Filed pursuant to Rule 424(b)(4)
Registration No. 333-224163

Prospectus

5,000,000 Shares

UNITY BIOTECHNOLOGY

Common Stock

This is the initial public offering of shares of common stock by Unity Biotechnology, Inc.

Prior to this offering, there has been no public market for our common stock. The initial public offering price of our common stock is $17.00 per share.

Our common stock will trade on The Nasdaq Global Select Market under the symbol “UBX.”

We are an “emerging growth company” as defined under the federal securities laws and, as such, have elected to comply with certain reduced reporting requirements for this prospectus and may elect to do so in future filings.

Investing in our common stock involves risks. See the section titled “Risk Factors” beginning on page 12 to read about factors you should consider before buying shares of our common stock.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities, or passed upon the accuracy or adequacy of this prospectus. Any representation to the contrary is a criminal offense.

	Per Share	Total
Initial public offering price	$ 17.00	$85,000,000
Underwriting discounts(1)	$ 1.19	$ 5,950,000
Proceeds to Unity Biotechnology, Inc., before expenses	$ 15.81	$79,050,000

(1) See the section titled “Underwriting” for additional information regarding compensation payable to the underwriters.

To the extent that the underwriters sell more than 5,000,000 shares of common stock, the underwriters have the option to purchase up to an additional 750,000 shares from us at the initial public offering price less the underwriting discount.

The underwriters expect to deliver the shares against payment in New York, New York on May 7, 2018.

Goldman Sachs & Co. LLC **Morgan Stanley** **Citigroup**

Mizuho Securities

Prospectus dated May 2, 2018.

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Prospectus

Through and including May 27, 2018 (the 25th day 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 is in addition to a dealer's obligation to deliver a prospectus when acting as an underwriter and with respect to an unsold allotment or subscription.

We and the underwriters have not authorized anyone to provide you any information other than that contained in this prospectus or in 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 not making an offer to sell these securities in any jurisdiction where the offer or sale is not permitted. You should assume that the information appearing in this prospectus is accurate only as of the date on the front cover of this prospectus. Our business, financial condition, results of operations and prospects may have changed since that date.

For investors outside of the United States: we have not and the underwriters have not done anything that would permit this offering or possession or distribution of this prospectus in any jurisdiction where action for that purpose is required, other than the United States. Persons outside of the United States who come into possession of this prospectus must inform themselves about, and observe any restrictions relating to, the offering of the shares of common stock and the distribution of this prospectus outside of the United States.

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 deciding to invest in our common stock, you should read this entire prospectus carefully, including the sections of this prospectus entitled "Risk Factors" and "Management's Discussion and Analysis of Financial Condition and Results of Operations" and our financial statements and related notes contained elsewhere in this prospectus. Unless the context otherwise requires or as otherwise noted, references in this prospectus to the "company," "Unity Biotechnology," "Unity," "we," "us" and "our" refer to Unity Biotechnology, Inc.

Unity Biotechnology, Inc.

Overview

Our mission is to extend human healthspan. We define healthspan, or healthy longevity, as the period of one's life unburdened by the diseases of aging. Enabled by foundational scientific insights, we have devoted over six years to identifying multiple mechanisms that we believe to be root causes of age-associated disease. We are utilizing these insights to develop a broad portfolio of drug candidates to treat these diseases of aging, and we plan to initiate our first clinical study of our lead drug candidate in the second quarter of 2018.

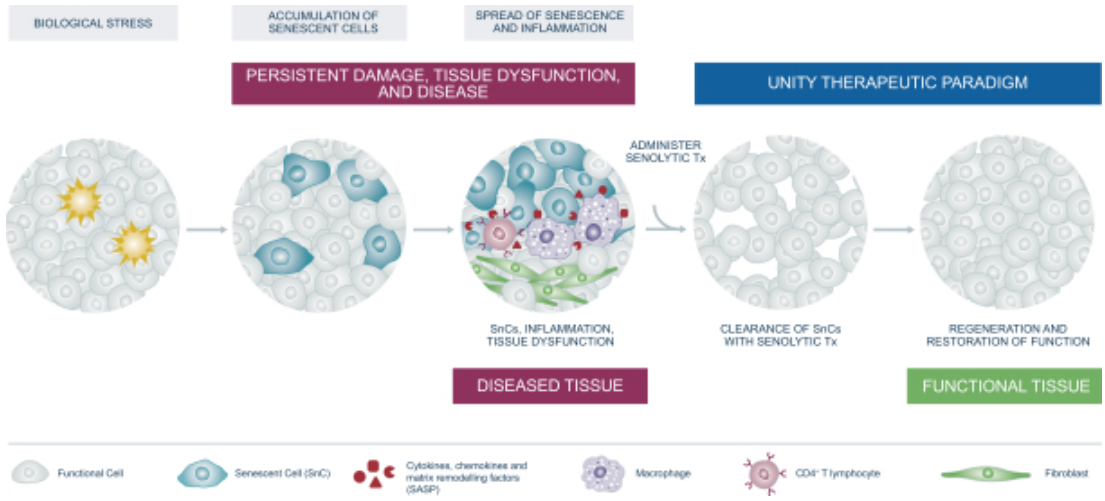
Age-associated diseases such as arthritis, vision loss, and cognitive decline cause considerable economic, personal, and societal burden. These diseases negatively impact quality of life, are typically chronic, and progress from the time of onset until death. It is estimated that providing healthcare for people over the age of 65 costs four to five times more than for younger individuals. According to the Centers for Disease Control and Prevention, this elderly population of Americans is expected to nearly double by 2050, increasing the economic burden of aging dramatically. Any success increasing longevity without treating underlying diseases of aging would only serve to increase this burden.

Over the last three decades, knowledge of the fundamental mechanisms of aging has advanced considerably. As a result of these advances, aging is no longer characterized as a single, over-arching process but rather as multiple biological and cellular processes working concurrently. We now have evidence that one of these mechanisms, the accumulation of senescent cells, is a major driver of many common age-associated diseases. The selective elimination of these cells extends both the healthspan and lifespan of animals, as we have demonstrated in preclinical studies published in *Nature* ("Naturally occurring P16Ink4a-positive cells shorten healthy lifespan," *Nature* (2016) and "Clearance of p16Ink4a-positive senescent cells delays ageing associated disorders," *Nature* (2011)) and *Science* ("Senescent intimal foam cells are deleterious at all stages of atherosclerosis," *Science* (2016)). In particular, in 2011, one of our scientific co-founders demonstrated that mice allowed to accumulate senescent cells aged more rapidly, and that the elimination of these accumulated cells blunted multiple aspects of aging. In 2016, another one of our scientific co-founders demonstrated that molecules able to selectively eliminate senescent cells, or senolytic molecules, could potentially blunt the senescence-driven effects of the cardiovascular disease atherosclerosis. *Science* listed these findings among the top breakthroughs of 2011 and 2016.

Cellular Senescence

Cellular senescence is a natural biological state in which a cell permanently halts division. As senescent cells accumulate with age, they begin secreting large quantities of more than 100 proteins,

including inflammatory factors, proteases, fibrotic factors, and growth factors that disturb the tissue micro-environment. This collection of secreted proteins is referred to as the Senescence Associated Secretory Phenotype, or SASP. In addition to its effects on tissue function, the SASP contains factors that induce senescence in neighboring cells, setting off a cascade of events that culminates in the formation of the functionally aged and/or diseased tissue that underlies a variety of age-associated diseases. Senolytic medicines selectively eliminate senescent cells and stop the production of the SASP at its source, which we believe addresses a root cause of these diseases. As a result, we believe senolytic medicines could have a more durable impact on disease and could slow, halt, or reverse particular diseases of aging. The figure below illustrates the process through which the accumulation of senescent cells and accompanying SASP factors affect tissue function and our therapeutic approach.



Our Pipeline

We are developing a portfolio of programs targeting specific biological mechanisms implicated in diseases of aging. Our core therapeutic approach targets cellular senescence, and we are currently advancing programs in musculoskeletal, ophthalmologic, and pulmonary disorders. Our clinical development strategy is initially focused on the development of senolytic medicines designed to be administered locally into diseased tissue. After demonstrating efficacy in indications amenable to localized therapy, we plan to pursue the development of senolytic medicines that could be administered systemically to treat additional diseases of aging, such as kidney, liver, and heart disease. In addition to our efforts to eliminate senescent cells, we are also advancing other programs with the potential to extend human healthspan, including the administration of circulating youth factors and the enhancement of mitochondrial health.

