalf of Unum, and will provide such documentation regarding same as SGI may reasonably request, to the extent licensed to SGI under Section 10.1. During the Term, SGI will promptly (and at least on a calendar quarterly basis) disclose to Unum any SGI Program IP created or conceived by or on behalf of SGI, and will provide such documentation regarding same as Unum may reasonably request.

12.4 Joint Research Agreement. This Agreement will be understood to be a joint research agreement in accordance with 35 USC § 103(c)(3) to Research, Develop and Commercialize Research Candidates, Development Candidates and Products in the Territory, provided that neither Party will be required by this reference to have any Patent take advantage of or become subject to such § 103(c)(3) except in accordance with the provisions of this Agreement regarding Prosecution and Maintenance of such Patent.

12.5 Patent Prosecution and Maintenance

(a) *Unum Prosecution and Maintenance*.

(i) Unum has the sole right to Prosecute and Maintain the Unum Background Patents, and SGI has no rights with respect thereto.

(ii) Other than with respect to Product Specific Patents and Unum Program IP that constitutes Joint Program IP, Unum has the first right, at its sole expense, to Prosecute and Maintain Unum Program IP, provided that the Patent Costs attributable to Product Claims will be (A) treated as Development Costs in the Shared Territory, and (B) will be shared equally with SGI in the Licensed Territory. SGI will reimburse Unum for its share of any such Patent Costs upon Unum's provision of receipts therefor (or such Patent Costs will be included as Development Costs if such Development Costs are then being calculated and reimbursed). Unum will regularly provide SGI with copies of all Patent applications within the Unum Program IP, and all other material submissions and correspondence with any Patent authorities regarding the foregoing, in sufficient time to allow for review and comment by SGI. In addition, Unum will provide SGI and its counsel with an opportunity to consult with Unum and its counsel regarding Prosecution and Maintenance of any of the foregoing and Unum will use reasonable efforts to address concerns raised by SGI with respect to the Prosecution and Maintenance of Patents that include Product Claims. Subject to the foregoing, in the event of any disagreement between Unum and SGI, Unum has the final decision-making authority with respect to the matter involved as long as Unum acts in good faith.

(iii) For any Patent within Unum Program IP having a specification that could reasonably support and enable a [***] in each case covering only a [***], the following will apply: to the extent not already being pursued by Unum and to the extent consistent with reasonable practices in the Prosecution and Maintenance of Patents generally, upon SGI's reasonable written request and provided that Unum reasonably agrees with SGI that the following Prosecution and Maintenance activities would not materially harm any Patents within the Unum

Program IP or Unum Background IP, Unum will file a U.S. continuation, continuation-in-part or divisional of such Patent seeking issuance of such composition-of-matter, method of manufacture or method-of-use claim scope (and no other claim scope) (each a "**Product Specific Patent**"). Each such Product Specific Patent will be and remain part of the "Unum Program IP" hereunder. If and at such time as SGI no longer has an exclusive license to all of the claim scope of any such Product Specific Patent, then such Product Specific Patent will no longer be treated as such hereunder (although it may remain part of the Unum Program IP). For any Product Specific Patents, Unum will regularly provide SGI with copies of all Patent applications within the Product Specific Patents, and all other material submissions and correspondence with any Patent authorities regarding the foregoing, in sufficient time to allow for review and comment by SGI. In addition, Unum will provide SGI and its counsel with an opportunity to consult with Unum and its counsel regarding Prosecution and Maintenance of Product Specific Patents and Unum will use reasonable efforts to address concerns raised by SGI. Subject to the foregoing, in the event of any disagreement between Unum and SGI relating to the Prosecution and Maintenance of Product Specific Patents, Unum has the final decision-making authority with respect to the matter involved as long as Unum acts in good faith.

(iv) SGI acknowledges and agrees that Unum may grant substantially similar rights to other exclusive Third Party licensees under any Unum Background Technology and Unum Program IP; provided that the rights of such Third Parties will be subject to the pre-existing rights of SGI.

(b) *SGI Prosecution and Maintenance*.

(i) SGI has the sole right to Prosecute and Maintain the SGI Background Patents, and Unum has no rights with respect thereto.

(ii) Other than with respect to SGI Program IP that constitutes Joint Program IP, SGI has the first right, at its sole expense, to Prosecute and Maintain SGI Program IP. SGI will regularly provide Unum with copies of all Patent applications within the SGI Program IP, and all other materials submissions and correspondence with any Patent authorities regarding the foregoing, in sufficient time to allow for review and comment by Unum. In addition, SGI will provide Unum and its counsel with an opportunity to consult with SGI and its counsel regarding Prosecution and Maintenance of any of the foregoing and SGI will use reasonable efforts to address concerns raised by Unum. Subject to the foregoing, in the event of any disagreement between SGI and Unum, SGI has the final decision-making authority with respect to the matter involved as long as SGI acts in good faith.

(c) *Cooperation*. Each Party will reasonably cooperate with the other Party in the Prosecution and Maintenance of the Patents for which it is responsible. Such cooperation will include promptly executing all documents, or requiring inventors, employees and consultants and agents of such Party and its Affiliates to execute all documents, as reasonable and appropriate so as to enable the Prosecution and Maintenance of any such Patents in any country.

(d) *Patent Marking*. Each Party will mark, and will cause its Affiliates to mark, all Products with all Unum Background Patents and SGI Background Patents and Patents within the Unum Program IP and SGI Program IP in accordance with the patent laws of the jurisdictions in which such Product is manufactured, used or sold.

(e) *Patent Extensions*.

(i) After the Parties have submitted for Regulatory Approval of a Product, they will discuss and agree on a strategy for seeking, in Unum's name if so required, patent term extensions, supplemental protection certificates and the like available under Applicable Law, including 35 U.S.C. § 156 and applicable foreign counterparts, (each, an "extension") for Patents in the Program IP in the Shared Territory in relation to each Product.

(ii) SGI will have the right after it has submitted for Regulatory Approval of a Product, but not the obligation, to request permission from Unum to seek, in Unum's name if so required, extensions for Patents in the Unum Program IP in each country in the Licensed Territory in relation to each Product. Unum agrees to grant SGI such permission on request.

(f) *Patent Listings*. Unum has the right, after consultation with SGI, to make all filings with Regulatory Authorities in the Shared Territory with respect to Unum Background Patents, SGI Background Patents and Patents within Unum Program IP or SGI Program IP, including as required or allowed in the Shared Territory, in the FDA's Orange Book if in the future legislation employs the Orange Book for biologics, or its alternative. SGI has the sole right to make all filings with Regulatory Authorities in the Licensed Territory, under the national implementations of Article 10.1(a)(iii) of Directive 2001/EC/83 or other international equivalents. Each Party will (i) provide to the other Party all information, including a correct and complete list Unum Background Patents, SGI Background Patents and Patents within Unum Program IP or SGI Program IP (as applicable) to enable the other Party to make such filings with Regulatory Authorities with respect to such Patents as provided herein, and (ii) cooperate with the other Party's reasonable requests in connection with Unum Background Patents, SGI Background Patents and Patents within Unum Program IP or SGI Program IP (as applicable), including meeting any submission deadlines, in each case ((i) and (ii)), to the extent required or permitted by Applicable Law.

12.6 Patent Enforcement and Defense.

(a) *Notice*. Each Party will notify the other Party in writing of any actual or suspected Competitive Infringement of any Product Claims by a Third Party, or of any claim of invalidity, unpatentability, unenforceability, or non-infringement of any Unum Background Patent, SGI Background Patent or Patent within the Program IP, and will, along with such notice, supply the other Party with any evidence in its Control pertaining thereto. For purposes of this Agreement, "**Competitive Infringement**" means, on a Product-by-Product basis, any allegedly infringing activity under any Unum Background Patent, SGI Background Patent or Patent within the Program IP with respect to the manufacture, use, sale, offer for sale or import of (i) such Product (or any Research Candidate or Development Candidate therefor), or (ii) an Alternative Product that has for clause (a) of the "Alternative Product" definition the same Collaboration Antigen as such Product and has for clause (b) of such definition (at least) an ACTR.

(b) *Enforcement and Defense of Competitive Infringement*.

(i) As between the Parties, SGI has the first right, but not the obligation, to seek to abate any actual or suspected Competitive Infringement of any SGI Background Patent or Patent within the SGI Program IP by a Third Party, or to file suit against any such Third Party under any SGI Background Patent or Patent within the SGI Program IP for such Competitive Infringement. If SGI does not take steps to abate the any such Competitive Infringement, or file suit to enforce the SGI Background Patent or Patent within the SGI Program IP against such Third Party with respect to such Competitive Infringement, within a commercially reasonable time, Unum has the right (but not the obligation) to take action as follows: first, to enforce Patent within the SGI Program IP against such Third Party for such Competitive Infringement, and second, if there are no such Patents within the SGI Program IP the Competitive Infringement is continuing, then to enforce any SGI Background Patent against such Third Party for such Competitive Infringement. The controlling Party will pay all its Patent Costs incurred for such enforcement.

(ii) As between the Parties, Unum has the first right, but not the obligation, to seek to abate any actual or suspected Competitive Infringement of any Unum Background Patent or Patent within the Unum Program IP by a Third Party, or to file suit against any such Third Party under any Unum Background Patent or Patent within the Unum Program IP for such Competitive Infringement. If Unum does not take steps to abate the any such Competitive Infringement, or file suit to enforce the Unum Background Patent or Patent within the Unum Program IP against such Third Party with respect to such Competitive Infringement, within a commercially reasonable time, SGI has the right (but not the obligation) to take action as follows: first, to enforce Patent within the Unum Program IP against such Third Party for such Competitive Infringement, and second, if there are no such Patents within the Unum Program IP that reasonably allegedly are infringed by such Competitive Infringement, or after any failed enforcement of any such Patents within the Unum Program IP the Competitive Infringement is continuing, then to enforce any Unum Background Patent against such Third Party for such Competitive Infringement. The controlling Party will pay all its Patent Costs incurred for such enforcement.

(iii) Neither Party will exercise any of its enforcement rights under this Section 12.6(b) without first consulting with the other Party, provided (i) that this consultation requirement will not limit each Party's rights under this Section 12.6(b), and (ii) the Parties will work to coordinate any enforcement in Share Territory.

(c) *Defense*.

(i) As between the Parties, SGI has the first right, but not the obligation, to defend against a declaratory judgment action or other action challenging any SGI Background Patent or Patent within the SGI Program IP, other than with respect to any defense of any SGI Background Patent or Patent within the SGI Program IP subject to (A) any counter-claims in any enforcement action, or (B) any action by a Third Party in response to an enforcement action brought by Unum pursuant to Section 12.6(b), which clause (A) or (B) defense will be controlled by Unum. If SGI does not take steps to defend within a commercially reasonable time, Unum has the right (but not the obligation) to defend any Patent within the SGI Program IP (but not any SGI Background Patent, except as provided above). Unum will not have any step-in right with respect to any such action regarding any SGI Background Patent, except as provided above.

(ii) As between the Parties, Unum has the first right, but not the obligation, to defend against a declaratory judgment action or other action challenging any Unum Background Patent or Patent within the Unum Program IP, other than with respect to any defense of any Unum Background Patent or Patent within the Unum Program IP subject to (A) any counter-claims in any enforcement action, or (B) any action by a Third Party in response to an enforcement action brought by SGI pursuant to Section 12.6(b), which clause (A) or (B) defense will be controlled by SGI. If Unum does not take steps to defend within a commercially reasonable time, SGI has the right (but not the obligation) to defend any Patent within the Unum Program IP (but not any Unum Background Patent, except as provided above). SGI will not have any step-in right with respect to any such action regarding any Unum Background Patent, except as provided above.

(iii) The controlling Party will pay all its Patent Costs incurred for such defense.

(d) *Withdrawal, Cooperation and Participation*. With respect to any infringement or defensive action identified above in this Section 12.6:

(i) If the controlling Party ceases to pursue or withdraws from such action, it will notify the other Party and such other Party may substitute itself for the withdrawing Party and proceed under the terms and conditions of this Section 12.6(d).

(ii) The non-controlling Party will cooperate with the Party controlling any such action (as may be reasonably requested by the controlling Party), including (A) providing access to relevant documents and other evidence, (B) making its and its Affiliates and licensees and all of their respective employees, consultants and agents available at reasonable business hours and for reasonable periods of time, but only to the extent relevant to such action, and (C) if necessary, by being joined as a party, subject for this clause (C) to the controlling Party agreeing to indemnify such non-controlling Party for its involvement as a named party in such action and paying those Patent Costs incurred by such Party in connection with such joinder. The Party controlling any such action will keep the other Party updated with respect to any such action, including providing copies of all documents received or filed in connection with any such action.

(iii) Each Party has the right to participate or otherwise be involved in any such action controlled by the other Party, in each case at the participating Party's sole cost and expense. If a Party elects to so participate or be involved, the controlling Party will provide the participating Party and its counsel with an opportunity to consult with the controlling Party and its counsel regarding the prosecution of such action (including reviewing the contents of any correspondence, legal papers or other documents related thereto), and the controlling Party will take into account reasonable requests of the participating Party.

(e) *Settlement.* SGI will not enter into any settlement of any claim described in this Section 12.6 that admits to the invalidity, unpatentability, narrowing of scope or unenforceability of the Patents that are the subject of the license grants under Section 10.1 and Section 10.2 or this Agreement in

a manner or to an extent that limits the scope of rights granted under Section 10.1 and Section 10.2, incurs any financial liability on the part of Unum or requires an admission of liability, wrongdoing or fault on the part of Unum, in each case without Unum's prior written consent. Unum will not enter into any settlement of any claim described in this Section 12.6 that admits to the invalidity, unpatentability, narrowing of scope or unenforceability of the Patents that are the subject of the license grants under Section 10.1 and Section 10.2 or this Agreement in a manner or to an extent that limits the scope of rights granted under Section 10.1 and Section 10.2, incurs any financial liability on the part of SGI or requires an admission of liability, wrongdoing or fault on the part of SGI, in each case without SGI's prior written consent. If a Party has joined the legal action, it will consent to such settlement proposed by the other Party and execute any documents or take such actions necessary to effect a settlement that comports with the requirements of this Section 12.6(e).

(f) *Damages*. Unless otherwise agreed by the Parties, all monies recovered upon the final judgment or settlement of any action described in Section 12.6(b), or any action described in Section 12.6(c), will be used: (i) first, to reimburse each of the Parties on a *pro rata* basis for each of their out-of-pocket costs and expenses relating to the action; and (ii) second, [***] to the controlling Party and [***] to the other Party.

(g) *Other Patents*. Other than as provided under Section 12.2(c) and Section 12.6, Unum has the sole right to enforce and defend (i) the Patents within the Unum Program IP and (ii) the Unum Background Patents, and SGI has no rights with respect thereto. SGI has the sole right to enforce and defend (i) the Patents within the SGI Program IP other than the SGI Program IP that constitutes Joint Program IP and (ii) the SGI Background Patents, and Unum has no rights with respect thereto.

12.7 Personnel Obligations. Prior to beginning work under this Agreement relating to any Research, Development or Commercialization of a Research Candidate, Development Candidate or Product, each employee, agent or independent contractor of SGI or Unum or of either Party's respective Affiliates will be bound by non-disclosure and invention assignment obligations which are consistent with the obligations of SGI or Unum, as appropriate, in this Article 12, to the extent permitted by Applicable Law, including: (a) promptly reporting any invention, discovery, process or other intellectual property right; (b) assigning to SGI or Unum, as appropriate, all of his or her right, title and interest in and to any invention, discovery, process or other intellectual property right; (c) in the case of employees, agents, or independent contractors working in the United States, taking actions reasonably necessary to secure patent protection; (d) performing all acts and signing, executing, acknowledging and delivering any and all documents required for effecting the obligations and purposes of this Agreement; and (e) abiding by the obligations of confidentiality and non-use set forth in Article 15. It is understood and agreed that such non-disclosure and invention assignment agreement need not reference or be specific to this Agreement.

12.8 Trademarks. The Parties will be jointly responsible for the selection, registration, maintenance and defense of all trademarks for use in connection with the sale or marketing of Products in the Shared Territory (the "**Marks**"). The fees and expenses incurred in connection therewith for Marks applicable to Products in the Licensed Territory will be the responsibility of SGI, and the Trademark Costs in the Shared Territory will be deemed Joint Commercialization Costs. All uses of the Marks in the Shared Territory will be reviewed by the JCC and will comply with Applicable Law (including those laws and regulations particularly applying to the proper use and designation of trademarks in the applicable countries). Neither Party will, without the other Party's prior written consent, use any trademarks or house marks of the other Party (including the other Party's corporate name), or marks confusingly similar

thereto, in connection with such Party's marketing or promotion of Products under this Agreement, except as may be expressly authorized in connection with activities under Section 8.3 or any Co-Promotion Agreement and except to the extent required to comply with Applicable Law. Unum will own all Marks relating to "ACTR" or "ACTR T-cells" (collectively, the "**ACTR Marks**") in the Territory. Other than the ACTR Marks, the Lead Commercializing Party will own all Marks with respect to the applicable Products in the Shared Territory. Other than the ACTR Marks, SGI will own all Marks with respect to the Products in the Licensed Territory.

12.9 Confirmatory Patent Licenses. Each Party will, if so requested by the other Party, promptly enter into confirmatory license agreements, in a form consistent with the terms of this Agreement and reasonably acceptable to the Parties, for purposes of recording the licenses granted under this Agreement with such patent offices in the Territory as such Party reasonably considers appropriate. Unum will bear any filing costs and any costs of outside counsel or experts required with respect to such recordations in the Shared Territory. SGI will bear any filing costs and any costs of outside counsel or experts required with respect to such recordations in the Licensed Territory.

ARTICLE 13
REPRESENTATIONS AND WARRANTIES

13.1 Mutual Representations and Warranties. Each Party hereby represents and warrants as of the Effective Date, and covenants (as applicable) to the other Party as follows:

(a) Corporate Existence and Power. It is a company or corporation duly organized, validly existing, and in good standing under the laws of the jurisdiction in which it is incorporated, and has full corporate power and authority and the legal right to own and operate its property and assets and to carry on its business as it is now being conducted and as contemplated in this Agreement, including the right to grant the licenses granted by it hereunder.

(b) Authority and Binding Agreement. (i) It has the corporate power and authority and the legal right to enter into this Agreement and perform its obligations hereunder; (ii) it has taken all necessary corporate action on its part required to authorize the execution and delivery of this Agreement and the performance of its obligations hereunder; and (iii) this Agreement has been duly executed and delivered on behalf of such Party, and constitutes a legal, valid, and binding obligation of such Party that is enforceable against it in accordance with its terms.

(c) No Conflict. It is not a party to, and, during the Term, will not enter into, any agreement that would prevent it from granting the rights or exclusivity granted or intended to be granted to the other Party under this Agreement or performing its obligations under this Agreement.

(d) No Debarment. Such Party is not debarred, has not been convicted, and is not subject to debarment or conviction pursuant to Section 306 of the FD&C Act. In the course of the Development of Development Candidates or Products, such Party has not used prior to the Effective Date and will not use, during the Term, any employee, agent or independent contractor who has been debarred by any Regulatory Authority, or, to the best of such Party's knowledge, is the subject of debarment proceedings by a Regulatory Authority or has been convicted pursuant to Section 306 of the FD&C Act.

(e) Existing In-Licenses. (a) Each SGI Existing In-License or Unum Existing In-License (as the case may be) is in full force and effect; (b) such Party is not, and is not aware that either it or the other party to a SGI Existing In-License or Unum Existing In-License (as the case may be) is, in breach of any provision of such agreement; and (c) such Party is not aware of any information or circumstance that could give rise to a bona fide allegation that such Party is in breach of a SGI Existing In-License or Unum Existing In-License (as the case may be) or otherwise give the other party to such agreement a right to terminate. Each Party hereby covenants and agrees that during the Term (i) it will use commercially reasonable efforts to maintain each SGI Existing In-License or Unum Existing In-License (as the case may be) in full force and effect; (ii) not consent to any amendment or modification or termination of a SGI Existing In-License or Unum Existing In-License (as the case may be) that would impose additional monetary obligations on the other Party or materially and adversely affect the rights granted to the other Party hereunder without the prior written permission of the other Party, such permission not to be unreasonably withheld, conditioned or delayed; and (iii) it will promptly advise the other Party of any notice of a breach or intent to terminate any SGI Existing In-License or Unum Existing In-License (as the case may be) that it receives, and to the extent permitted under the SGI Existing In-License or Unum Existing In-License (as the case may be), the other Party will have the right but not the obligation to cure any such breach.

13.2 Representations and Warranties by Unum. Unum hereby represents and warrants to SGI, as of the Effective Date, as follows:

(a) Title; Encumbrances. Unum owns or has a valid right to use the Unum Background Technology existing as of the Effective Date, including the Patents listed on Exhibit F, provided, however, that the foregoing will not constitute a representation or warranty of non-infringement of a Third Party's intellectual property rights. Unum has the right to grant the licenses to SGI as purported to be granted pursuant to this Agreement. Neither Unum nor any of its Affiliates has entered into any agreement granting any right, interest or claim in or to, any Unum Background Patents or Unum Background Know-How to any Third Party that would conflict with the licenses to SGI as purported to be granted pursuant to this Agreement.

(b) Recordation. Unum has properly recorded in the relevant United States and foreign patent offices the assignments, or other necessary documents, supporting its legal title to the Unum Background Patents.

(c) Notice of Infringement or Misappropriation. Unum has not received any written notice from any Third Party asserting or alleging that any research, development, use, manufacture, sale, offer for sale or importation of ACTR T-cells by Unum has infringed or misappropriated, or would infringe or misappropriate, the intellectual property rights of any Third Party.

(d) No Proceedings. There are no pending, and to Unum's knowledge there are no threatened, actions, claims, demands, suits, proceedings, arbitrations, grievances, citations, summonses, subpoenas, inquiries or investigations of any nature, civil, criminal, regulatory or otherwise, in law or in equity, against Unum or any of its Affiliates or, to the knowledge of Unum, pending or threatened against any Third Party, in each case involving the Unum Background Technology, or relating to the transactions contemplated by this Agreement.

(e) Third-Party Activities. To Unum's knowledge, there are no activities by Third Parties that would constitute infringement or misappropriation of the Unum Background Technology (in the case of pending claims, evaluating them as if issued).

(f) No Misappropriation. To the knowledge of Unum, the conception and reduction to practice of any inventions and the use or development of any other Know-How within the Unum Background Technology have not constituted or involved the misappropriation of trade secrets or other rights or property of any Third Party.

13.3 Other Covenants by Unum.

(a) No Transfer of Title. Unum covenants and agrees that from the Effective Date until the expiration of the Term, neither it nor its Affiliates will enter into any agreement with any Third Party, whether written or oral, with respect to, or otherwise assign, transfer, license, or convey its right, title or interest in or to, the Unum Background Technology, in each case, that is in conflict with the rights granted by Unum to SGI under this Agreement or that would prevent Unum from performing its obligations under this Agreement.

13.4 Representations and Warranties by SGI. SGI hereby represents and warrants to Unum, as of the Effective Date, as follows:

(a) Title; Encumbrances. SGI owns or has a valid right to use the SGI Background Technology existing as of the Effective Date, including the Patents listed on Exhibit G, provided, however, that the foregoing will not constitute a representation or warranty of non-infringement of a Third Party's intellectual property rights. SGI has the right to grant the licenses to Unum as purported to be granted pursuant to this Agreement. Neither SGI nor any of its Affiliates has entered into any agreement granting any right, interest or claim in or to, any SGI Background Patents or SGI Background Know-How to any Third Party that would conflict with the licenses to Unum as purported to be granted pursuant to this Agreement.

(b) Recordation. SGI has properly recorded in the relevant United States and foreign patent offices the assignments, or other necessary documents, supporting its legal title to the SGI Background Patents.

(c) Notice of Infringement or Misappropriation. SGI has not received any written notice from any Third Party asserting or alleging that any research, development, use, manufacture, sale, offer for sale or importation of SGI Antibodies by SGI has infringed or misappropriated, or would infringe or misappropriate, the intellectual property rights of any Third Party.

(d) No Proceedings. Except as otherwise disclosed, there are no pending, and to SGI's knowledge there are no threatened, actions, claims, demands, suits, proceedings, arbitrations, grievances, citations, summonses, subpoenas, inquiries or investigations of any nature, civil, criminal, regulatory or otherwise, in law or in equity, against SGI or any of its Affiliates or, to the knowledge of SGI, pending or threatened against any Third Party, in each case involving the SGI Background Technology, or relating to the transactions contemplated by this Agreement.

(e) Third-Party Activities. To SGI's knowledge, there are no activities by Third Parties that would constitute infringement or misappropriation of the SGI Background Technology (in the case of pending claims, evaluating them as if issued).

(f) No Misappropriation. To the knowledge of SGI, the conception and reduction to practice of any inventions and the use or development of any other Know-How within the SGI Background Technology have not constituted or involved the misappropriation of trade secrets or other rights or property of any Third Party.

13.5 Other Covenants by SGI.

(a) No Transfer of Title. SGI covenants and agrees that from the Effective Date until the expiration of the Term, neither it nor its Affiliates will enter into any agreement with any Third Party, whether written or oral, with respect to, or otherwise assign, transfer, license, or convey its right, title or interest in or to, the SGI Background Technology, in each case, that is in conflict with the rights granted by SGI to Unum under this Agreement or that would prevent SGI from performing its obligations under this Agreement.

13.6 Disclaimer. Unum makes no representations or warranties except as set forth in this Article 13 concerning the Unum Background Technology, and SGI makes no representations or warranties except as set forth in this Article 13 concerning the SGI Background Technology.

13.7 No Other Representations or Warranties. EXCEPT AS EXPRESSLY STATED IN THIS Article 13, NO REPRESENTATIONS OR WARRANTIES WHATSOEVER, WHETHER EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, NON-INFRINGEMENT, OR NON-MISAPPROPRIATION OF THIRD PARTY INTELLECTUAL PROPERTY RIGHTS, IS MADE OR GIVEN BY OR ON BEHALF OF A PARTY. EXCEPT AS EXPRESSLY STATED IN THIS AGREEMENT, ALL REPRESENTATIONS AND WARRANTIES, WHETHER ARISING BY OPERATION OF LAW OR OTHERWISE, ARE HEREBY EXPRESSLY EXCLUDED.

ARTICLE 14
INDEMNIFICATION

14.1 Indemnification by Unum. Unum will defend, indemnify, and hold harmless SGI, its Affiliates, subcontractors, distributors, licensees and sublicensees, and each of their respective officers, directors, employees, and agents (the "**SGI Indemnitees**") from and against any and all damages or other amounts payable to a Third Party claimant, as well as any reasonable attorneys' fees and costs of litigation incurred by such SGI Indemnitees (collectively, "**SGI Damages**"), all to the extent resulting from any claims, suits, proceedings or causes of action brought by such Third Party ("**SGI Claims**") against such SGI Indemnitee that arise from or are based on: (a) a breach of any of Unum's representations, warranties and obligations under this Agreement; (b) the willful misconduct or grossly negligent acts of Unum, its Affiliates, or subcontractors (excluding SGI, its Affiliates, and subcontractors as licensees or sublicensees of Unum hereunder), or the officers, directors, employees, or agents of Unum or its Affiliates, or subcontractors sublicensees; or (c) any violation of Applicable Law by Unum, its Affiliates, or subcontractors (excluding SGI, its Affiliates, and subcontractors as licensees or sublicensees of Unum hereunder), or the officers, directors, employees, or agents of Unum or its Affiliates or subcontractors; excluding, in each case ((a), (b) and (c)), any damages or other amounts for which SGI has an obligation to indemnify any Unum Indemnitee pursuant to Section 14.2.