Our current pipeline of programs is illustrated below:

Within our cellular senescence programs, our lead senolytic molecules, UBX0101 and UBX1967, designed for local treatment for the removal of accumulated senescent cells, are described below:

- UBX0101 is our lead drug candidate for musculoskeletal disease with an initial focus on osteoarthritis. This drug candidate is a potent senolytic small molecule inhibitor of the MDM2/p53 protein interaction. Disruption of this protein interaction can trigger the elimination of senescent cells. Our investigational new drug, or IND, application for UBX0101 was cleared by the U.S. Food and Drug Administration, or FDA, in April 2018, and we plan to initiate a Phase 1 clinical study in osteoarthritis in the second quarter of 2018. We expect to receive data from this clinical study in the first quarter of 2019.
- UBX1967 is our lead drug candidate for ophthalmologic diseases. This drug candidate is a potent senolytic small molecule inhibitor of specific members of the Bcl-2 family of apoptosis regulatory proteins. Senescent cells utilize pro-survival mechanisms to remain viable and rely on specific Bcl-2 protein family members to persist and accumulate in tissues. We plan to submit our IND application and commence a Phase 1 clinical study in an ophthalmologic indication in the second half of 2019.

In addition to the above, we expect to file one additional IND application in the second half of 2019 for a Phase 1 clinical study in either an additional ophthalmologic indication or an initial pulmonary indication. We retain worldwide rights to UBX0101 and have an option to an exclusive license for UBX1967 pursuant to our compound library and option agreement with Ascentage Pharma Group Corp. Ltd. See “Business—Licenses and Collaborations.”

Advantages of Our Approach

We believe that senolytic medicines—medicines that selectively eliminate senescent cells from diseased tissues—may have four advantages over other efforts to treat age-associated diseases:

- ***Senolytic medicines target a root cause of diseases of aging.*** Unlike treatments that inhibit the activity of a single factor (such as antibodies targeting single pro-inflammatory proteins), we believe a senolytic medicine that selectively eliminates accumulated senescent

cells and their associated SASP could simultaneously blunt the activity of numerous factors contributing to disease.

- ***Senolytic medicines are dosed intermittently.*** The administration of senolytic medicines would remove senescent cells from diseased tissue. As new senescent cells may take months or even years to re-accumulate, senolytic medicines could potentially be dosed infrequently. We believe that intermittent dosing may improve drug tolerability and patient adherence when compared to chronic therapies.
- ***Senescent cells accumulate at sites of disease, simplifying multiple aspects of clinical development.*** Our ability to quantify senescent cells and accompanying SASP factors in sites of disease may simplify clinical development through targeted indication selection, patient selection, and monitoring of therapeutic response.
- ***Senolytic medicines restore tissues to a healthy state.*** We believe senescent cells generally do not accumulate in young individuals and that the accumulation of senescent cells is unnecessary for normal tissue function. Our goal for the administration of senolytic medicines is to restore tissue to a functionally younger state.

We have secured our lead position in the discovery and development of senolytic medicines through our commitment to fundamental biological research and translational science. We have partnered with key academics and thought leaders to pursue areas of emerging aging science. We continue to recruit top tier scientists with the desire and drive to understand, uncover, and invent. We invest a significant proportion of resources and effort in emerging fields of aging science in order to transition fundamental scientific observations to the design and development of new therapeutics. We believe that we have built the internal research capabilities and scientific network to continue to be at the forefront of extending human healthspan.

Our Team

We have assembled an executive team of scientific, clinical, and business leaders with broad expertise in biotechnology. Our co-founder and President, Nathaniel (Ned) E. David, Ph.D., is a biochemist and experienced entrepreneur, having founded four biotechnology companies. Our Chief Executive Officer, Keith R. Leonard Jr., M.S., M.B.A., was CEO of KYTHERA Biopharmaceuticals from its founding through its acquisition in 2015 and held numerous leadership roles over thirteen years at Amgen. Our Chief Medical Officer, Jamie Dananberg, M.D., has held leadership roles at Takeda Pharmaceuticals and Eli Lilly & Co. and has overseen the development of eight FDA-approved products. Our Chief Scientific Officer, Daniel G. Marquess, D.Phil., served as Vice President and Head of Medicinal Chemistry at Theravance Biopharma. We have approximately 70 employees, over 65% of whom hold advanced degrees.

We have built a strong culture of teamwork with emphasis on external collaboration, providing us with access to rapidly-evolving science. We maintain more than a dozen active early-stage research and discovery focused collaborations with leading external academic institutions, including: the Buck Institute for Research on Aging; Massachusetts General Hospital; Mayo Clinic; the Medical Research Council (MRC, Imperial College); The University of California, San Francisco; and Yale University.

Our Strategy

To achieve our objective of building Unity into a leading healthspan company, we focus on two parallel efforts. First, we are committed to developing senolytic medicines that slow, halt, or reverse specific diseases of aging. Second, we dedicate significant resources and effort to better understand

additional fundamental aging mechanisms and translate these insights into human medicines. To achieve these core objectives we intend to:

- ***Demonstrate in our clinical studies that local treatment with senolytic medicines can alter the course of an age-associated disease***. If we prove that local treatment with senolytic medicines can slow, halt, or reverse aspects of aging, we will be well-positioned to expand upon that success with numerous additional applications.
- ***Continue research into the development of systemic senolytic medicines***. In order to realize the full potential of senolysis, we intend to explore the development of systemic senolytic medicines using multiple modalities, including small molecules and biologics.
- ***Target aging mechanisms beyond cellular senescence***. In order to achieve our broader goal of extending human healthspan, we will continue to conduct fundamental research into additional aging mechanisms beyond cellular senescence, including loss of circulating youth factors and mitochondrial dysfunction.
- ***Leverage our core science and biotechnology experience***. We strive to attract, retain, and incentivize a unique team with significant strengths and experience in basic science, biotechnology, medicinal chemistry, and clinical development. Over the last six years, our team has identified multiple mechanisms that can selectively eliminate senescent cells, created potent senolytic molecules, and developed proprietary animal models to monitor senescent cell clearance.
- ***Opportunistically expand our product portfolio***. Our internal research has identified multiple biological pathways that are potential targets for diseases of aging. We will search for opportunities for potential in-licensing of novel medicines with rapid access to clinical development.
- ***Continue to build a robust and defensible patent portfolio***. We are an innovative biotechnology company focused on developing novel insights into the biology and diseases of aging. We intend to continue to aggressively develop, file, and pursue patent protection for our innovative technologies.

Risks Associated with Our Business

Our ability to implement our business strategy is subject to numerous risks that you should be aware of before making an investment decision. These risks are described more fully in the section entitled ‘‘Risk Factors,’’ immediately following this prospectus summary. These risks include the following, among others:

- We are a preclinical-stage biopharmaceutical company with a limited operating history and no products approved for commercial sale. We have incurred significant losses since our inception, and we anticipate that we will continue to incur losses for the foreseeable future, which, together with our limited operating history, make it difficult to assess our future viability.
- We will require substantial additional financing to achieve our goals, and a failure to obtain this capital when needed on acceptable terms, or at all, could force us to delay, limit, reduce or terminate our product development, other operations or commercialization efforts.
- Our core therapeutic approach to extending human healthspan is based on our understanding of cellular senescence. Utilizing senolytic molecules to treat age-associated diseases is a novel therapeutic approach, which exposes us to unforeseen risks and makes it difficult to predict the time and cost of drug development and potential for regulatory approval.