14.2 Indemnification by SGI. SGI will defend, indemnify, and hold harmless Unum, its Affiliates, subcontractors, distributors, licensees and sublicensees, and each of their respective officers, directors, employees, and agents, (the "**Unum Indemnitees**") from and against any and all damages or other amounts payable to a Third Party claimant, as well as any reasonable attorneys' fees and costs of litigation incurred by such Unum Indemnitees (collectively, "**Unum Damages**"), all to the extent resulting from any claims, suits, proceedings or causes of action brought by such Third Party (collectively, "**Unum Claims**") against such Unum Indemnitee that arise from or are based on: (a) a breach of any of SGI's representations, warranties, and obligations under this Agreement; (b) the willful misconduct or grossly negligent acts of SGI or its Affiliates or subcontractors (excluding Unum, its Affiliates, and subcontractors as licensees or sublicensees of SGI hereunder), or the officers, directors, employees, or agents of SGI or its Affiliates or subcontractors; or (c) any violation of Applicable Law by SGI, its Affiliates or subcontractors (excluding Unum, its Affiliates, and subcontractors as licensees or sublicensees of SGI hereunder), or the officers, directors, employees, or agents of SGI or its Affiliates or subcontractors; excluding, in each case ((a), (b), and (c), any damages or other amounts for which Unum has an obligation to indemnify any SGI Indemnitee pursuant to Section 14.1.

14.3 Indemnification Procedures. The Party claiming indemnity under this Article 14 (the "**Indemnified Party**") will give written notice to the Party from whom indemnity is being sought (the "**Indemnifying Party**") promptly after learning of the claim, suit, proceeding or cause of action for which indemnity is being sought ("**Claim**"). The Indemnifying Party's obligation to defend, indemnify, and hold harmless pursuant to Section 14.1, Section 14.2 or Section 14.3, as applicable, will be reduced to the extent the Indemnified Party's delay in providing notification pursuant to the previous sentence results in prejudice to the Indemnifying Party. At its option, the Indemnifying Party may assume the defense of any Claim for which indemnity is being sought by giving written notice to the Indemnified Party within [***] days after receipt of the notice of the Claim. The assumption of defense of the Claim will not be construed as an acknowledgment that the Indemnifying Party is liable to indemnify any Indemnified Party in respect of the Claim, nor will it constitute waiver by the Indemnifying Party of any defenses it may assert against the Indemnified Party's claim for indemnification. The Indemnified Party will provide the Indemnifying Party with reasonable assistance, at the Indemnifying Party's expense, in connection with the defense. The Indemnified Party may participate in and monitor such defense with counsel of its own choosing at its sole expense; provided, however, the Indemnifying Party has the right to assume and conduct the defense of the Claim with counsel of its choice. The Indemnifying Party will not settle any Claim without the prior written consent of the Indemnified Party, not to be unreasonably withheld, conditioned or delayed, unless the settlement involves only the payment of money. The Indemnified Party will not settle any such Claim without the prior written consent of the Indemnifying Party, which consent will not be unreasonably withheld, conditioned or delayed. If the Indemnifying Party does not assume and conduct the defense of the Claim as provided above, (a) the Indemnified Party may defend against, and consent to the entry of any judgment or enter into any settlement with respect to the Claim in any manner the Indemnified Party may deem reasonably appropriate (and the Indemnified Party need not consult with, or obtain any consent from, the Indemnifying Party in connection therewith), and (b) the Indemnified Party reserves any right it may have under this Article 14 to obtain indemnification from the Indemnified Party.

14.4 Certain Third Party Claims Related to Products in the Shared Territory. The Parties will share in any Shared Program Damages. With respect to any Shared Program Damages incurred by a Party (or any of its Indemnified Persons) during the Term, such Shared Program Damages will be deemed to constitute (and will be included in) Development Costs or Joint Commercialization Costs, as applicable (and the Parties will cooperate in good faith to allocate such amount(s) to the appropriate cost category). After the Term, any Shared Program Damages will continue to be shared with [***] borne by SGI [***] borne by Unum, and the Party (or any of its Indemnified Persons) that has incurred such Shared Program Damages will be reimbursed by the other Party [***] where the bearing Party is Unum and [***] where the bearing Party is SGI no later than [***] days after receipt of reasonable documentation evidencing such amounts. If either Party receives notice of a Third Party claim that arises from or is based on any Shared Program Activities, such Party will inform the other Party in writing as soon as reasonably practicable, and the Parties will discuss a strategy on how to defend against such Third Party claim.

14.5 Limitation of Liability. NEITHER PARTY WILL BE LIABLE TO THE OTHER FOR ANY SPECIAL, CONSEQUENTIAL, INCIDENTAL, PUNITIVE, OR INDIRECT DAMAGES ARISING FROM OR RELATING TO ANY BREACH OF THIS AGREEMENT OR ANY TORT CLAIMS ARISING HEREUNDER, REGARDLESS OF ANY NOTICE OF THE POSSIBILITY OF SUCH DAMAGES. NOTWITHSTANDING THE FOREGOING, NOTHING IN THIS SECTION 14.5 IS INTENDED TO OR WILL LIMIT OR RESTRICT (A) THE INDEMNIFICATION RIGHTS OR OBLIGATIONS OF ANY PARTY UNDER SECTION 14.1, SECTION 14.2 OR SECTION 14.4, (B) DAMAGES AVAILABLE FOR A PARTY'S BREACH OF ITS CONFIDENTIALITY OBLIGATIONS UNDER Article 15, OR (C) DAMAGES AVAILABLE IN THE CASE OF A PARTY'S FRAUD, GROSS NEGLIGENCE OR INTENTIONAL MISCONDUCT.

14.6 Insurance. During the Term, each Party will procure and maintain insurance, including clinical trial liability and product liability insurance, with respect to its activities hereunder at all times during which any Product is being clinically tested in human subjects or commercially distributed or sold. It is understood that such insurance will not be construed to create a limit of either Party's liability with respect to its indemnification obligations under this Article 14. Each Party will provide the other with written evidence of such insurance upon request. Each Party will provide the other with written notice at least [***] days prior to the cancellation, non-renewal or material change in such insurance or self-insurance which materially adversely affects the rights of the other Party hereunder.

ARTICLE 15
CONFIDENTIALITY

15.1 Confidential Information. Except to the extent expressly authorized by this Agreement or otherwise agreed in writing by the Parties, each Party agrees that, during the Term and for [***] thereafter, it will, and will cause its Affiliates, to keep confidential and not publish or otherwise disclose to any Third Party, and not use for any purpose other than as provided for in this Agreement or any Ancillary Agreement, any Confidential Information of the other Party or any of its Affiliates, provided that each Party and its Affiliates may disclose the Confidential Information of the other Party or its Affiliates to the receiving Party's and its Affiliates' officers, directors, employees and agents who in each case are bound by commercially reasonable obligations of confidentiality with respect to the use and disclosure of such Confidential Information. Notwithstanding the foregoing, Confidential Information of a Party or its Affiliate will exclude that portion of such information or materials that the receiving Party (or the receiving Party's Affiliate) can demonstrate by competent written proof:

(a) was already known to the receiving Party or its Affiliate, other than under an obligation of confidentiality, at the time of disclosure by the other Party;

(b) was generally available to the public or otherwise part of the public domain at the time of its disclosure to the receiving Party;

(c) became generally available to the public or otherwise part of the public domain after its disclosure and other than through any wrongful act, fault, or negligence of the receiving Party;

(d) is subsequently disclosed to the receiving Party or its Affiliate by a Third Party without obligations of confidentiality with respect thereto; or

(e) is independently discovered or developed by the receiving Party or its Affiliate without the aid, application, or use of Confidential Information.

The Parties acknowledge that Confidential Information has been provided by the Parties to each other prior to the Effective Date pursuant to the Existing Confidentiality Agreement. The Parties agree that as of the Effective Date, all such Confidential Information will be protected by the terms and conditions of this Agreement, which will replace those of such Existing Confidentiality Agreement.

15.2 Authorized Disclosure of Confidential Information. Notwithstanding Section 15.1, each Party may disclose Confidential Information to the extent such disclosure is reasonably necessary in the following situations:

(a) filing or prosecuting Patents in accordance with Article 12;

(b) regulatory filings and other filings with Governmental Authorities (including Regulatory Authorities), including filings with the SEC or FDA, with respect to a Product as permitted hereunder;

(c) responding to a valid order of a court of competent jurisdiction or other competent authority; provided that the receiving Party will first have given to the disclosing Party notice and a reasonable opportunity to quash the order or obtain a protective order requiring that the Confidential Information be held in confidence or used only for the purpose for which the order was issued; and provided further that if such order is not quashed or a protective order is not obtained, the Confidential Information disclosed will be limited to the information that is legally required to be disclosed;

(d) complying with Applicable Law, including regulations promulgated by securities exchanges;

(e) disclosure to its Affiliates and Third Parties only on a need-to-know basis and solely in connection with the performance by the disclosing Party of its obligations or the exercise of its rights under this Agreement (including with respect to Research, Development, Manufacturing and Commercialization of Research Candidates, Development Candidates and Products), provided that each disclosee, prior to any such disclosure, must be bound by obligations of confidentiality and non-use at least as equivalent in scope as those set forth in Section 15.1 and this Section 15.2;

(f) disclosure of the terms of this Agreement or any Ancillary Agreement to any bona fide potential or actual investor, investment banker, acquirer, merger partner, licensee, collaborator or other potential or actual financial partner; provided that each disclosee must be bound by obligations of confidentiality and non-use at least as equivalent in scope as those set forth in Section 15.1 and this Section 15.2 prior to any such disclosure, except that, where the disclosee is an investor, investment banker or financial partner, such disclosee will only need to be bound by commercially reasonable confidential terms; and

(g) disclosure of any results of Research or Development or status reports to any bona fide potential or actual investor, investment banker, acquirer, merger partner, licensee, collaborator or other potential or actual financial partner; provided that each disclosee must be bound by obligations of confidentiality and non-use at least as equivalent in scope as those set forth in Section 15.1 and this Section 15.2 prior to any such disclosure, except that, where the disclosee is an investor, investment banker or financial partner, such disclosee will only need to be bound by commercially reasonable confidential terms.

Notwithstanding the foregoing, in the event that a Party is required to make a disclosure of the other Party's Confidential Information pursuant to Section 15.2(a), Section 15.2(b), Section 15.2(c) or Section 15.2(d), it will, except where impracticable, give reasonable advance notice to the other Party of such disclosure and use reasonable efforts to secure confidential treatment of such information. In any event, the Parties agree to take all reasonable action to avoid disclosure of Confidential Information hereunder.

15.3 Terms of Agreement.

(a) The Parties agree that the material terms of this Agreement and any Ancillary Agreements are the Confidential Information of both Parties, subject to the special authorized disclosure provisions set forth in this Section 15.3 and Section 15.4. The Parties have agreed to make a joint public announcement of the execution of this Agreement substantially in the form of the press release attached as Exhibit H on or within two (2) Business Days after the Effective Date.

(b) After release of such press release, if either Party or any of its Affiliates desires to make a press release or other similar public announcement concerning the material terms of this Agreement or any activities under this Agreement, such Party will give reasonable prior advance notice of the proposed text of such press release or announcement to the other Party for its prior review and approval (except as otherwise provided herein), such approval not to be unreasonably withheld, conditioned or delayed, except that, subject to Section 15.4(c), in the case of a press release or governmental filing required by law, the disclosing Party will provide the other Party with such advance notice as it reasonably can and will not be required to obtain approval therefor. A Party commenting on such a proposed press release or announcement will provide its comments, if any, within five (5) Business Days after receiving the press release for review. Each Party has the right to issue a press release announcing the achievement of each milestone under this Agreement as it is achieved, and the achievements of Regulatory Approvals as they occur, subject only to the review procedure set forth in the preceding sentence. In relation to a Party's review of such a proposed press release or announcement, the Party may make specific, reasonable comments on such proposed press release or announcement within the prescribed time for commentary, but will not withhold its approval to disclosure of any information that is required by Applicable Law to be disclosed. Neither Party will be required to seek the permission of the other Party to repeat any information regarding the terms of this Agreement that have already been publicly disclosed by such Party or such Party's Affiliate, or by the other Party or any of its Affiliates, in accordance with this Section 15.3.

(c) The Parties acknowledge that either or both Parties may be obligated to make a filing (including to file a copy of this Agreement) with the SEC or other Governmental Authorities (including upon a proposed initial public offering for Unum). Each Party will be entitled to make such a required filing, provided that it will (i) submit in connection with such filing the redacted copy of this Agreement in a form mutually agreed to by the Parties (the "**Redacted Agreement**"), (ii) request, and use commercially reasonable efforts consistent with Applicable Laws to obtain, confidential treatment of all terms redacted from this Agreement, as reflected in the Redacted Agreement, for a period of at least[***], (iii) promptly deliver to the other Party any written correspondence received by it or its representatives from such Governmental Authority with respect to such confidential treatment request and promptly advise the other Party of any other material communications between it or its representatives with such Governmental Authority with respect to such confidential treatment request, (iv) upon the written request of the other Party, if legally justifiable, request an appropriate extension of the term of the confidential treatment period, and (v) if such Governmental Authority requests any changes to the redactions set forth in the Redacted Agreement, use commercially reasonable efforts consistent with Applicable Laws to support the redactions in the Redacted Agreement as originally filed and not agree to any changes to the Redacted Agreement without, to the extent practical, first discussing such changes with the other Party and taking the other Party's comments into consideration when deciding whether to agree to such changes (provided that a Party will only be required to make such efforts to support such redactions once). Each Party will be responsible for its own legal and other external costs in connection with any such filing, registration or notification.