- Our business is dependent on the successful development, regulatory approval, and commercialization of our drug candidates, all of which are in early stages of development and none of which have been tested in a human subject.
- We may be unable to obtain regulatory approval for our drug candidates under applicable regulatory requirements. The denial or delay of any such approval would delay commercialization of our drug candidates and adversely impact our potential to generate revenue, our business and our results of operations.
- Clinical development involves a lengthy and expensive process with an uncertain outcome, and results of earlier studies and trials may not be predictive of future trial results.
- It may be many years, if ever, before we develop senolytic medicines capable of systemic administration to treat systemic diseases of aging.
- We rely on third parties in the conduct of all of our preclinical studies and intend to rely on third parties in the conduct of all of our future clinical studies. If these third parties do not successfully carry out their contractual duties, fail to comply with applicable regulatory requirements or meet expected deadlines, we may be unable to obtain regulatory approval for our drug candidates.
- If we are unable to obtain, maintain and enforce intellectual property protection directed to our senolytic medicine platform and any future technologies that we develop, others may be able to make, use, or sell products substantially the same as ours, which could adversely affect our ability to compete in the market.
- Our stock price may be volatile and you may not be able to resell shares of our common stock at or above the price you paid.

Corporate Information

We were founded on March 30, 2009, as a Delaware corporation under the name Forge, Inc. On January 28, 2015, we changed our name to Unity Biotechnology, Inc. Our principal executive offices are located at 3280 Bayshore Blvd., Suite 100, Brisbane, California 94005, and our telephone number is (650) 416-1192. Our website address is www.unitybiotechnology.com. The information on, or that can be accessed through, our website is not part of this prospectus. We have included our website address as an inactive textual reference only.

Unity Biotechnology and our logo are some of our trademarks used in this prospectus. This prospectus also includes trademarks, tradenames, and service marks that are the property of other organizations. Solely for convenience, our trademarks and tradenames referred to in this prospectus may appear without the ® and ™ symbol, but those references are not intended to indicate, in any way, that we will not assert, to the fullest extent under applicable law, our rights, or the right of the applicable licensor to these trademarks and tradenames.

Implications of Being an Emerging Growth Company

We are an emerging growth company as defined in the Jumpstart Our Business Startups Act of 2012, or the JOBS Act. We will remain an emerging growth company until the earlier of (1) the last day of the year following the fifth anniversary of the consummation of this offering, (2) the last day of the year in which we have total annual gross revenue of at least $1.07 billion, (3) the last day of the year in which we are deemed to be a “large accelerated filer” as defined in Rule 12b-2 under the Securities Exchange Act of 1934, as amended, or the Exchange Act, which would occur if the market value of our common stock held by non-affiliates exceeded $700.0 million as of the last business day of the second

fiscal quarter of such year or (4) the date on which we have issued more than $1.0 billion in non-convertible debt securities during the prior three-year period. An emerging growth company may take advantage of specified reduced reporting requirements and is relieved of certain other significant requirements that are otherwise generally applicable to public companies. As an emerging growth company:

- We will present only two years of audited financial statements, plus unaudited condensed financial statements for any interim period, and related management's discussion and analysis of financial condition and results of operations;
- We will avail ourselves of the exemption from the requirement to obtain an attestation and report from our auditors on the assessment of our internal control over financial reporting pursuant to the Sarbanes-Oxley Act of 2002, or Sarbanes Oxley;
- We will provide less extensive disclosure about our executive compensation arrangements; and
- We will not require stockholder non-binding advisory votes on executive compensation or golden parachute arrangements.

In addition, under the JOBS Act, emerging growth companies can delay adopting new or revised accounting standards until such time as those standards apply to private companies. We have elected to avail ourselves of the extended transition period for complying with new or revised financial accounting standards. As a result of the accounting standards election, we will not be subject to the same implementation timing for new or revised accounting standards as other public companies that are not emerging growth companies which may make comparison of our financials to those of other public companies more difficult. Additionally, because we have taken advantage of certain reduced reporting requirements, the information contained herein may be different from the information you receive from other public companies in which you hold stock.

THE OFFERING

Issuer	Unity Biotechnology, Inc.
Common stock offered by us	5,000,000 shares.
Common stock to be outstanding after the offering	41,903,538 shares (or 42,653,538 shares if the underwriters exercise their option to purchase additional shares in full).
Underwriters' option to purchase additional shares	750,000 shares.
Use of proceeds	We estimate that the net proceeds from this offering will be approximately $76.1 million, or approximately $87.9 million if the underwriters exercise their option to purchase additional shares in full, at the initial public offering price of $17.00 per share, after deducting the underwriting discounts and commissions and estimated offering expenses payable by us. We currently expect to use the net proceeds from this offering to fund our clinical development of UBX0101, our planned IND-enabling studies and Phase 1 clinical studies of UBX1967, internal research and development activities and for working capital and general corporate purposes. See "Use of Proceeds" on page 63 for a more complete description of the intended use of proceeds from this offering.
Risk factors	See "Risk Factors" beginning on page 12 and other information included in this prospectus for a discussion of factors that you should consider carefully before deciding to invest in our common stock.
Directed Share Program	Certain friends and family of our directors and officers and certain of our other employees and their friends and family have agreed to purchase 109,200 shares of our common stock in this offering at the initial public offering price in a directed share program. The underwriters will receive the same underwriting discount on the shares purchased by these persons and entities as they will on the other shares sold to the public in this offering. See "Underwriting" beginning on page 184.
Proposed Nasdaq Global Select Market symbol	"UBX"

The number of shares of common stock to be outstanding after this offering is based on 4,830,389 shares of common stock outstanding as of December 31, 2017, and includes an aggregate of 28,159,724 shares of common stock issuable upon conversion of our outstanding Series A-1, Series A-2 and Series B convertible preferred stock as of December 31, 2017 and 3,913,425 shares of common stock issuable upon conversion of our Series C convertible preferred stock issued in March and April 2018, and excludes the following:

- 4,365,694 shares of our common stock issuable upon the exercise of stock options to purchase common stock that were outstanding as of December 31, 2017, with a weighted average exercise price of $3.07 per share;
- 918,595 shares of our common stock reserved for issuance pursuant to future awards under our 2013 Equity Incentive Plan, or the Plan, and associated amendments as of December 31, 2017;
- 96,610 shares of our common stock issuable upon the exercise of an outstanding warrant with an exercise price of $0.18 per share;
- 763,501 shares of our common stock issuable upon the exercise of outstanding convertible preferred stock warrants with a weighted-average exercise price of $0.65 per share;
- 739,551 shares of our common stock that we may be obligated to issue under our license agreements;
- 4,289,936 shares of common stock reserved for issuance pursuant to future awards under our 2018 Equity Incentive Award Plan, as well as any automatic increases in the number of shares of our common stock reserved for future issuance under this plan, which became effective upon the effectiveness of the registration statement to which this prospectus relates; and
- 536,242 shares of common stock reserved for issuance pursuant to future awards under our Employee Stock Purchase Plan, as well as any automatic increases in the number of shares of our common stock reserved for future issuance under this plan, which became effective upon the effectiveness of the registration statement to which this prospectus relates.

In addition, unless we specifically state otherwise, all information in this prospectus assumes:

- a 1-for-2.95 reverse stock split of our capital stock, which we effected on April 20, 2018;
- the conversion of all shares of our outstanding convertible preferred stock into an aggregate of 32,073,149 shares of common stock immediately prior to the consummation of this offering;
- the filing and effectiveness of our amended and restated certificate of incorporation in Delaware and the adoption of our amended and restated bylaws, each of which will occur immediately prior to the consummation of this offering;
- no exercise of outstanding stock options or warrants subsequent to December 31, 2017; and
- no exercise of the underwriters' option to purchase additional shares of common stock.

Unless otherwise specified and unless the context otherwise requires, we refer to our Series A-1, Series A-2, and Series B, convertible preferred stock outstanding at December 31, 2017 and Series C convertible preferred stock issued in March and April 2018 collectively as "convertible preferred stock" or "preferred stock" in this prospectus, as well as for financial reporting purposes and in the financial tables included in this prospectus, as more fully explained in Note 11 and Note 17 to our audited financial statements included in this prospectus.

SUMMARY FINANCIAL DATA

The following tables present summary financial data for our business. We derived the statements of operations data for the years ended December 31, 2016 and 2017, from our audited financial statements appearing elsewhere in this prospectus. Our historical results are not necessarily indicative of the results that may be expected in the future. You should read this data together with our financial statements and related notes appearing elsewhere in this prospectus and the information under the captions "Selected Financial Data" and "Management's Discussion and Analysis of Financial Condition and Results of Operations."

	Year Ended December 31,	
	2016	2017
	(in thousands, except share and per share data)	
Summary of Operations Data:		
Contribution revenue	$ —	$ 1,382
Operating expenses:		
Research and development	13,707	37,373
General and administrative	5,137	9,617
Total operating expenses	18,844	46,990
Loss from operations	(18,844)	(45,608)
Loss on extinguishment of promissory notes	(9,377)	—
Interest income (expense), net	(2,183)	1,055
Other expense, net	—	(103)
Net loss	$ (30,404)	$ (44,656)
Net loss per share, basic and diluted(1)	$ (11.42)	$ (13.97)
Weighted average number of shares used in computing net loss per share, basic and diluted(1)	2,662,841	3,197,516
Pro forma net loss per share, basic and diluted(1)		$ (1.49)
Weighted average number of shares used in computing pro forma net loss per share, basic and diluted(1)		30,039,385

(1) See Notes 2 and 14 to our audited financial statements for an explanation of the calculations of our basic and diluted net loss per common share, pro forma net loss per common share, and the weighted-average number of common shares used in the computation of the per share amounts.

The table below presents our balance sheet data as of December 31, 2017:

- on an actual basis;
- on a pro forma basis to give effect to: (i) the sale and issuance in March and April 2018 of 3,913,425 shares of our Series C convertible preferred stock at $15.3317 per share for net proceeds of $59.9 million, (ii) the conversion of all shares of our outstanding Series A-1, Series A-2, Series B and Series C convertible preferred stock into an aggregate of 32,073,149 shares of common stock immediately prior to the consummation of this offering; and (iii) the filing and effectiveness of our amended and restated certificate of incorporation, which will occur, in each case, immediately prior to the consummation of this offering; and
- on a pro forma as adjusted basis to give further effect to the sale of 5,000,000 shares of common stock in this offering at the initial public offering price of $17.00 per share,

after deducting the underwriting discounts and commissions and estimated offering expenses payable by us.

	As of December 31, 2017		
	Actual	Pro Forma	Pro Forma As Adjusted
		(In thousands)	
Balance Sheet Data:			
Cash and cash equivalents	$ 7,298	$ 67,178	$ 143,228
Marketable securities	84,330	84,330	84,330
Working capital	80,983	140,863	216,913
Total assets	102,024	161,904	237,954
Convertible preferred stock	173,956	—	—
Accumulated deficit	(86,880)	(86,880)	(86,880)
Total stockholders' (deficit) equity	(83,113)	150,723	226,773

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 have a material adverse effect on our business, results of operations, financial condition and 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 may also impair our business operations.

Risks Related to Our Limited Operating History, Financial Condition, and Capital Requirements

We are a preclinical-stage biopharmaceutical company with a limited operating history and no products approved for commercial sale. We have incurred significant losses since our inception, and we anticipate that we will continue to incur losses for the foreseeable future, which, together with our limited operating history, make it difficult to assess our future viability.

We are a preclinical-stage biopharmaceutical company with a limited operating history. Biopharmaceutical product development is a highly speculative undertaking and involves a substantial degree of risk. We have not yet sought approval for commercial sale of any products and therefore have no products approved for commercial sale and have not generated any revenue from contracts with customers and have incurred losses in each year since our inception in March 2009. We have only a limited operating history upon which you can evaluate our business and prospects. In addition, we have limited experience and have not yet demonstrated an ability to successfully overcome many of the risks and uncertainties frequently encountered by companies in new and rapidly evolving fields, particularly in the biopharmaceutical industry. We only recently received clearance from the U.S. Food and Drug Administration, or FDA, of an Investigational New Drug, or IND, application for one of our lead drug candidates, UBX0101, a senolytic small-molecule inhibitor of MDM2/p53, and we have not yet initiated clinical studies for any of our drug candidates.

We have had significant operating losses since our inception. Our net loss for the years ended December 31, 2016 and 2017, was approximately $30.4 million and $44.7 million, respectively. As of December 31, 2017, we had an accumulated deficit of $86.9 million. Substantially all of our losses have resulted from expenses incurred in connection with our research and development programs and from general and administrative costs associated with our operations. We expect to continue to incur losses for the foreseeable future, and we anticipate these losses will increase as we continue to develop our drug candidates, conduct clinical studies and pursue research and development activities. Even if we achieve profitability in the future, we may not be able to sustain profitability in subsequent periods. Our prior losses, combined with expected future losses, have had and will continue to have an adverse effect on our stockholders' equity and working capital.

We will require substantial additional financing to achieve our goals, and a failure to obtain this capital when needed on acceptable terms, or at all, could force us to delay, limit, reduce or terminate our product development, other operations or commercialization efforts.

Since our inception, we have invested a significant portion of our efforts and financial resources in research and development activities. Preclinical studies and clinical studies for our drug candidates and additional research and development activities to discover and develop new drug candidates will require substantial funds to complete. As of December 31, 2017, we had capital resources consisting of cash, cash equivalents, and marketable securities of $91.6 million. In March and April 2018, we received net proceeds of $59.9 million from the sale and issuance of shares of our Series C convertible preferred stock. We believe that we will continue to expend substantial resources for the foreseeable

future in connection with the preclinical and clinical development of our lead drug candidates, UBX0101 and UBX1967, and the discovery and development of any other drug candidates we may choose to pursue. These expenditures will include costs associated with conducting preclinical studies and clinical studies, obtaining regulatory approvals, and manufacturing and supply, as well as marketing and selling any products approved for sale. In addition, other unanticipated costs may arise. Because the outcome of any preclinical study or clinical study is highly uncertain, we cannot reasonably estimate the actual amounts necessary to successfully complete the development and commercialization of our lead drug candidates or any future drug candidates.

We expect our existing capital resources, together with the proceeds from the offering will fund our planned operating expenses into 2021. However, our operating plans may change as a result of many factors currently unknown to us, and we may need to seek additional funds sooner than planned, through public or private equity or debt financings or other sources, such as strategic collaborations. Such financing may result in dilution to stockholders, imposition of burdensome debt covenants and repayment obligations, or other restrictions that may affect our business. In addition, we may seek additional capital due to favorable market conditions or strategic considerations even if we believe we have sufficient funds for our current or future operating plans.

Our future capital requirements depend on many factors, including:

- the scope, progress, results and costs of researching and developing UBX0101, UBX1967 or any other drug candidates, and conducting preclinical studies and clinical studies, including our planned Phase 1 clinical study of UBX0101, which we expect to initiate in the second quarter of 2018;
- the timing of, and the costs involved in, obtaining regulatory approvals for our lead drug candidates or any future drug candidates;
- the number and characteristics of any additional drug candidates we develop or acquire;
- the timing and amount of any milestone payments we are required to make pursuant to our license agreements;
- the cost of manufacturing our lead drug candidates or any future drug candidates and any products we successfully commercialize;
- the cost of building a sales force in anticipation of product commercialization;
- the cost of commercialization activities if our lead drug candidates or any future drug candidates are approved for sale, including marketing, sales and distribution costs;
- our ability to maintain existing, and establish new, strategic collaborations, licensing or other arrangements and the financial terms of any such agreements, including the timing and amount of any future milestone, royalty or other payments due under any such agreement;
- any product liability or other lawsuits related to our products;
- the expenses needed to attract, hire and retain skilled personnel;
- the costs associated with being a public company;
- the costs involved in preparing, filing, prosecuting, maintaining, defending and enforcing our intellectual property portfolio; and
- the timing, receipt and amount of sales of any future approved products, if any.

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

- delay, limit, reduce or terminate preclinical studies, clinical studies or other development activities for our lead drug candidates or any future drug candidate;

- delay, limit, reduce or terminate our research and development activities; or
- delay, limit, reduce or terminate our efforts to establish manufacturing and sales and marketing capabilities or other activities that may be necessary to commercialize our lead drug candidates or any future drug candidate, or reduce our flexibility in developing or maintaining our sales and marketing strategy.