15.4 Public Disclosures of Data. Neither Party nor any of its Affiliates will, except as may be required by Applicable Law in the reasonable judgment of such Party or its Affiliates and its or their counsel, publicly disclose data or results of Research or Development that have not already been publicly disclosed with respect to any Product (whether conducted prior to or during the Term of this Agreement), except as provided in this Section 15.4.

(a) Press Releases. The Parties will coordinate to issue a joint press release covering the top line results of all material Clinical Trials as quickly as possible following finalization and receipt of such results. Either Party desiring to make such a joint press release will notify the other Party of its intent no later than three (3) Business Days prior to the proposed release date and include with such notice a copy of the proposed press release for such other Party to comment and for the content of such press releases to be determined by mutual agreement of the Parties. If either Party believes disclosure of such results should be deferred to an upcoming scientific or medical conference, the Parties will confer diligently and in good faith to attempt to reach agreement on that point.

(b) Scientific and Medical Conferences. All presentations of such data and results relating to Research Candidates, Development Candidates and Products at scientific and medical conferences will be by mutual agreement of the Parties.

(c) Publications. Publications of such data and results relating to Research Candidates, Development Candidates and Products in peer-reviewed journals ("**Publications**") will be made only pursuant to this Section 15.4(c). The Party proposing a Publication will provide the other

Party the opportunity to review the proposed Publication at least [***] days prior to its intended submission for publication. If the other Party offers no comments on the Publication, the submitting Party may submit the Publication [***] days after it provided the Publication to the reviewing Party (or earlier, with the written consent of the reviewing Party). The submitting Party will consider the comments of the reviewing Party in good faith. If the Parties are unable to agree upon any aspect of the Publication, including its form, content, timing (including with respect to additional time required for seeking patent protection for inventions disclosed in the Publication), or proposed medium of publication, either Party may refer the dispute to the JDC, which will resolve the dispute in accordance with Section 4.3(d) in the best interests of the Development and Commercialization of the Development Candidates and Products and in a manner designed to the extent possible to enable each Party to comply with its publication policies, provided that Unum has a veto right to the extent the proposed publication raises an ACTR Matter. The submitting Party will provide the other Party a copy of the Publication at the time of the submission. Notwithstanding the foregoing, the JDC will not have the right to authorize the Publication of either Party's Confidential Information without such Party's consent, except that this restriction will not restrict the JDC from authorizing any Publication of any Clinical Trial results. Each Party agrees to acknowledge the contributions of the other Party, and the employees of the other Party, in all Publications as scientifically appropriate. Once Publications have been reviewed by each Party and have been approved for publication, the same Publications do not have to be provided again to the other Party for review for a later submission for publication. Expedited reviews for abstracts or poster presentations may be arranged if mutually agreeable to the Parties. For the avoidance of doubt, the foregoing requirements and restrictions will not apply with respect to either Party's proposed publication of results of any work performed (i) following the expiration or termination of the Term, or (ii) with respect to any Reversion Product.

ARTICLE 16
TERM AND TERMINATION

16.1 Term. This Agreement will become effective on the Effective Date and, unless earlier terminated pursuant to this Article 16, will expire (a) on a Product-by-Product and country-by-country basis, (i) in the Shared Territory, on the date on which neither Party is Researching, Developing or Commercializing such Product (or any Research Candidate or Development Candidate therefor), and (ii) in the Licensed Territory, at the end of the applicable Royalty Term for such Product, and (b) on a Reversion Product-by-Reversion Product and country-by-country basis, until such time as no further payments are owed by the Continuing Party to the Opt-Out Party for such Reversion Product in such country (the last such period, the "**Term**").

16.2 Termination for IP Challenge. Either Party has the right to terminate this Agreement upon written notice to the other Party in the event that the other Party or any of its Affiliates directly or indirectly challenges in a legal or administrative proceeding the patentability, enforceability or validity of any Unum Background Patents or Patents within the Unum Program IP or the SGI Background Patents or Patents within the SGI Program IP, as the case may be; provided that (i) this Section 16.2 will not apply to any such proceeding involving any Third Party who becomes an Affiliate of a Party hereunder if such proceeding was initiated at least [***] before the signing of the definitive document(s) whereby such Third Party becomes such an Affiliate, and (ii) if initiated within any such three-month period, this Section 16.2 will not apply to such proceeding if such proceeding is terminated within [***]days of such Third Party becoming an Affiliate of such Party.

16.3 Termination by Either Party for Breach or Insolvency.

(a) Termination for Material Breach.

(i) *Material Breach.* Unum has the right to terminate this Agreement upon written notice to SGI if SGI materially breaches its obligations under this Agreement and, after receiving written notice from Unum identifying such material breach by SGI in reasonable detail, fails to cure such material breach within ninety (90) days from the date of such notice (or within [***] days from the date of such notice in the event such material breach is solely based upon SGI's failure to pay any amounts due Unum hereunder). SGI has the right to terminate this Agreement upon written notice to Unum if Unum materially breaches its obligations under this Agreement and, after receiving written notice from SGI identifying such material breach by Unum in reasonable detail, fails to cure such material breach within [***] days from the date of such notice (or within [***] days from the date of such notice in the event such material breach is solely based upon Unum's failure to pay any amounts due SGI hereunder).

(ii) *Disputed Breach*. If the alleged breaching Party disputes in good faith the existence or materiality of a breach specified in a notice provided by the other Party in accordance with Section 16.3(a)(i), and such alleged breaching Party provides the other Party notice of such dispute within such [***] day or [***] day period, as applicable, then the non-breaching Party will not have the right to terminate this Agreement under Section 16.3(a)(i) unless and until an arbitrator, in accordance with Article 17, has determined that the alleged breaching Party has materially breached this Agreement and that such Party fails to cure such breach within [***] days following such arbitrator's decision (except to the extent such breach involves the failure to make a payment when due, which breach must be cured within [***] days following such arbitrator's decision). The arbitrator's decision will include a description of what is required to cure such breach. It is understood and agreed that during the pendency of such dispute, all of the terms and conditions of this Agreement will remain in effect.

(iii) *Disfavored Remedy*. The Parties agree that termination pursuant to Section 16.3(a) is a remedy to be invoked only if the breach cannot be adequately remedied through a combination of specific performance and the payment of money damages.

(iv) *Alternative to Termination Under Section 16.3(a).* If a non-breaching Party has the right to terminate this Agreement under this Section 16.3(a) (including expiration of all applicable cure periods thereunder), and if the breach giving rise to such termination right cannot be adequately remedied through a combination of specific performance and the payment of money damages as contemplated by Section 16.3(a)(iii), in lieu of exercising such termination right, the non-breaching Party may elect once per Development Compound and associated Product by written notice to the breaching Party before the end of such applicable cure period to have this Agreement continue in full force and effect and instead have, starting immediately after the end of such applicable cure period, any future milestone payments and the applicable royalty rates due under this Agreement by such non-breaching Party be reduced by one third (1/3), provided that such reduction will not apply if such future milestone payments and royalty rates have already been previously reduced pursuant to this Section 16.3(a)(iv). For clarity, this Section 16.3(a)(iv) is a non-cumulative remedy, but if elected, would be considered in connection with any claim, order for specific performance or award of money damages relating to any such breach.

(b) Termination for Insolvency. If, at any time during the Term (i) a case is commenced by or against either Party under Title 11, United States Code, as amended, or analogous provisions of Applicable Law outside the United States (the "**Bankruptcy Code**") and, in the event of an involuntary case under the Bankruptcy Code, such case is not dismissed within [***] days after the commencement thereof, (ii) either Party files for or is subject to the institution of bankruptcy, liquidation or receivership proceedings (other than a case under the Bankruptcy Code), (iii) either Party assigns all or a substantial portion of its assets for the benefit of creditors, (iv) a receiver or custodian is appointed for either Party's business, or (v) a substantial portion of either Party's business is subject to attachment or similar process; then, in any such case ((i), (ii), (iii), (iv) or (v)), the other Party may terminate this Agreement upon written notice to the extent permitted under Applicable Law.

16.4 Phase 1 ACTR+rituximab Clinical Trials. Unum will promptly provide SGI with all safety data generated with respect to (a) the product candidate in the Existing Phase 1 Clinical Trial and all correspondence to and from any Regulatory Authority regarding such product candidate, and (b) the product candidate in the First Viral Phase 1 Clinical Trial and all correspondence to and from any Regulatory Authority regarding such product candidate, in each case, for clauses (a) and (b), if and to the extent (i) Unum has access to such data and correspondence and (ii) Unum has the right to use, and disclose such data and correspondence to SGI. All such data and related information will be the Confidential Information of Unum. The Alliance Managers will then schedule a meeting of the JSC as soon as reasonably practicable after completion of the Existing Phase 1 Clinical Trial or earlier, if requested by a Party. SGI will have the right to terminate this Agreement within [***] days after the date of such JSC meeting if, in the reasonable option of SGI's senior management, the Research, Development or Commercialization of all Development Candidates and associated Products must be terminated for Safety Reasons. If SGI terminates this Agreement pursuant to this Section 16.4, then any obligation of SGI to continue to supply SGI Antibodies or of Unum to supply ACTR T-cells, or for either Party to otherwise facilitate the continued Research, Development and Commercialization of Development Candidates and associated Products, under Section 16.6(a) will be of no force or effect. For clarity, Unum may challenge any such termination as an Arbitral Matter under Article 17.

16.5 Safety Reasons.

(a) SGI will have the right to terminate this Agreement upon ninety (90) days prior written notice to Unum with an explanation contained therein if, in the reasonable opinion of SGI's senior management, the Research, Development or Commercialization of all Development Candidates and associated Products must be terminated for Safety Reasons attributable to ACTR T-cells. If SGI terminates this Agreement pursuant to this Section 16.5(a), then any obligation of SGI to continue to supply SGI Antibodies or of Unum to supply ACTR T-cells, or for either Party to otherwise facilitate the continued Development and Commercialization of Development Candidates and associated Products, under Section 16.6(a) will be of no force or effect. For clarity, Unum may challenge any such termination as an Arbitral Matter under Article 17; provided that the applicable Clinical Trial will be suspended pending the resolution of such challenge.

(b) Each Party will have the right to terminate this Agreement on a Product-by-Product basis with respect to such Product upon [***] written notice to the other Party with an explanation contained therein if, in the reasonable opinion of such Party's senior management, the Research, Development or Commercialization of any Development Candidate and associated Product must be terminated for Safety Reasons. If a Party terminates this Agreement pursuant to this Section 16.5(b), then any obligation of SGI to continue to supply SGI Antibodies or of Unum to supply ACTR T-cells, or for either Party to otherwise facilitate the continued Development and Commercialization of such Development Candidate and associated Product, under Section 16.6(a) will be of no force or effect. For clarity, either Party may challenge any such termination as an Arbitral Matter under Article 17; provided that the applicable Clinical Trial will be suspended pending the resolution of such challenge.

16.6 Effects of Termination of this Agreement. The following will apply in the event of (1) a termination of this Agreement in full or (2) in the event of a termination with respect to a Development Candidate or Product, on a Development Candidate-by-Development Candidate or Product-by-Product basis, with respect to such Development Candidate or Product but not any other Development Candidate or Product. For clarity, any termination of this Agreement with respect to a Product or Development Candidate will result in the termination of the applicable Collaboration Antigen.

(a) Wind-down Period.

(i) Following the termination of this Agreement for any reason each Party will be responsible for an orderly wind-down of this Agreement with respect to such Research Candidate, Development Candidate, Product or Reversion Product (as applicable), in accordance with accepted pharmaceutical industry norms and ethical practices, including any then on-going Clinical Trials hereunder with respect to such Research Candidate, Development Candidate, Product or Reversion Product (as applicable). The Parties will endeavor to effect any such wind-down as expeditiously as possible and subject to Applicable Law and taking in account the then-current applicable Research Plan, Early Clinical Development Plan, Late Clinical Development Plan or Joint Commercialization Plan. In such circumstances, each Party will also continue to bear its share of all Research Costs, Development Costs and Joint Commercialization Costs incurred during any such wind-down period, as well as all committed or otherwise non-cancellable Research Costs, Development Costs and Joint Commercialization Costs for any activities agreed to by the Parties under the then-current applicable Research Plan, Early Clinical Development Plan, Late Clinical Development Plan or Joint Commercialization Plan. By way of example, but not limitation, in the event that the termination of this Agreement occurs in the middle of a Phase 3 Clinical Trial for a Development Candidate, then each Party will continue to bear its share of all Development Costs with respect to such Phase 3 Clinical Trial until it is concluded.

(ii) During the applicable wind-down period, neither Party will make any statement to any Person, whether written, verbal, electronic or otherwise, that disparages any Product or Reversion Product, the work performed by either Party under this Agreement, or the other Party.

(b) Remaining Inventories. Except for termination under Section 16.4 or Section 16.5, each Party will be entitled, during the [***] following termination of this Agreement, to finish any work-in-progress and to sell in the Territory any inventory of Research Candidate, Development Candidate, Product or Reversion Product that remains on hand as of the effective date of the termination. SGI or Unum will pay to the other Party the royalties and milestone payments applicable to such sales in accordance with the terms and conditions of this Agreement.