We also could be required to seek funds through arrangements with collaborators or others that may require us to relinquish rights to some of our technologies or drug candidates that we would otherwise pursue on our own. We do not expect to realize revenue from sales of products or royalties from licensed products in the foreseeable future, if at all, and unless and until our drug candidates are clinically tested, approved for commercialization and successfully marketed. To date, we have primarily financed our operations through the sale of debt and equity securities. We will be required to seek additional funding in the future and currently intend to do so through collaborations, public or private equity offerings or debt financings, credit or loan facilities or a combination of one or more of these funding sources. Our ability to raise additional funds will depend on financial, economic and other factors, many of which are beyond our control. Additional funds may not be available to us on acceptable terms or at all. If we raise additional funds by issuing equity securities, our stockholders will suffer dilution and the terms of any financing may adversely affect the rights of our stockholders. In addition, as a condition to providing additional funds to us, future investors may demand, and may be granted, rights superior to those of existing stockholders. Debt financing, if available, is likely to involve restrictive covenants limiting our flexibility in conducting future business activities, and, in the event of insolvency, debt holders would be repaid before holders of our equity securities received any distribution of our corporate assets.

Due to the significant resources required for the development of our drug candidates, we must prioritize development of certain drug candidates and/or certain disease indications. We may expend our limited resources on candidates or indications that do not yield a successful product and fail to capitalize on drug candidates or indications that may be more profitable or for which there is a greater likelihood of success.

We plan to develop a pipeline of drug candidates to treat age-associated diseases and extend human healthspan. We are currently developing multiple senolytic molecules to address a variety of age-associated diseases, including musculoskeletal, ophthalmologic and pulmonary disorders. In addition, we are pursuing other aging mechanisms, such as loss of circulating youth factors and mitochondrial dysfunction, which also have the potential to reduce the damaging effects of age. We seek to maintain a process of prioritization and resource allocation among our programs to maintain a balance between aggressively advancing lead programs in identified indications and exploring additional indications or mechanisms to effect diseases of aging. However, due to the significant resources required for the development of our drug candidates, we must focus on specific diseases and disease pathways and decide which drug candidates to pursue and the amount of resources to allocate to each. Our near-term objective is to demonstrate in our clinical studies that local treatment with senolytic molecules can alter the course of an age-associated disease. To accomplish this goal, we submitted our IND application in March 2018, which was cleared by the FDA in April 2018, and we plan to initiate a Phase 1 clinical study of UBX0101 in osteoarthritic patients in the second quarter of 2018. In addition, we plan to submit our IND application and commence a Phase 1 clinical study of UBX1967 in an ophthalmologic indication in the second half of 2019.

Our decisions concerning the allocation of research, development, collaboration, management and financial resources toward particular drug candidates or therapeutic areas may not lead to the development of any viable commercial product and may divert resources away from better opportunities. Similarly, our potential decisions to delay, terminate or collaborate with third parties in respect of certain programs may subsequently also prove to be suboptimal and could cause us to miss

valuable opportunities. If we make incorrect determinations regarding the viability or market potential of any of our programs or drug candidates or misread trends in the aging or healthspan or biopharmaceutical industry, our business, financial condition and results of operations could be materially adversely affected. As a result, we may fail to capitalize on viable commercial products or profitable market opportunities, be required to forego or delay pursuit of opportunities with other drug candidates or other diseases and disease pathways that may later prove to have greater commercial potential than those we choose to pursue, or relinquish valuable rights to such drug candidates through collaboration, licensing or other royalty arrangements in cases in which it would have been advantageous for us to invest additional resources to retain development and commercialization rights.

Our operating results may fluctuate significantly, which makes our future operating results difficult to predict and could cause our operating results to fall below expectations.

Our quarterly and annual operating results may fluctuate significantly, which makes it difficult for us to predict our future operating results. These fluctuations may occur due to a variety of factors, many of which are outside of our control and may be difficult to predict, including:

- the timing and cost of, and level of investment in, research, development and, if approved, commercialization activities relating to our drug candidates, which may change from time to time;
- the timing and status of enrollment for our clinical studies;
- the cost of manufacturing our drug candidates, as well as building out our supply chain, which may vary depending on the quantity of production and the terms of our agreements with manufacturers;
- expenditures that we may incur to acquire, develop or commercialize additional drug candidates and technologies;
- timing and amount of any milestone, royalty or other payments due under any collaboration or license agreement;
- future accounting pronouncements or changes in our accounting policies;
- the timing and success or failure of preclinical studies and clinical studies for our drug candidates or competing drug candidates, or any other change in the competitive landscape of our industry, including consolidation among our competitors or partners.
- the timing of receipt of approvals for our drug candidates from regulatory authorities in the United States and internationally;
- coverage and reimbursement policies with respect to our drug candidates, if approved, and potential future drugs that compete with our products; and
- the level of demand for our products, if approved, which may vary significantly over time;

The cumulative effects of these factors could result in large fluctuations and unpredictability in our quarterly and annual operating results. As a result, comparing our operating results on a period-to-period basis may not be meaningful. Investors should not rely on our past results as an indication of our future performance.

This variability and unpredictability could also result in our failing to meet the expectations of industry or financial analysts or investors for any period. If our revenue or operating results fall below the expectations of analysts or investors or below any forecasts we may provide to the market, or if the forecasts we provide to the market are below the expectations of analysts or investors, the price of our common stock could decline substantially. Such a stock price decline could occur even when we have met any previously publicly stated revenue or earnings guidance we may provide.

Risks Related to Our Business

Our core therapeutic approach to extending human healthspan is based on our understanding of cellular senescence. Utilizing senolytic molecules to treat age-associated diseases is a novel therapeutic approach, which exposes us to unforeseen risks and makes it difficult to predict the time and cost of drug development and potential for regulatory approval.

We are developing a pipeline of drug candidates to treat age-associated diseases and extend human healthspan. Our foundational science and lead drug candidates are based on senescent biology. We believe that we can develop drug candidates capable of eliminating accumulated senescent cells and the associated Senescence Associated Secretory Phenotype, or SASP, when administered locally, and eventually develop systemic senolytic medicines using multiple modalities. However, this approach to treating age-associated diseases is novel and the scientific research that forms the basis of our efforts to develop senolytic medicines is ongoing. We currently have only limited data, and no conclusive evidence in humans that the accumulation of senescent cells and resulting exposure to SASP factors is the underlying cause of tissue damage and dysfunction associated with many age-associated diseases. Further, we have not yet tested our senolytic molecules in humans and our current data is limited to animal models and preclinical cell lines, the results of which may not translate into humans. As such, there can be no assurances that even if we are able to develop senolytic medicines capable of eliminating senescent cells that such medicines would safely and effectively treat age-associated diseases.

While cellular senescence is a natural occurring biological process, the administration of senolytic medicines to eliminate accumulated senescent cells in humans is untested and may potentially harm healthy tissue or result in unforeseen safety events. We may also ultimately discover that our senolytic molecules do not possess certain properties required for therapeutic effectiveness, or that even if found to be effective in one type of tissue, such molecules are not effective in other tissues. In addition, given the novel nature of this therapeutic approach, designing preclinical and clinical studies to demonstrate the effect of senolytic medicines is complex and exposes us to unforeseen risks. For example, attempts to replicate mouse anterior cruciate ligament, or ACL, transection findings using different animal models of osteoarthritis, or OA, have proven to be challenging, as it is difficult to mimic a disease like OA, which develops over a long period of time in humans, in short-term animal models. A model of OA using the rat medial meniscal-tibial ligament, or MX, transection failed to produce significant senescence, while a recently conducted canine model of OA in which both the ACL and MX were transected produced significantly higher levels of senescence (roughly 10-fold higher than that of the mouse ACL model). In those studies, administration of UBX0101 did not appear to affect either senescence burden or SASP factors. Further, the scientific evidence to support the feasibility of developing systemic senolytic medicines is both preliminary and limited. We may spend substantial funds attempting to develop these drug candidates and never succeed in doing so.

No regulatory authority has granted approval for a senolytic medicine. As such, we believe the FDA has limited experience with biological senescence, which may increase the complexity, uncertainty and length of the regulatory approval process for our drug candidates. We may never receive approval to market and commercialize any drug candidate. Even if we obtain regulatory approval, the approval may be for targets, disease indications or patient populations that are not as broad as we intended or desired or may require labeling that includes significant use or distribution restrictions or safety warnings. We may be required to perform additional or unanticipated clinical studies to obtain approval or be subject to post-marketing testing requirements to maintain regulatory approval. If our senolytic molecules prove to be ineffective, unsafe or commercially unviable, our entire senolytic platform and pipeline would have little, if any, value, which would have a material and adverse effect on our business, financial condition, results of operations and prospects.

Our business is dependent on the successful development, regulatory approval, and commercialization of our drug candidates, all of which are in early stages of development and none of which have been tested in a human subject.

We have no products approved for sale and all of our drug candidates are in early stages of development. Our lead drug candidate, UBX0101, has not yet been evaluated in a clinical study and our other lead drug candidate, UBX1967, has yet to complete IND-enabling studies. Further, we have not yet administered any of our drug candidates in humans and, as such, we face significant translational risk with our drug candidates. The success of our business, including our ability to finance our company and generate any revenue in the future, will primarily depend on the successful development, regulatory approval and commercialization of drug candidates from our senolytic medicine pipeline. However, given our early stage of development, it may be many years, if we succeed at all, before we have demonstrated the safety and efficacy of a drug candidate sufficient to warrant approval for commercialization.

In the future, we may also become dependent on other drug candidates that we may develop or acquire. The clinical and commercial success of our drug candidates and future drug candidates will depend on a number of factors, including the following:

- our ability to raise any additional required capital on acceptable terms, or at all;
- our ability to complete IND-enabling studies and successfully submit IND or comparable applications;
- timely completion of our preclinical studies and clinical studies, which may be significantly slower or cost more than we currently anticipate and will depend substantially upon the performance of third-party contractors;
- whether we are required by the FDA or similar foreign regulatory agencies to conduct additional clinical studies or other studies beyond those planned to support the approval and commercialization of our drug candidates or any future drug candidates;
- acceptance of our proposed indications and primary endpoint assessments relating to the proposed indications of our drug candidates by the FDA and similar foreign regulatory authorities;
- our ability to demonstrate to the satisfaction of the FDA and similar foreign regulatory authorities the safety, efficacy and acceptable risk to benefit profile of our lead drug candidates or any future drug candidates;
- the prevalence, duration and severity of potential side effects or other safety issues experienced with our drug candidates or future approved products, if any;
- the timely receipt of necessary marketing approvals from the FDA and similar foreign regulatory authorities;
- achieving and maintaining, and, where applicable, ensuring that our third-party contractors achieve and maintain compliance with our contractual obligations and with all regulatory requirements applicable to our lead drug candidates or any future drug candidates or approved products, if any;
- the willingness of physicians, operators of clinics and patients to utilize or adopt any of our future drug candidates to treat age-associated diseases;
- the ability of third parties with whom we contract to manufacture adequate clinical study and commercial supplies of our lead drug candidates or any future drug candidates, remain in good standing with regulatory agencies and develop, validate and maintain commercially viable manufacturing processes that are compliant with current good manufacturing practices, or cGMP;

- our ability to successfully develop a commercial strategy and thereafter commercialize our drug candidates or any future drug candidates in the United States and internationally, if approved for marketing, reimbursement, sale and distribution in such countries and territories, whether alone or in collaboration with others;
- the convenience of our treatment or dosing regimen;
- acceptance by physicians, payors and patients of the benefits, safety and efficacy of our drug candidates or any future drug candidates, if approved, including relative to alternative and competing treatments;
- patient demand for our drug candidates, if approved;
- our ability to establish and enforce intellectual property rights in and to our drug candidates or any future drug candidates; and
- our ability to avoid third-party patent interference, intellectual property challenges or intellectual property infringement claims.

These factors, many of which are beyond our control, could cause us to experience significant delays or an inability to obtain regulatory approvals or commercialize our drug candidates. Even if regulatory approvals are obtained, we may never be able to successfully commercialize any of our drug candidates. Accordingly, we cannot provide assurances that we will be able to generate sufficient revenue through the sale of our drug candidates or any future drug candidates to continue our business or achieve profitability.

We may be unable to obtain regulatory approval for our drug candidates under applicable regulatory requirements. The denial or delay of any such approval would delay commercialization of our drug candidates and adversely impact our potential to generate revenue, our business and our results of operations.

To gain approval to market our drug candidates, we must provide the FDA and foreign regulatory authorities with clinical data that adequately demonstrate the safety and efficacy of the drug candidate for the intended indication applied for in the applicable regulatory filing. For our senolytic medicines, we must also demonstrate that eliminating senescent cells and the associated SASP will lead to the improvement of well-defined and measurable endpoints. Product development is a long, expensive and uncertain processes, and delay or failure can occur at any stage of any of our clinical development programs. A number of companies in the biotechnology and pharmaceutical industries have suffered significant setbacks in clinical studies, even after promising results in earlier preclinical or clinical studies. These setbacks have been caused by, among other things, preclinical findings made while clinical studies were underway and safety or efficacy observations made in clinical studies, including previously unreported adverse events. Success in preclinical testing and early clinical studies does not ensure that later clinical studies will be successful, and the results of clinical studies by other parties may not be indicative of the results in trials we may conduct.

We have not previously submitted a new drug application, or NDA, or biologics license application, or BLA, to the FDA, or similar approval filings to comparable foreign regulatory authorities. An NDA, BLA or other relevant regulatory filing must include extensive preclinical and clinical data and supporting information to establish that the drug candidate is safe, pure and potent for each desired indication. The NDA, BLA or other relevant regulatory filing must also include significant information regarding the chemistry, manufacturing and controls for the product.

Our IND application for UBX0101 was cleared by the FDA in April 2018, and we plan to conduct IND-enabling studies of UBX1967. The research, testing, manufacturing, labeling, approval, sale,

marketing and distribution of drug and biologic products are subject to extensive regulation by the FDA and other regulatory authorities in the United States and other countries, and such regulations differ from country to country. We are not permitted to market our drug candidates in the United States or in any foreign countries until they receive the requisite approval from the applicable regulatory authorities of such jurisdictions.

The FDA or any foreign regulatory bodies can delay, limit or deny approval of our drug candidates for many reasons, including:

- our inability to demonstrate to the satisfaction of the FDA or the applicable foreign regulatory body that any of our drug candidates is safe and effective for the requested indication;
- the FDA's or the applicable foreign regulatory agency's disagreement with our trial protocol or the interpretation of data from preclinical studies or clinical studies;
- our inability to demonstrate that the clinical and other benefits of any of our drug candidates outweigh any safety or other perceived risks;
- the FDA's or the applicable foreign regulatory agency's requirement for additional preclinical studies or clinical studies;
- the FDA's or the applicable foreign regulatory agency's non-approval of the formulation, labeling or specifications of UBX0101, UBX1967, or any of our future drug candidates;
- the FDA's or the applicable foreign regulatory agency's failure to approve the manufacturing processes or facilities of third-party manufacturers upon which we rely; or
- the potential for approval policies or regulations of the FDA or the applicable foreign regulatory agencies to significantly change in a manner rendering our clinical data insufficient for approval.

Of the large number of biopharmaceutical and pharmaceutical products in development, only a small percentage successfully complete the FDA or other regulatory approval processes and are commercialized.

Even if we eventually complete clinical testing and receive approval from the FDA or applicable foreign agencies for any of our drug candidates, the FDA or the applicable foreign regulatory agency may grant approval contingent on the performance of costly additional clinical studies which may be required after approval. The FDA or the applicable foreign regulatory agency also may approve our lead drug candidates for a more limited indication or a narrower patient population than we originally requested, and the FDA, or applicable foreign regulatory agency, may not approve our drug candidates with the labeling that we believe is necessary or desirable for the successful commercialization of such drug candidates.

Any delay in obtaining, or inability to obtain, applicable regulatory approval would delay or prevent commercialization of our drug candidates and would materially adversely impact our business and prospects.

Clinical development involves a lengthy and expensive process with an uncertain outcome, and results of earlier studies and trials may not be predictive of future trial results.