16.7 Other Remedies. Termination or expiration of this Agreement for any reason will not release either Party from any liability or obligation that already has accrued prior to such expiration or termination, nor affect the survival of any provision hereof to the extent it is expressly stated to survive such termination. Termination or expiration of this Agreement for any reason will not constitute a waiver or release of, or otherwise be deemed to prejudice or adversely affect, any rights, remedies or claims, whether for damages or otherwise, that a Party may have hereunder or that may arise out of or in connection with such termination or expiration.

16.8 Rights in Bankruptcy. All rights and licenses granted under or pursuant to this Agreement by Unum and SGI are, and will otherwise be deemed to be, for purposes of Section 365(n) of the U.S. Bankruptcy Code, licenses of right to "intellectual property" as defined under Section 101 of the U.S. Bankruptcy Code. The Parties agree that each Party, as licensee of certain rights under this Agreement, will retain and may fully exercise all of its rights and elections under the U.S. Bankruptcy Code. The Parties further agree that, in the event of the commencement of a bankruptcy proceeding by or against a Party (such Party, the "**Bankrupt Party**") under the U.S. Bankruptcy Code, the other Party will be entitled to a complete duplicate of (or complete access to, as appropriate) any intellectual property licensed to such other Party and all embodiments of such intellectual property, which, if not already in such other Party's possession, will be promptly delivered to it (a) upon any such commencement of a bankruptcy proceeding upon such other Party's written request therefor, unless the Bankrupt Party elects to continue to perform all of its obligations under this Agreement or (b) if not delivered under clause (a), following the rejection of this Agreement by the Bankrupt Party upon written request therefor by the other Party.

16.9 Survival. Termination or expiration of this Agreement will not affect rights or obligations of the Parties under this Agreement that have accrued prior to the date of termination or expiration of this Agreement. Notwithstanding anything to the contrary, the following provisions will survive and apply after expiration or termination of this Agreement: Sections 5.8(b), 7.1(d)(i), 7.1(d)(ii), 7.2, 7.3, 10.1(e), 10.3, 10.4(j), 10.4(l), 10.5, 10.6, 10.9, 11.10(c), 11.17, 12.1, 12.2, 12.4, 13.6 and 13.7, and Article 1, Article 14, Article 15, Article 16, Article 17 and Article 18. In addition, the other applicable provisions of Article 11 will survive such expiration or termination of this Agreement to the extent required to make final reimbursements, reconciliations or other payments incurred or accrued prior to the date of termination or expiration. For any surviving provisions requiring action or decision by a Committee or an Executive Officer, each Party will appoint representatives to act as its Committee members or Executive Officer, as applicable. All provisions not surviving in accordance with the foregoing will terminate upon expiration or termination of this Agreement and be of no further force and effect.

ARTICLE 17
DISPUTE RESOLUTION

17.1 Disputes. It is the objective of the Parties to establish procedures to facilitate the resolution of disputes arising under this Agreement in an expedient manner by mutual cooperation and without resort to litigation. In the event of any disputes, controversies or differences which may arise between the Parties out of or in relation to or in connection with this Agreement (other than (a)

differences of [***] at a Committee, which will be resolved pursuant to Section 4.6, or (b) disputes relating to the payment obligations to be paid for a Reversion Product, which will be resolved pursuant to Sections 3.1(d), 3.2(c) or 3.2(d) and Exhibit I), including any alleged failure to perform, or breach, of this Agreement ("**Arbitral Matter**"), or any issue relating to the interpretation or application of this Agreement, then upon the request of either Party by written notice, the Parties agree to meet and discuss in good faith a possible resolution thereof, which good faith efforts will include at least one in-person meeting between the Executive Officers of each Party. If the matter is not resolved within [***] days following the written request for discussions, either Party may then invoke the provisions of Section 17.1 or Section 17.9, as appropriate, provided, however, that the provisions of Section 17.1 will not be invoked and rather the applicable Party has the right to invoke its decision-making authority if the dispute relates to (a) the Prosecution or Maintenance of the Patents pursuant to Section 12.5, and (b) the enforcement of the Patents pursuant to Section 12.6. For the avoidance of doubt, any differences of business, technical or scientific judgment arising at a Committee pursuant to Article 4 will be resolved solely in accordance with Section 4.6 unless referred by the Executive Officers for resolution in accordance with this Article 17.

17.2 Arbitration. Any Arbitral Matter that is not resolved pursuant to Section 17.1, except for a dispute, claim or controversy under Section 17.9 or as otherwise noted in Section 17.1, will be settled by binding arbitration as follows. Either Party, following the end of the [***] day period referenced in Section 17.1, may refer such issue to arbitration by submitting a written notice of such request to the other Party. The Parties hereby agree that any period of limitations that would otherwise expire between the initiation of an arbitration proceeding and its conclusion will be extended until twenty (20) days after the conclusion of the arbitration. Promptly following receipt of such notice, the Parties will meet and discuss in good faith and agree on an arbitrator to resolve the issue, which arbitrator will be neutral and independent of both Parties and all of their respective Affiliates, will have significant experience and will have expertise in licensing and partnering agreements in the pharmaceutical and biotechnology industries. If the Parties cannot agree on such arbitrator within [***] of request by a Party for arbitration, then such arbitrator will be appointed by JAMS, which arbitrator must meet the foregoing criteria. The place of arbitration will be New York, NY. The proceedings will be conducted pursuant to the rules set forth by JAMS for such proceedings. The Parties agree that discovery appropriate to the issues in the dispute will be permitted in the arbitration, including reasonable document requests, pre-hearing exchanges of information, expert witness disclosures, limited depositions of important witnesses and other appropriate discovery, provided that such discovery will be limited to the narrower of (a) the scope of discovery agreed to by the Parties, or if none can be agreed, established by the arbitrator, and (b) such discovery as would be permitted by the Federal Rules of Civil Procedure and is approved by the arbitrator, keeping in mind the goal of an expedited and efficient proceeding. The arbitration will be governed by the procedural and substantive law set forth in Section 17.2 and the United States Arbitration Act, 9 U.S.C. §§1-16 to the exclusion of any inconsistent state laws. Either Party may apply to the arbitrator for interim injunctive relief or may seek from any court having jurisdiction any injunctive or provisional relief necessary to protect the rights or property of that Party pending resolution of the matter pursuant to this Article 17. The Parties have the right to be represented by counsel. Any judgment or award rendered by the arbitrator will be final and binding on the Parties, and will be governed by the terms and conditions hereof, including the limitation on damages set forth in Section 14.5. The Parties agree that such a judgment or award may be enforced in any court of competent jurisdiction. The statute of limitations of the State of Delaware applicable to the commencement of a lawsuit will apply to the commencement of arbitration under this Article 17. Each Party will bear its own costs and expenses and attorneys' fees in

the arbitration, except that the arbitrator may order the non-prevailing Party to bear all or an appropriate part (reflective of the relative success on the issues) of the costs and expenses and reasonable attorneys' fees incurred by the prevailing Party based on the relative merits of each Party's positions on the issues in the dispute. The Party that does not prevail in the arbitration proceeding will pay the arbitrator's fees and expenses and any administrative fees of arbitration. All proceedings and decisions of the arbitrator(s) will be deemed Confidential Information of each of the Parties, and will be subject to Article 15.

17.3 Governing Law. This Agreement will be governed by and construed under the substantive laws of the State of New York, excluding any conflicts or choice of law rule or principle that might otherwise refer construction or interpretation of this Agreement to the substantive law of another jurisdiction.

17.4 Award. Any award to be paid by one Party to the other Party as determined by the arbitrator as set forth above under Section 17.1 will be promptly paid in U.S. dollars free of any tax, deduction or offset; and any costs, fees or taxes incident to enforcing the award will, to the maximum extent permitted by law, be charged against the Party resisting enforcement. Each Party agrees to abide by the award rendered in any arbitration conducted pursuant to this Article 17, and agrees that, subject to the U.S. Federal Arbitration Act, 9 U.S.C. §§ 1-16, judgment may be entered upon the final award in the Federal District Court for the State of New York and that other courts may award full faith and credit to such judgment in order to enforce such award. The award will include interest from the date of any damages incurred for breach of this Agreement, and from the date of the award until paid in full, at a rate fixed by the arbitrator.

17.5 Injunctive Relief. Nothing in this Article 17 will preclude either Party from seeking equitable relief or interim or provisional relief from a court of competent jurisdiction, including a temporary restraining order, preliminary injunction or other interim equitable relief, concerning a dispute either prior to or during any arbitration if necessary to protect the interests of such Party or to preserve the status quo pending the arbitration proceeding. Therefore, in addition to its rights and remedies otherwise available at law, including the recovery of damages for breach of this Agreement, upon an adequate showing of material breach, and without further proof of irreparable harm other than this acknowledgement, such non-breaching Party will be entitled to seek (a) immediate equitable relief, specifically including, but not limited to, both interim and permanent restraining orders and injunctions, and (b) such other and further equitable relief as the court may deem proper under the circumstances. For the avoidance of doubt, nothing in this Section 17.5 will otherwise limit a breaching Party's opportunity to cure a material breach as permitted in accordance with Section 16.3(a).

17.6 Confidentiality. The arbitration proceeding will be confidential and the arbitrator will issue appropriate protective orders to safeguard each Party's Confidential Information. Except as required by law, no Party will make (or instruct the arbitrator to make) any public announcement with respect to the proceedings or decision of the arbitrator without prior written consent of the other Party. The existence of any dispute submitted to arbitration, and the award, will be kept in confidence by the Parties and the arbitrator, except as required in connection with the enforcement of such award or as otherwise required by Applicable Law.

17.7 Survivability. Any duty to arbitrate under this Agreement will remain in effect and be enforceable after termination of this Agreement for any reason.

17.8 Jurisdiction. For the purposes of this Article 17, the Parties acknowledge their diversity (SGI having its principal place of business in the State of Washington and Unum having its principal place of business in the Commonwealth of Massachusetts), and except as provided in Section 18.11, agree to accept the jurisdiction of any United States District Court located in the State of New York for the purposes of enforcing or appealing any awards entered pursuant to this Article 17 and for enforcing this Agreements reflected in this Article 17 and agree not to commence any action, suit or proceeding related thereto except in such courts.

17.9 Patent and Trademark Disputes. Notwithstanding Section 17.1, any dispute, controversy or claim relating to the scope, validity, enforceability or infringement of any Unum Background Patents, Unum Program IP, SGI Background Patents, SGI Program IP or Marks covering the manufacture, use, importation, offer for sale or sale of Products will be submitted to a court of competent jurisdiction in the country in which such patent or trademark rights were granted or arose.

ARTICLE 18
MISCELLANEOUS

18.1 Entire Agreement; Amendment. This Agreement, including the Exhibits hereto, and the Ancillary Agreements set forth the complete, final and exclusive agreement and all the covenants, promises, agreements, warranties, representations, conditions and understandings between the Parties hereto with respect to the subject matter hereof and supersedes all prior agreements (including the Existing Confidentiality Agreement) and understandings between the Parties existing as of the Effective Date with respect to the subject matter hereof. In the event of any inconsistency between any plan hereunder (including the Early Clinical Development Plan, Late Clinical Development Plan or Joint Commercialization Plan) and this Agreement, the terms of this Agreement will prevail. There are no covenants, promises, agreements, warranties, representations, conditions or understandings, either oral or written, between the Parties other than as are set forth herein and therein. No subsequent alteration, amendment, change or addition to this Agreement will be binding upon the Parties unless reduced to writing and signed by an authorized officer of each Party.

18.2 Force Majeure. Both Parties will be excused from the performance of their obligations under this Agreement to the extent that such performance is prevented or delayed by force majeure and the nonperforming Party promptly provides notice of the prevention to the other Party. Such excuse will be continued so long as the condition constituting force majeure continues and the nonperforming Party takes reasonable efforts to remove the condition; provided, however, that if the condition constituting force majeure continues for more than ninety (90) consecutive days the other Party has the option to terminate this Agreement immediately upon written notice. For purposes of this Agreement, force majeure will mean conditions beyond the control of the Parties, including an act of God, war, civil commotion, terrorist act, labor strike or lock-out, epidemic, failure or default of public utilities or common carriers, destruction of production facilities or materials by fire, earthquake, storm or like catastrophe, and failure of plant or machinery (provided that such failure could not have been prevented by the exercise of skill, diligence, and prudence that would be reasonably and ordinarily expected from a skilled and experienced person engaged in the same type of undertaking under the same or similar circumstances).

18.3 Notices. Any notice required or permitted to be given under this Agreement will be in writing, will specifically refer to this Agreement, and will be addressed to the appropriate Party at the address specified below or such other address as may be specified by such Party in writing in accordance with this Section 18.3, and will be deemed to have been given for all purposes (a) when received, if hand-delivered or sent by a reputable international expedited delivery service, or (b) when delivered, if sent by email or facsimile transmission (receipt verified), or (c) five (5) Business Days after mailing, if mailed by first class certified or registered mail, postage prepaid, return receipt requested. This Section 18.3 is not intended to govern the day-to-day business communications necessary between the Parties in performing their obligations under the terms of this Agreement.

If to Unum:	Unum Therapeutics, Inc. One Broadway 4th Floor Cambridge, MA 02142 Email: christiana.stamoulis@unumrx.com Attention: Christiana Stamoulis Chief Financial Officer and Head of Corporate Development
With a copy to (which will not constitute notice):	Goodwin Procter LLP Exchange Place 53 State Street Boston, MA 02109 Attention: Kingsley L. Taft, Esq.
If to SGI:	Seattle Genetics, Inc. 21823 30th Drive St Bothell, WA 98021 Fax: (425) 527-4107 Email: legal@seagen.com Attention: General Counsel
Invoices to SGI:	accountspayable@seagen.com,
With a copy to:	Accounts Payable 21823 – 30th Drive SE Bothell, WA 98021

18.4 No Strict Construction; Headings. This Agreement has been prepared jointly and will not be strictly construed against either Party. Ambiguities, if any, in this Agreement will not be construed against any Party, irrespective of which Party may be deemed to have authored the ambiguous provision. The headings of each Article and Section in this Agreement have been inserted for convenience of reference only and are not intended to limit or expand on the meaning of the language contained in the particular Article or Section.

18.5 Assignment.

(a) Neither Party may assign or transfer this Agreement or any rights or obligations hereunder without the prior written consent of the other, except that a Party may make such an assignment without the other Party's consent to an Affiliate or to a successor to substantially all of the assets or business to which this Agreement relates, whether in a merger, sale of stock, sale of assets, reorganization or other transaction. Any permitted successor or assignee of rights or obligations hereunder will, in a writing to the other Party, expressly assume performance of such rights or obligations (and in any event, any Party assigning this Agreement to an Affiliate will remain bound by the terms and conditions hereof). Any permitted assignment will be binding on the successors of the assigning Party. Any assignment or attempted assignment by either Party in violation of the terms of this Section 18.5 will be null, void and of no legal effect.

(b) Notwithstanding anything to the contrary herein, (i) no Materials, Know-How, Patents, Regulatory Materials or Regulatory Approvals not Controlled by a Party or any of its Affiliates prior to an Industry Transaction of such Party will be deemed Controlled for purposes of this Agreement after such Industry Transaction, other than (1) any Program IP arising from the performance of the activities contemplated under this Agreement no matter when Controlled, and (2) any Patent that claims priority, directly or indirectly, to any other Patent first Controlled by such Party before such Industry Transaction no matter when such Patent is filed or issued, and (ii) this Agreement (including Section 10.8 (Exclusivity) and Section 10.9 (Acquisition of Alternative Product Rights)) will apply only to those assets (including the items identified in clause (i) above) Controlled by a Party and its Affiliates before such Industry Transaction. For the purposes of this Agreement, (A) "**Industry Transaction**" of a Party means that (1) such Party has become an Affiliate of an entity that is a Drug Company (as defined below), or (2) any sale, license or other transfer (in one transaction or a series of related transactions) of all or substantially all of such Party's assets or that portion of such Party's business pertaining to the subject matter of this Agreement has occurred to a Drug Company, and (B) "**Drug Company**" will mean any independent Third Party entity that prior to the date of the Industry Transaction conducts research and development of pharmaceutical products in the biotechnology or pharmaceutical industry or develops or commercializes therapeutic or diagnostic products.

(c) Following any Industry Transaction of Unum or its Affiliates, in the event such Drug Company has, or has rights or an interest in, at any time, a product that would otherwise meet the definition of an Alternative Product, such Drug Company will establish reasonable firewalls to prevent disclosure of SGI Confidential Information, SGI Background IP and SGI Program IP (collectively, the "**SGI Sensitive Information**") beyond Unum or its Affiliates personnel who continue to actively perform obligations under this Agreement, and to control the dissemination of SGI Sensitive Information disclosed after the Industry Transaction of Unum or its Affiliates with such Drug Company. For clarity, the foregoing will not apply to any SGI Sensitive Information that is not treated as Confidential Information under Article 15. Notwithstanding the foregoing, following such Industry Transaction of Unum or its Affiliates, Unum will be allowed to provide the amount of financial payments (including the underlying reports provided hereunder) from SGI to Unum hereunder to a Third Party acquirer or its Affiliates.

(d) Following any Industry Transaction of SGI or its Affiliates, in the event such Drug Company has, or has rights or an interest in, at any time, a product that would otherwise meet the definition of an Alternative Product, such Drug Company will establish reasonable firewalls to prevent disclosure of Unum Confidential Information, Unum Background IP and Unum Program IP (collectively, the "**Unum Sensitive Information**") beyond SGI or its Affiliates personnel who continue to actively perform obligations under this Agreement, and to control the dissemination of Unum Sensitive

Information disclosed after the Industry Transaction of SGI or its Affiliates with such Drug Company. For clarity, the foregoing will not apply to any Unum Sensitive Information that is not treated as Confidential Information under Article 15. Notwithstanding the foregoing, following such Industry Transaction of SGI or its Affiliates, SGI will be allowed to provide the amount of financial payments (including the underlying reports provided hereunder) from Unum to SGI hereunder to a Third Party acquirer or its Affiliates.

18.6 Standstill.

(a) Restrictions. SGI agrees that during the period ("**Standstill Period**") commencing on the Effective Date and ending on the later to occur of (A) the [***] anniversary of the [***] to occur of (w) the date of consummation of an initial public offering of the common stock of Unum pursuant to an effective registration statement under the Securities Act of 1933, as amended, or a foreign equivalent thereof (the "**IPO**"), (x) the date that Unum becomes subject to the requirements of Section 12 or Section 15(d) of the Securities Exchange Act of 1934, as amended (the "**Exchange Act**"), (y) the date Unum files a Form 10 with the Securities and Exchange Commission for the registration of a class of its securities, and (z) the date the stockholders of Unum acquire at least the majority of shares of public company that is subject to the reporting requirements of the Exchange Act (each such date in subclauses (w), (x), (y) and (z), the "**Public Company Date**"), (B) the [***] anniversary of the Effective Date, if no IPO has been consummated during such [***] period and (c) the date of termination or expiration of this Agreement in accordance with Article 16, neither SGI nor any of its Affiliates will, directly or indirectly:

(i) propose (1) any merger, consolidation, business combination, tender or exchange offer, purchase of Unum's assets or businesses, or similar transactions involving Unum or (2) any recapitalization, restructuring, liquidation or other extraordinary transaction with respect to Unum;

(ii) acquire beneficial ownership of any securities (including in derivative form) of Unum (collectively, a transaction specified in Section 18.6(a) and this Section 18.6(a)(ii) involving a majority of Unum's outstanding capital stock or consolidated assets, is referred to as a "**Business Combination**"), (A) propose or seek, whether alone or in concert with others, any "solicitation" (as such term is used in the rules of the Securities and Exchange Commission ("**SEC**")) of proxies or consents to vote any securities of Unum, (B) nominate any person as a director of Unum, (C) propose any matter to be voted upon by the stockholders of Unum, or (D) act, alone or in concert with others, to seek to control the management, Board of Directors, policies or affairs of Unum;

(iii) directly or indirectly, form, join or in any way participate in a third party "group" (as such term is used in the rules of the Securities and Exchange Commission) (or discuss with any third party the potential formation of a group) with respect to any securities of Unum or a Business Combination involving Unum;

(iv) request Unum (or any of its officers, directors, Affiliates (as such term is defined in Rule 12b-2 of the Exchange Act) employees, attorneys, accountants, financial advisors and other professional representatives, directly or indirectly, to amend or waive any provision of this Section 18.6 (including this sentence); or

(v) take any action that could reasonably be expected to require Unum to make a public announcement regarding a potential Business Combination under applicable SEC or stock exchange rules.

(b) Exceptions.

(i) Notwithstanding the restrictions of Section 18.6(a), nothing in this Agreement will prohibit SGI or any of its Affiliates from owning or acquiring in the ordinary course and for passive investment purposes the legal or beneficial interest in up to [***]%) of the outstanding shares of Unum.

(ii) Nothing in this Agreement will prevent SGI from communicating with the [***] of Unum to make a proposal for a Business Combination, so long as such communication is made confidentially and would not reasonably be expected to require public disclosure by Unum under applicable SEC or stock exchange rules.

(iii) Following the end of the Standstill Period, nothing in this Agreement (including the prohibitions on use and disclosure set forth in Article 15) will, directly or indirectly, prevent or otherwise limit SGI from taking any actions referred to in this Section 18.6 or related thereto, and in each case without notice to or consultation with Unum. The expiration of the Standstill Period will not terminate or otherwise affect any of the other provisions of this Agreement.

(iv) The obligations and restrictions of SGI under Section 18.6(a) will automatically terminate and be of no further force or effect (i) upon Unum publicly announcing a process designed to solicit offers relating to transactions that, if consummated, would constitute a Business Combination; (ii) from and after the execution by Unum of a definitive agreement that, if consummated, would result in a Business Combination; or (iii) upon the board of directors of Unum adopting a plan of liquidation or dissolution.

(v) If (A) Unum receives a [***] from a Third Party with respect to an Business Combination, which proposal Unum's Board of Directors [***], and (B) Unum's Board of Directors will have commenced a process to solicit proposals from Third Parties for a Business Combination, then Unum will promptly notify SGI of such determination by Unum's Board of Directors (but in no event later than [***] after such determination), it being understood and agreed by SGI that: (1) Unum will be under no obligation to specify in such notice the [***], the [***], or any other [***]of such proposed transaction; rather [***] of Unum's having [***] from a Third Party with respect to a Business Combination of Unum, which proposal Unum's Board of Directors [***], (2) SGI will have no right to disclose to any Third Party such information contained in such notice, or take any other action which would reasonably likely result in Unum being required to publicly disclose such information, (3) the information disclosed in such notice is the Confidential Information of Unum, which SGI acknowledges is material, non-public information of Unum, and (4) Unum and its advisors will be free to conduct any such process as they in their sole discretion will determine, including, without limitation, negotiating with any of the prospective parties and entering into a definitive agreement without additional notice to SGI.

(c) No Transfers or Sales. SGI agrees that, neither it nor any of its Affiliates will, without the prior written consent of the managing underwriter, during the period commencing on the date that SGI first purchases shares of any securities of Unum pursuant to the Equity Agreements and ending on the earlier of: (x) the [***] anniversary of the Public Company Date, (y) an Industry Transaction of Unum and (z) the termination of this Agreement for any reason, (i) lend, offer, pledge, sell, encumber, assign, distribute, contract to sell, sell any option or contract to purchase, purchase any option or contract to sell, grant any option, right or warrant to purchase, or otherwise transfer or dispose of, directly or indirectly (whether by actual disposition or effective economic disposition due to hedging, cash settlement or otherwise), any securities of Unum held immediately before the effective date of the registration statement for the offering or (ii) enter into any swap or other arrangement that transfers to another, in whole or in part, any of the economic consequences of ownership of the securities of Unum, whether any such transaction described in clause (i) or (ii) above is to be settled by delivery of securities of Unum or other securities, in cash or otherwise. The foregoing provisions of this Section 18.6(b)(v) will not apply to the sale of any equity securities to an underwriter pursuant to an underwriting agreement. The underwriters in connection with the public offering of Unum are intended third party beneficiaries of this Section 18.6(b)(v) and has the right, power and authority to enforce the provisions hereof as though they were a party hereto. SGI further agrees to execute such agreements as may be reasonably requested by the underwriters in the public offering of Unum that are consistent with this Section 18.6(b)(v) or that are necessary to give further effect thereto. In order to enforce the covenant in this Section 18.6(b)(v), Unum may impose stop-transfer instructions with respect to the equity securities held by SGI (and transferees and assignees thereof) until the end of such restricted period.

(d) Termination. The restrictions set forth in this Section 18.6 will terminate and be of no further force or effect immediately prior to the consummation of a Deemed Liquidation Event (as such term is defined in the certificate of incorporation of Unum, as may be amended from time to time). In addition, the prohibitions set forth in the foregoing Section 18.6 will not apply to (i) any investment in any securities of Unum or its subsidiaries by or on behalf of any independently managed pension plan or employee benefit plan or trust, including without limitation (A) any direct or indirect interests in portfolio securities held by an investment company registered under the Investment Company Act of 1940, as amended, or (B) interests in securities comprising part of a mutual fund or broad based, publicly traded market basket or index of stocks approved for such a plan or trust in which such plan or trust invests; or (ii) securities of Unum or any of its subsidiaries held by a person acquired by SGI (or any of SGI's Affiliates) on the date such person first entered into an agreement to be acquired by SGI (or such Affiliate) or acquired after such person was acquired by SGI (or such Affiliate) pursuant to an agreement requiring (but only to the extent requiring) such person to acquire such securities, which agreement was in effect on the date such person first entered into an agreement to be acquired by SGI (or such Affiliate), or (iii) any assets or securities of Unum, as debtor, that are acquired in a transaction subject to the approval of the U.S. Bankruptcy Court pursuant to proceedings under the U.S. Bankruptcy Code.

18.7 HSR Compliance.

(a) *HSR Filing*. If Unum notifies SGI pursuant to Section 3.3(a)(ii), or if SGI notifies Unum pursuant to Section 3.3(b)(ii), that an HSR Filing is required, then each of SGI and Unum will make an HSR Filing within five (5) Business Days after such notice. The Parties will cooperate with one another to the extent necessary in the preparation of any such HSR Filing.

(b) *HSR Clearance*. In connection with obtaining HSR Clearance, SGI and Unum will use their respective commercially reasonable efforts to resolve as promptly as practicable any objections that may be asserted by FTC or DOJ with respect to the transactions notified in an HSR Filing; provided, the term "commercially reasonable efforts" does not require either party to (a) sell, divest (including through a license or a reversion of licensed or assigned rights), hold separate, transfer or dispose of any assets, operations, rights, product lines, businesses or interest therein of itself or any of its Affiliates (or consent to any of the foregoing actions); or (b) litigate or otherwise formally oppose any determination (whether judicial or administrative in nature) by a governmental authority seeking to impose any of the restrictions referenced in clause (a) above.