Clinical testing is expensive and can take many years to complete, and its outcome is inherently uncertain. Failure or delay can occur at any time during the clinical study process. Success in preclinical studies and early clinical studies does not ensure that later clinical studies will be successful. A number of companies in the biotechnology, and pharmaceutical industries have suffered significant

setbacks in clinical studies, even after positive results in earlier preclinical studies or clinical studies. These setbacks have been caused by, among other things, preclinical findings made while clinical studies were underway and safety or efficacy observations made in clinical studies, including previously unreported adverse events. The results of our preclinical animal studies or studies in *ex vivo* human tissues may not be predictive of the results of outcomes in human clinical studies. For example, our senolytic molecules may demonstrate different chemical and pharmacological properties in patients than they do in laboratory studies or may interact with human biological systems in unforeseen or harmful ways. Drug candidates in later stages of clinical studies may fail to show the desired pharmacological properties or safety and efficacy traits despite having progressed through preclinical studies and initial clinical studies. Notwithstanding any promising results in earlier studies, we cannot be certain that we will not face similar setbacks. Even if we are able to initiate and complete clinical studies, the results may not be sufficient to obtain regulatory approval for our drug candidates.

Although our IND application for UBX0101 was cleared by the FDA in April 2018, and we expect to initiate a Phase 1 clinical study in the second quarter of 2018, we may experience delays in obtaining the FDA's authorization to initiate clinical studies under such IND, completing ongoing studies of our other drug candidates and initiating our planned studies and trials. Additionally, we cannot be certain that studies or trials for our drug candidates will begin on time, not require redesign, enroll an adequate number of subjects on time or be completed on schedule, if at all. Clinical studies can be delayed or terminated for a variety of reasons, including delays or failures related to:

- the FDA or comparable foreign regulatory authorities disagreeing as to the design or implementation of our clinical studies;
- delays in obtaining regulatory approval to commence a trial;
- reaching agreement on acceptable terms with prospective contract research organizations, or CROs, and clinical study sites, the terms of which can be subject to extensive negotiation and may vary significantly among different CROs and trial sites;
- obtaining institutional review board, or IRB, approval at each trial site;
- recruiting an adequate number of suitable patients to participate in a trial;
- having subjects complete a trial or return for post-treatment follow-up;
- clinical sites deviating from trial protocol or dropping out of a trial;
- addressing subject safety concerns that arise during the course of a trial;
- adding a sufficient number of clinical study sites; or
- obtaining sufficient product supply of drug candidate for use in preclinical studies or clinical studies from third-party suppliers.

We may experience numerous adverse or unforeseen events during, or as a result of, preclinical studies and clinical studies that could delay or prevent our ability to receive marketing approval or commercialize our drug candidates, including:

- we may receive feedback from regulatory authorities that requires us to modify the design of our clinical studies;
- clinical studies of our drug candidates may produce negative or inconclusive results, and we may decide, or regulators may require us, to conduct additional clinical studies or abandon drug development programs, including all of our senolytic programs;
- the number of patients required for clinical studies of our drug candidates may be larger than we anticipate, enrollment in these clinical studies may be slower than we anticipate or participants may drop out of these clinical studies at a higher rate than we anticipate;

- our third-party contractors may fail to comply with regulatory requirements, fail to maintain adequate quality controls, or be unable to provide us with sufficient product supply to conduct and complete preclinical studies or clinical studies of our drug candidates in a timely manner, or at all;
- we or our investigators might have to suspend or terminate clinical studies of our drug candidates for various reasons, including non-compliance with regulatory requirements, a finding that our drug candidates have undesirable side effects or other unexpected characteristics, or a finding that the participants are being exposed to unacceptable health risks;
- the cost of clinical studies of our drug candidates may be greater than we anticipate;
- the quality of our drug candidates or other materials necessary to conduct preclinical studies or clinical studies of our drug candidates may be insufficient or inadequate;
- regulators may revise the requirements for approving our drug candidates, or such requirements may not be as we anticipate; and
- future collaborators may conduct clinical studies in ways they view as advantageous to them but that are suboptimal for us.

If we are required to conduct additional clinical studies or other testing of our drug candidates beyond those that we currently contemplate, if we are unable to successfully complete clinical studies of our drug candidates or other testing, if the results of these trials or tests are not positive or are only moderately positive or if there are safety concerns, we may:

- incur unplanned costs;
- be delayed in obtaining marketing approval for our drug candidates or not obtain marketing approval at all;
- obtain marketing approval in some countries and not in others;
- obtain marketing approval for indications or patient populations that are not as broad as intended or desired
- obtain marketing approval with labeling that includes significant use or distribution restrictions or safety warnings, including boxed warnings;
- be subject to additional post-marketing testing requirements; or
- have the treatment removed from the market after obtaining marketing approval.

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

Further, conducting clinical studies in foreign countries, as we may do for certain of our drug candidates, presents additional risks that may delay completion of our clinical studies. These risks include the failure of enrolled patients in foreign countries to adhere to clinical protocol as a result of differences in healthcare services or cultural customs, managing additional administrative burdens associated with foreign regulatory schemes, as well as political and economic risks relevant to such foreign countries.

Principal investigators for our clinical studies may serve as scientific advisors or consultants to us from time to time and may receive cash or equity compensation in connection with such services. If these relationships and any related compensation result in perceived or actual conflicts of interest, or a regulatory authority concludes that the financial relationship may have affected the interpretation of the trial, the integrity of the data generated at the applicable clinical study site may be questioned and the utility of the clinical study itself may be jeopardized, which could result in the delay or rejection of the marketing application we submit. Any such delay or rejection could prevent or delay us from commercializing our current or future drug candidates.

If we experience delays in the completion, or termination, of any preclinical study or clinical study of our drug candidates, the commercial prospects of our drug candidates may be harmed, and our ability to generate revenues from any of these drug candidates will be delayed or not realized at all. In addition, any delays in completing our clinical studies may increase our costs, slow down our drug candidate development and approval process and jeopardize our ability to commence product sales and generate revenues. Any of these occurrences may significantly harm our business, financial condition and prospects. In addition, many of the factors that cause, or lead to, a delay in the commencement or completion of clinical studies may also ultimately lead to the denial of regulatory approval of our drug candidates. If one or more of our drug candidates or our senescence technology generally prove to be ineffective, unsafe or commercially unviable, our entire platform and pipeline would have little, if any, value, which would have a material and adverse effect on our business, financial condition, results of operations and prospects.

We may not be successful in our efforts to continue to create a pipeline of drug candidates or to develop commercially successful products. If we fail to successfully identify and develop additional drug candidates, our commercial opportunity may be limited.

We are committed to developing senolytic medicines that slow, halt or reverse age-associated diseases and are currently advancing multiple senolytic molecules to address a variety of age-associated diseases, including musculoskeletal, ophthalmologic and pulmonary disorders. As senolytic medicines are not limited to intervention by a single mode of action or molecular target, we believe that we can modulate a number of biologic pathways in order to trigger the beneficial elimination of senescent cells. However, our core therapeutic approach is based on our belief that the elimination of the accumulation of senescent cells and their accompanying SASP can treat the root cause of many of the diseases of aging, which may never be successfully validated in a human. In addition, identifying, developing, obtaining regulatory approval and commercializing drug candidates for the treatment of age-associated diseases will require substantial additional funding beyond the net proceeds of this offering and is prone to the risks of failure inherent in drug development. Research programs to identify drug candidates also require substantial technical, financial and human resources, regardless of whether or not any drug candidates are ultimately identified, and even if our research programs initially show promise in identifying potential drug candidates, they may fail to yield drug candidates for clinical development.

In addition, we believe that many age-associated diseases will require the development of systemic senolytic medicines and that the full potential to extend human healthspan will require additional non-senescence based therapeutic approaches. As a result, we intend to continue to dedicate significant resources and effort to better understand fundamental aging mechanisms, such as loss of circulating youth factors and mitochondrial dysfunction, and translate these insights into human medicines. However, the scientific evidence to support the feasibility of developing systemic senolytic medicines is both preliminary and limited and our non-senolytic programs are based on emerging science. We therefore cannot provide any assurance that we will be able to successfully identify or acquire additional drug candidates, advance any of these additional drug candidates through the development process, successfully commercialize any such additional drug candidates, if approved, or

assemble sufficient resources to identify, acquire, develop or, if approved, commercialize additional drug candidates. If we are unable to successfully identify, acquire, develop and commercialize additional drug candidates, our commercial opportunity may be limited.