(c) *Cooperation*. In connection with obtaining HSR Clearance, each of SGI and Unum will (a) cooperate with each other in connection with any investigation or other inquiry relating to an HSR Filing and the transactions notified therein; (b) keep the other Party or its counsel informed of any communication received from or given to the FTC or DOJ relating to an HSR Filing and the transactions notified therein (and provide a copy to the other Party if such communication is in writing); (c) reasonably consult with each other in advance of any meeting or conference with the FTC or DOJ, and to the extent permitted by the FTC or DOJ, give the other Party or their counsel the opportunity to attend and participate in such meetings and conferences; and (d) permit the other Party or its counsel to review in advance, and in good faith consider the views of the other Party or its counsel concerning, any submission, filing or communication (and documents submitted therewith) intended to be given to the FTC or DOJ.

18.8 Performance by Affiliates. Subject to the limitations of Section 10.4, each Party may discharge any obligations and exercise any right hereunder through any of its Affiliates. Each Party hereby guarantees the performance by its Affiliates of such Party's obligations under this Agreement, and will cause its Affiliates to comply with the provisions of this Agreement in connection with such performance. Any breach by a Party's Affiliate of any of such Party's obligations under this Agreement will be deemed a breach by such Party, and the other Party may proceed directly against such Party without any obligation to first proceed against such Party's Affiliate.

18.9 Nonsolicitation. During the term of this Agreement, each Party agrees that neither it nor any of its Affiliates will knowingly recruit, solicit or induce, directly or indirectly, any employee of the other Party or any of its Affiliates directly involved in the Research, Development, Manufacture or Commercialization activities with respect to any Research Candidates, Development Candidates or Products to terminate his or her employment with the other Party or such Affiliate and become employed by or consult for such Party or any of its Affiliates. For purposes of the foregoing sentence, "recruit", "solicit" or "induce" will not be deemed to mean (a) circumstances where an employee initiates contact with such Party or any of its Affiliates with regard to possible employment, or (b) general solicitations of employment not specifically targeted at employees of the other Party or any of its Affiliates, including responses to general advertisements.

18.10 Further Actions. Each Party agrees to execute, acknowledge and deliver such further instruments, and to do all such other acts, as may be necessary or appropriate in order to carry out the purposes and intent of this Agreement.

18.11 Compliance with Applicable Law. Each Party will comply with Applicable Law in the course of performing its obligations or exercising its rights pursuant to this Agreement.

18.12 Severability. If any one or more of the provisions of this Agreement is held to be invalid or unenforceable by an arbitrator or by any court of competent jurisdiction from which no appeal can be or is taken, the provision will be considered severed from this Agreement and will not serve to invalidate any remaining provisions hereof. The Parties will make a good faith effort to replace any invalid or unenforceable provision with a valid and enforceable one such that the objectives contemplated by the Parties when entering into this Agreement may be realized.

18.13 No Waiver. Any delay in enforcing a Party's rights under this Agreement or any waiver as to a particular default or other matter will not constitute a waiver of such Party's rights to the future enforcement of its rights under this Agreement, except with respect to an express written and signed waiver relating to a particular matter for a particular period of time.

18.14 Independent Contractors. Each Party will act solely as an independent contractor, and nothing in this Agreement will be construed to give either Party the power or authority to act for, bind, or commit the other Party in any way. Nothing herein will be construed to create the relationship of partners, principal and agent, or joint-venture partners between the Parties.

18.15 Counterparts. This Agreement may be executed in one (1) or more counterparts, each of which will be deemed an original, but all of which together will constitute one and the same instrument.

[*Signature Page Follows*]

[***] INDICATES MATERIAL THAT HAS BEEN OMITTED AND FOR WHICH CONFIDENTIAL TREATMENT HAS BEEN REQUESTED. ALL SUCH OMITTED MATERIAL HAS BEEN FILED WITH THE SECURITIES AND EXCHANGE COMMISSION PURSUANT TO RULE 406 PROMULGATED UNDER THE SECURITIES ACT OF 1933, AS AMENDED

IN WITNESS WHEREOF, the Parties have executed this Agreement by their duly authorized representatives as of the Effective Date.

UNUM THERAPEUTICS, INC.

By: /s/ Charles Wilson
Name: Charles Wilson
Title: President and CEO

SEATTLE GENETICS, INC.

By: /s/ Clay B. Siegall
Name: Clay B. Siegall
Title: Pres & CEO

Signature Page to Collaboration Agreement

[***] INDICATES MATERIAL THAT HAS BEEN OMITTED AND FOR WHICH CONFIDENTIAL TREATMENT HAS BEEN REQUESTED. ALL SUCH OMITTED MATERIAL HAS BEEN FILED WITH THE SECURITIES AND EXCHANGE COMMISSION PURSUANT TO RULE 406 PROMULGATED UNDER THE SECURITIES ACT OF 1933, AS AMENDED

EXHIBIT A
ANTIGEN INFORMATION

1. Expression of the Antigen (mRNA + protein) in different tumor types and different normal tissues, Antigen shedding in patient and normal human (or animal models) blood
2. Antibody affinity and specificity for the Antigen, including ability to recognize homologues
3. Antibody affinity for CD16
4. In vitro cell killing activity for the Antibody if any, and assessment if any of in vitro or in vivo ADCC killing
5. In vivo tumor activity
6. Animal PK
7. Antibody stability, aggregation, suitability for manufacture, timelines for manufacture (if not already manufactured), CHO cell titers and analytics (if manufactured)
8. Clinical results (including summary of adverse events, assessments for efficacy, PK, PK/PD, RO)
9. Any know Patents or Know-How relating to the Antigen or Antibody (to be provided in a format to be mutually agreed by the Parties)
10. Any Third Party financial obligations relating to the Antigen or Antibody

[***] INDICATES MATERIAL THAT HAS BEEN OMITTED AND FOR WHICH CONFIDENTIAL TREATMENT HAS BEEN REQUESTED. ALL SUCH OMITTED MATERIAL HAS BEEN FILED WITH THE SECURITIES AND EXCHANGE COMMISSION PURSUANT TO RULE 406 PROMULGATED UNDER THE SECURITIES ACT OF 1933, AS AMENDED

EXHIBIT B
SGI EXISTING IN-LICENSES

License Agreement, dated [***], by and between SGI and [***]. (Antigen A-1)

[***] INDICATES MATERIAL THAT HAS BEEN OMITTED AND FOR WHICH CONFIDENTIAL TREATMENT HAS BEEN REQUESTED. ALL SUCH OMITTED MATERIAL HAS BEEN FILED WITH THE SECURITIES AND EXCHANGE COMMISSION PURSUANT TO RULE 406 PROMULGATED UNDER THE SECURITIES ACT OF 1933, AS AMENDED

EXHIBIT C
UNUM EXISTING IN-LICENSES

The NUS Agreement.

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EXHIBIT D
JOINT STEERING COMMITTEE

Unum: Charles Wilson, Seth Ettenberg and Christiana Stamoulis

SGI: To be determined within 30 days of the Effective Date.

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EXHIBIT E-1
INITIAL RESEARCH PLAN FOR A1 ANTIGEN

[***]

In Vitro Phase

SGI will transfer to Unum:

1. The [***] lead [***]mAb ([***] mg), [***] ([***] mg) and isotype control mAb (approximately [***] mgs)
2. Catalog number and source of the cell Lines to be used:

Sample Name	Cancer Type	Catalog Number	Source
[***]	[***]	[***]	[***]
[***]	[***]	[***]	[***]
[***]	[***]	[***]	[***]
[***]	[***]	[***]	[***]
[***]	[***]	[***]	[***]

3. Standard protocols for growth and expression analysis of target cells, including source and catalog numbers for appropriate target detection antibodies(or labeled [***]) for flow cytometry.

Examples of assays run during this phase of work include (but are not limited to):

1. Reagent and cell line characterization for use in Unum assays – antibody physical integrity (gel); antibody concentration determination (UV); antibody detection with standard reagents (e.g. anti-IgG antibody); antibody binding to target (cell-surface, soluble if available); antibody binding specificity (e.g. target vs. non-target cell); target expression quantitation on cell lines
2. Characterization of mAb binding to ACTR – Dose titration of [***] mAb on [***] cells (compare to historical binding data).
3. Characterization of [***] cell activation by mAb—Evaluate activation markers (flow cytometry) on [***]7, +/-mAb (compare to historical data)
4. Characterize mAb activation of primary T-cells (from 2-3 healthy donors)—[***] Flow cytometry-based phenotype + target cancer cell lines, +/-mAb; [***] (IC) and release; Proliferation of primary T-cells (CSFE). Full panel of assays with multiple donors on up to [***] target cell lines with the option for confirmatory data on up to [***] cell lines total.

In Vivo Phase

SGI will transfer to Unum:

1. Approximately [***] mgs each of [***] and isotype control
2. SOP for the [***] (or other models) [***]

Assays run during this phase of work include (but are not limited to):

1. Model development – determine cell number and growth kinetics for use in efficacy model
2. Test single high dose efficacy of mAb and ACTR combination and compare to controls (antibody isotype control and non-ACTR T-cell control)
3. Correlative studies include:
    i. T-cell activation (serum and cell)
    ii. T-cell proliferation
4. Test an additional in vivo model (e.g. PC-3)

Decision to proceed

Following the in vivo research phase, both companies will evaluate the data including activity and immunologic specificity and decide whether to proceed to clinical trials or to conduct further research.

Translational Phase

SGI and Unum will decide jointly which translational research questions are addressed and the extent to which they are investigated.

SGI will transfer to Unum:

Blood, tissues, cells, and protocols if possible.

Questions include:

- How does the level of target expression vary across patients, and what effect does this have on ACTR efficacy? Understand the relevant levels of receptor (number of receptors / cell) on cell from historical SGI data, or develop a new data set using quantitative FACS.
    - Across multiple [***] positive cell lines run T-cell cytotoxicity assay with dose titration curve [***] mAb
- Is there an expression threshold (a minimal expression level required for ACTR efficacy with a particular mAb)?
    - mRNA electroporation of [***] into a [***] negative cell, evaluate ACTR-Ab combination in T-cell cytotoxicity assay
- What potential combination therapies (e.g. targeted LMW, other protein therapeutics) would the patient population benefit from that work well, or are antagonistic to ACTR therapy?
    - Select a small subset of SOC and targeted therapies used in the indication and patient population of choice and combine with ACTR in vitro / in vivo assays.
- What contribution or effects of pervious therapy in a given patient population or disease burden have on mAb / ACTR T-cell product?
    - Obtain [***] patient blood samples from selected indications and patient populations, produce ACTR T-cells and test expansion and potency in vitro.

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EXHIBIT E-2
INITIAL RESEARCH PLAN FOR A2 ANTIGEN

[***]

In Vitro Phase

SGI will transfer to Unum:

1. The [***]lead mAbs ([***] mgs), and isotype control mAb (approximately [***] mgs)
2. Catalog number and source of the cell Lines to be used:

Sample Name	Cancer Type	Catalog Number	Source
[***]	[***]	[***]	[***]
[***]	[***]	[***]	[***]
[***]	[***]	[***]	[***]
[***]	[***]	[***]	[***]
[***]	[***]	[***]	[***]
[***]	[***]	[***]	[***]

3. Standard protocols for growth and expression analysis of target cells, including source and catalog numbers for appropriate target detection antibodies for flow cytometry.

Examples of assays run during this phase of work include (but are not limited to):

1. Reagent and cell line characterization for use in Unum assays – antibody physical integrity (gel); antibody concentration determination (UV); antibody detection with standard reagents (e.g. anti-IgG antibody); antibody binding to target (cell-surface, soluble if available); antibody binding specificity (e.g. target vs. non-target cell); target expression quantitation on cell lines
2. Characterization of mAb binding to ACTR – Dose titration of [***] mAbs on ACTR Jurkat cells (compare to historical binding data).
3. Characterization of [***] cell activation by mAb - Evaluate activation markers (flow cytometry) on ACTR-[***] cells + [***], +/-mAb (compare to historical data)
4. Characterize mAb activation of primary T-cells (from [***] healthy donors) —Cytotoxicity ([***]); Flow cytometry-based phenotype + target cancer cell lines, +/- mAb; Cytokine levels (IC) and release; Proliferation of primary T-cells (CSFE). Full panel of assays with multiple donors on up to [***] target cell lines with the option for confirmatory data on up to [***] cell lines total.

In Vivo Phase

SGI will transfer to Unum:

1. Approximately [***] mgs each of [***] lead mAb and isotype control
2. SOP for the xenograft models

Assays run during this phase of work include (but are not limited to):

1. Model development – determine cell number and growth kinetics for use in efficacy model (do we need to create a new luciferized model)
2. Test single high dose efficacy of mAb and ACTR combination and compare to controls (antibody isotype control and non-ACTR T-cell control)
3. Correlative studies include:
    i. T-cell activation (serum and cell)
    ii. T-cell proliferation
4. Test an additional in vivo model (e.g. [***])

Decision to proceed

Following the in vivo research phase, both companies will evaluate the data including activity and immunologic specificity and decide whether to proceed to clinical trials or to conduct further research.

Translational Phase

SGI and Unum will decide, jointly, which translational research questions are addressed and the extent to which they are investigated.

SGI will transfer to Unum:

Blood, tissues, cells, and protocols if possible.

Questions include:

- How does the level of target expression vary across patients, and what effect does this have on ACTR efficacy? Understand the relevant levels of receptor (number of receptors / cell) on cell from historical SGI data, or develop a new data set using quantitative FACS.
    - Across multiple BCMA positive cell lines run T-cell cytotoxicity assay with dose titration curve of [***] mAb
- Is there an expression threshold (a minimal expression level required for ACTR efficacy with a particular mAb)?
    - mRNA electroporation of [***] into a [***] cell, evaluate ACTR-Ab combination in T-cell cytotoxicity assay
- What potential combination therapies (e.g. targeted LMW, other protein therapeutics) would the patient population benefit from that work well, or are antagonistic to ACTR therapy?
    - Select a small subset of SOC and targeted therapies used in the indication and patient population of choice and combine with ACTR in vitro / in vivo assays.
- What contribution or effects of pervious therapy in a given patient population or disease burden have on mAb / ACTR T-cell product?
    - Obtain [***] patient blood samples from selected indications and patient populations, produce ACTR T-cells and test expansion and potency in vitro.

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EXHIBIT F
EXISTING UNUM BACKGROUND PATENTS

Application Number	Title	Filing Date
[***]	[***]	[***]
[***]	[***]	[***]
[***]	[***]	[***]
[***]	[***]	[***]
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EXHIBIT G
EXISTING SGI BACKGROUND PATENTS

Liv-1 Families

Case Number	Country	Application Number	Filing Date	Publication Number	Patent Number	Issue Date
[***]	[***]	[***]	[***]		[***]	[***]
[***]	[***]	[***]	[***]	[***]		
[***]	[***]	[***]	[***]	[***]		
[***]	[***]	[***]	[***]	[***]		
[***]	[***]	[***]	[***]	[***]		
[***]	[***]	[***]	[***]	[***]	[***]	[***]
[***]	[***]	[***]	[***]	[***]	[***]	[***]
[***]	[***]	[***]	[***]	[***]	[***]	[***]
[***]	[***]	[***]	[***]			
[***]	[***]	[***]	[***]			
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[***]	[***]	[***]	[***]			
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SEA Technology

Case Number	Country	Application Number	Filing Date	Publication Number	Patent Number	Issue Date
[***]	[***]	[***]	[***]			
[***]	[***]	[***]	[***]			
[***]	[***]	[***]	[***]			
[***]	[***]	[***]	[***]		[***]	[***]
[***]	[***]	[***]	[***]		[***]	[***]
[***]	[***]	[***]	[***]	[***]	[***]	[***]
[***]	[***]	[***]	[***]		[***]	[***]
[***]	[***]	[***]	[***]		[***]	[***]
[***]	[***]	[***]	[***]		[***]	[***]
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[***]	[***]	[***]	[***]			
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EXHIBIT H
PRESS RELEASE

FOR RELEASE: Monday, June 8, 2015

6:00 a.m. Pacific / 9:00 a.m. Eastern

Seattle Genetics and Unum Therapeutics Enter into Strategic Cancer Immunotherapy Collaboration

-Collaboration Combines Seattle Genetics' Expertise in Cancer Targets and Antibody-Based Therapies with Unum's Novel Antibody-Coupled T-cell Receptor (ACTR) Technology-

-Companies to Focus on the Development of Next Generation Cellular Immunotherapy Agents that Combine Unum's Universal T-cell Approach with Select Seattle Genetics Targets and Antibodies-

BOTHELL, WA and CAMBRIDGE, MA – June 8, 2015 – Seattle Genetics, Inc. (Nasdaq: SGEN) and Unum Therapeutics announced today that the two companies have entered into a strategic collaboration and license agreement to develop and commercialize novel antibody-coupled T-cell receptor (ACTR) therapies for cancer.

Unum's proprietary ACTR technology enables programming of a patient's T-cells to attack tumor cells when co-administered with tumor-specific therapeutic antibodies. Seattle Genetics, through its extensive work in the field of antibody-drug conjugates (ADCs), has a substantial portfolio of cancer targets and tumor-specific monoclonal antibodies from which programs will be selected for the collaboration.

"This collaboration is an exciting extension of our work over more than 17 years, empowering antibodies in order to provide new therapeutic options for cancer patients," said Clay B. Siegall, Ph.D., President and Chief Executive Officer of Seattle Genetics. "Unum's innovative technology for a universal, antibody-directed cellular immunotherapy is differentiated from other engineered T-cell approaches, and may have broad applicability across a range of cancer targets. We are pleased to be collaborating with one of the most promising companies in the emerging field of cellular immunotherapy to develop new treatment options for cancer patients with unmet medical needs."

"Unum's strategy is to develop and commercialize a universal cellular immunotherapy that can be used in combination with a variety of antibodies to attack a wide range of hematological and solid tumors," said Charles Wilson, Ph.D., President and Chief Executive Officer of Unum Therapeutics. "We believe that our unique approach has the potential to advance beyond the safety and efficacy limitations of current generation T-cell approaches. We are delighted to collaborate with Seattle Genetics in the development of ACTR therapies. Their leadership in antibody-based therapies and expertise in the development of cancer treatments will be invaluable as we work together to bring potentially breakthrough therapies to patients."

Under the terms of the agreement, Seattle Genetics will make an upfront payment of $25 million and an equity investment of $5 million in Unum's next round of private financing. The companies will initially develop two ACTR products incorporating Seattle Genetics' antibodies, and Seattle Genetics has an option to expand the collaboration to include a third ACTR product. Unum will conduct preclinical research and clinical development activities through phase 1 with funding from Seattle Genetics. The companies will work together to co-develop and jointly fund programs after phase 1 unless either company opts out. Seattle Genetics and Unum will co-commercialize and share profits 50/50 on any co-developed programs in the United States. Seattle Genetics will retain exclusive commercial rights outside of the United States, paying Unum high single to mid-double digit royalties on ex-U.S. sales. Potential option fee and progress-dependent milestone payments to Unum under the collaboration may total up to $615 million across all three ACTR programs.

As a result of the amounts paid up front and the additional development activities expected under this deal, Seattle Genetics will provide revised 2015 financial guidance in connection with announcing its second quarter financial results currently planned for July 30, 2015.

About ACTR Technology

ACTR is a chimeric protein that combines components from receptors normally found on two different human immune cell types – natural killer (NK) cells and T-cells – to create a novel cancer cell killing activity. T-cells bearing the ACTR receptor can be directed to attack tumor cells by providing a monoclonal antibody that binds to antigens on the cancer cell surface and then acts as a bridge to the ACTR T-cell, enabling tumor cell killing. Unum has built a platform for cancer treatment based upon ACTR. In contrast to other approaches that are limited to a single target and treat a narrow set of tumors, Unum's approach is not restricted by antigen and may have applications for treating many types of cancers.

About Seattle Genetics

Seattle Genetics is a biotechnology company focused on the development and commercialization of innovative antibody-based therapies for the treatment of cancer. Seattle Genetics is leading the field in developing antibody-drug conjugates (ADCs), a technology designed to harness the targeting ability of antibodies to deliver cell-killing agents directly to cancer cells. The company's lead product, ADCETRIS® (brentuximab vedotin) is a CD30-targeted ADC that, in collaboration with Takeda Pharmaceutical Company Limited, is commercially available for two indications in more than 55 countries, including the U.S., Canada, Japan and members of the European Union. Additionally, ADCETRIS is being evaluated broadly in more than 30 ongoing clinical trials in CD30-expressing malignancies. Seattle Genetics is also advancing a robust pipeline of clinical-stage programs, including SGN-CD19A, SGN-CD33A, SGN-LIV1A, SGN-CD70A, ASG-22ME, ASG-15ME and SEA-CD40. Seattle Genetics has collaborations for its ADC technology with a number of leading biotechnology and pharmaceutical companies, including AbbVie, Agensys (an affiliate of Astellas), Bayer, Genentech, GlaxoSmithKline and Pfizer. More information can be found at www.seattlegenetics.com.

About Unum Therapeutics

Unum Therapeutics uses proprietary T-cell engineering technology in combination with tumor-targeting antibodies to activate the body's own immune system to fight cancer. Unum's lead program, based on its Antibody-Coupled T-cell Receptor (ACTR) technology, recently entered Phase 1 clinical testing to assess safety and efficacy. Unum is seeking partners interested in using the ACTR technology to arm proprietary tumor-specific antibodies with a T-cell to improve their therapeutic potential. The company is headquartered in Cambridge, MA. For more information, visit www.unumrx.com.

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For Seattle Genetics:

Certain of the statements made in this press release are forward looking, such as those, among others, relating to the therapeutic potential of ACTR-based products. Actual results or developments may differ materially from those projected or implied in these forward-looking statements. Factors that may cause such a difference include the inability to show sufficient activity in clinical trials and the risk of adverse events as these programs advance in clinical trials. More information about the risks and uncertainties faced by Seattle Genetics is contained in the company's 10-Q for the quarter ended March 31, 2015 filed with the Securities and Exchange Commission. Seattle Genetics disclaims any intention or obligation to update or revise any forward-looking statements, whether as a result of new information, future events or otherwise.

# # #

CONTACTS

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ppinkston@seagen.com

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Unum Therapeutics:
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Sam Brown Inc.
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EXHIBIT I

EXPEDITED ARBITRATION

(a) If a Party exercises its rights under Sections 3.1(d), 3.2(c) or 3.2(d) to refer a dispute relating to the payment obligations for a Reversion Product (a "**Valuation Dispute**"), then the Parties will follow the expedited dispute resolution process in this Exhibit I (and not the dispute resolution process in Article 17 of this Agreement). The Parties agree and acknowledge that any good faith dispute under Sections 3.1(d), 3.2(c) or 3.2(d) will not be deemed to be a material breach of this Agreement.

(b) The Valuation Dispute will be submitted to fast-track, binding arbitration in accordance with the following:

(i) Arbitration will be conducted in Denver, Colorado under the rules of the American Arbitration Association ("**AAA**") for the resolution of commercial disputes in the most expedited manner permitted by such rules. The Parties will appoint a single arbitrator to be selected by mutual agreement. If the Parties are unable to agree on an arbitrator, the Parties will request that the AAA select the arbitrator; provided that (A) the selection of the arbitrator will not be negatively influenced by the geographic location of such arbitration, and (B) the Parties agree that they will reimburse the travel expenses for the arbitrator [***] so that the arbitrator may be selected from any geographic location in the United States. The arbitrator will be a professional in business or licensing experienced in the valuation of biopharmaceutical products with at least ten (10) years of experience in the pharmaceutical and life sciences industries, including the conduct research, development and commercialization collaborations. The cost of the arbitration will be borne equally by the Parties. Except in a proceeding to enforce the results of the arbitration or as otherwise required by Applicable Laws, neither Unum nor SGI nor any arbitrator may disclose the existence, content or results of any arbitration hereunder without the prior written agreement of Unum and SGI.

(ii) Within [***] days after such matter is referred to arbitration, each Party will provide the arbitrator with a proposal and written memorandum in support of its position regarding the Valuation Dispute, as well as documentary evidence in support thereof (each a "**Brief**") and the arbitrator will provide each Party's Brief to the other Party after it receives it from both Parties. Each Party's proposal will be required to comply with the requirements of Section 3.1(d)(ii) or Section 3.2(c)(ii), as applicable, regarding the last and best proposals.

(iii) Within [***] days after a Party submits its Brief, the other Party will have the right to respond thereto. The response and any material in support thereof will be provided to the arbitrator and the other Party.

(iv) The arbitrator will have the right to meet with the Parties as necessary to inform the arbitrator's determination and to perform independent research and analysis. Within [***] days of the receipt by the arbitrator of both Parties' responses, the arbitrator will deliver his/her decision regarding the Valuation Dispute in writing (i.e., the payment obligations that will apply to the Development and Commercialization of the applicable Reversion Product); provided that the arbitrator will select one of the resolutions proposed by the Parties (subject to the limitations relating to the last and best proposals as set forth in of Section 3.1(d)(ii) or Section 3.2(c)(ii), as applicable).

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FIRST AMENDMENT TO COLLABORATION AGREEMENT

This First Amendment to Collaboration Agreement (this "**Amendment**") is entered into as of October 31, 2017 (the "**Amendment Effective Date**"), by and between **UNUM THERAPEUTICS INC.**, a Delaware corporation having its principal place of business at 200 Cambridge Park Drive, Suite 3100, Cambridge, MA 02140 ("**Unum**"), and **SEATTLE GENETICS, INC.**, a Delaware corporation having a principal office at 21823 30th Drive SE, Bothell, WA 98021 ("**SGI**"). Capitalized terms used in this Amendment but not otherwise defined shall have the meanings ascribed to such terms in the Agreement (as defined below).

WHEREAS, Unum and SGI are parties to that certain Collaboration Agreement dated as of June 7, 2015 (the "**Agreement**"); and

WHEREAS, Unum and SGI desire to amend the Agreement as provided herein.

NOW, THEREFORE, in consideration of the mutual provisions and covenants herein, the receipt and sufficiency of which are hereby acknowledged, Unum and SGI hereby agree as follows:

1. Pursuant to Section 1.72, the Parties acknowledge and agree that [***] pursuant to its terms. Notwithstanding the foregoing, the Parties agree to extend the Exchange Period for the A2 Antigen for the period commencing as of [***] and ending on [***].
2. Except as amended by this Amendment, the Agreement shall remain in full force and effect in accordance with the terms thereof.
3. This Amendment and any disputes between the Parties relating to the subject matter of this Amendment shall be construed and the respective rights of the Parties determined as provided in Article 17 of the Agreement, *mutatis mutandis*.
4. This Amendment may be executed in one (1) or more counterparts, each of which will be deemed an original, but all of which together will constitute one and the same instrument.

[SIGNATURE PAGE FOLLOWS]

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IN WITNESS WHEREOF, Unum and SGI have caused this Amendment to be executed by their respective authorized representatives as of the Amendment Effective Date.

SEATTLE GENETICS, INC.

BY: /s/ Dennis Benjamin
NAME: Dennis Benjamin
TITLE: VP Translational Research

UNUM THERAPEUTICS, INC.

BY: /s/ Christiana Stamoulis
NAME: Christiana Stamoulis
TITLE: CFO and Head of Corporate Development