It may be many years, if ever, before we develop senolytic medicines capable of systemic administration to treat systemic diseases of aging.

We are focusing initially on the development of senolytic molecules for age-associated diseases that can be treated by means of local treatment and intend to continue our research into the development of systemic senolytic medicines. However, we are still at a very early stage of developing locally administered senolytic medicines, and we must establish proof-of-concept in humans for local treatment before developing a systemically administered senolytic medicine. We still face significant risks in the development of localized treatments. As a result, it may be many years before we have sufficient human data and scientific understanding to effectively pursue a systemically administered senolytic medicine, if ever.

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

The timely completion of clinical studies 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. We may experience difficulties in patient enrollment in our clinical studies for a variety of reasons. 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 study investigators with the appropriate competencies and experience;
- clinicians' and patients' perceptions as to the potential advantages of the drug candidate being studied in relation to other available therapies, including any new drugs that may be approved for the indications we are investigating; and
- our ability to obtain and maintain patient consents.

In addition, our clinical studies may compete with other clinical studies for drug candidates that are in the same therapeutic areas as our drug 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 may conduct some of our clinical studies at the same clinical study sites that some of our competitors use, which will reduce the number of patients who are available for our clinical studies in such clinical study site.

Further, senolytic medicines designed to eliminate senescent cells and associated SASP may result in unforeseen events, including by harming healthy tissues. As a result, it is possible that safety concerns could negatively affect patient enrollment among the patient populations that we intend to treat, including among those in indications with a low risk of mortality. Delays in patient enrollment may result in increased costs or may affect the timing or outcome of the planned clinical studies, which could prevent completion of these trials and adversely affect our ability to advance the development of our drug candidates.

Our drug candidates may cause undesirable side effects or have other properties that could delay or prevent their regulatory approval, limit the commercial profile of an approved label, or result in significant negative consequences following marketing approval, if any.

Undesirable side effects caused by our drug candidates could cause us or regulatory authorities to interrupt, delay or halt clinical studies and could result in a more restrictive label or the delay or denial of regulatory approval by the FDA or comparable foreign regulatory authorities. No senolytic medicines designed to eliminate senescent cells and associated SASP have ever been tested in humans. As a result, any clinical studies we initiate could reveal a high and unacceptable severity and prevalence of side effects, and it is possible that patients enrolled in such clinical studies could respond in unexpected ways. For instance, in preclinical *in vivo* animal and *ex vivo* human tissue studies, our senolytic molecules have exhibited clearance of senescent cells, however the elimination of accumulated senescent cells may result in unforeseen events, including by harming healthy cells or tissues. In addition, the entry by cells into a senescent state is a natural biological process that we believe may have protective effects, such as halting the proliferation of damaged cells. The treatment of tissues with senolytic molecules could interfere with such protective processes.

If unacceptable side effects arise in the development of our drug candidates, we, the FDA, the IRBs at the institutions in which our studies are conducted, or the DSMB could suspend or terminate our clinical studies or the FDA or comparable foreign regulatory authorities could order us to cease clinical studies or deny approval of our drug candidates for any or all targeted indications. Treatment-related side effects could also affect patient recruitment or the ability of enrolled patients to complete any of our clinical studies or result in potential product liability claims. In addition, these side effects may not be appropriately recognized or managed by the treating medical staff. We expect to have to train medical personnel using our drug candidates to understand the side effect profiles for our clinical studies and upon any commercialization of any of our drug candidates. Inadequate training in recognizing or managing the potential side effects of our drug candidates could result in patient injury or death. Any of these occurrences may harm our business, financial condition and prospects significantly.

In addition, even if we successfully advance any of our drug candidates into and through clinical studies, such trials will likely only include a limited number of subjects and limited duration of exposure to our drug candidates. As a result, we cannot be assured that adverse effects of our drug candidates will not be uncovered when a significantly larger number of patients are exposed to the drug candidate. Further, any clinical studies may not be sufficient to determine the effect and safety consequences of taking our drug candidates over a multi-year period.

If any of our drug candidates receives marketing approval, and we or others later identify undesirable side effects caused by such products, a number of potentially significant negative consequences could result, including:

- regulatory authorities may withdraw their approval of the product;
- we may be required to recall a product or change the way such product is administered to patients;
- additional restrictions may be imposed on the marketing of the particular product or the manufacturing processes for the product or any component thereof;
- regulatory authorities may require the addition of labeling statements, such as a “black box” warning or a contraindication;
- we may be required to implement a Risk Evaluation and Mitigation Strategy, or REMS, or create a Medication Guide outlining the risks of such side effects for distribution to patients;
- we could be sued and held liable for harm caused to patients;

- the product may become less competitive; and
- our reputation may suffer.

Any of the foregoing events could prevent us from achieving or maintaining market acceptance of the particular drug candidate, if approved, and result in the loss of significant revenues to us, which would materially and adversely affect our results of operations and business. In addition, if one or more of our drug candidates or our senescence approach generally prove to be unsafe, our entire platform and pipeline could be affected, which would have a material and adverse effect on our business, financial condition, results of operations and prospects.

Even if our lead drug candidates or any future drug candidates obtain regulatory approval, they may fail to achieve the broad degree of physician and patient adoption and use necessary for commercial success.

Even if one or more of our drug candidates receive FDA or other regulatory approvals, the commercial success of any of our current or future drug candidates will depend significantly on the broad adoption and use of the resulting product by physicians and patients for approved indications. Our drug candidates may not be commercially successful. For a variety of reasons, including among other things, competitive factors, pricing or physician preference, reimbursement by insurers, the degree and rate of physician and patient adoption of our current or future drug candidates, if approved, will depend on a number of factors, including:

- the clinical indications for which the product is approved and patient demand for approved products that treat those indications;
- the safety and efficacy of our product as compared to other available therapies;
- the availability of coverage and adequate reimbursement from managed care plans, insurers and other healthcare payors for any of our drug candidates that may be approved;
- acceptance by physicians, operators of clinics and patients of the product as a safe and effective treatment;
- physician and patient willingness to adopt a new therapy over other available therapies to treat approved indications;
- overcoming any biases physicians or patients may have toward particular therapies for the treatment of approved indications;
- proper training and administration of our drug candidates by physicians and medical staff;
- public misperception regarding the use of our therapies, or public bias against “anti-aging” companies;
- patient satisfaction with the results and administration of our drug candidates and overall treatment experience, including, for example, the convenience of any dosing regimen;
- the cost of treatment with our drug candidates in relation to alternative treatments and reimbursement levels, if any, and willingness to pay for the product, if approved, on the part of insurance companies and other third-party payers, physicians and patients;
- the willingness of patients to pay for certain of our products, if approved;
- the revenue and profitability that our products may offer a physician as compared to alternative therapies;
- the prevalence and severity of side effects;
- limitations or warnings contained in the FDA-approved labeling for our products;

- the willingness of physicians, operators of clinics and patients to utilize or adopt our products as a solution;
- any FDA requirement to undertake a REMS;
- the effectiveness of our sales, marketing and distribution efforts;
- adverse publicity about our products or favorable publicity about competitive products; and
- potential product liability claims.

We cannot assure you that our current or future drug candidates, if approved, will achieve broad market acceptance among physicians and patients. Any failure by our drug candidates that obtain regulatory approval to achieve market acceptance or commercial success would adversely affect our results of operations.

We rely on third-party suppliers to manufacture preclinical supplies of our drug candidates and we intend to rely on third parties to produce clinical supplies as well as commercial supplies of any approved product. The loss of these suppliers, or their failure to comply with applicable regulatory requirements or to provide us with sufficient quantities at acceptable quality levels or prices, or at all, would materially and adversely affect our business.

We do not have nor do we plan to build or acquire the infrastructure or capability internally to manufacture supplies of our drug candidates or the materials necessary to produce our drug candidates for use in the conduct of our preclinical studies or clinical studies, and we lack the internal resources and the capability to manufacture any of our drug candidates on a preclinical, clinical or commercial scale. The facilities used by our contract manufacturers to manufacture our drug candidates are subject to various regulatory requirements and may be subject to the inspection of the FDA or other regulatory authorities. We do not control the manufacturing process of, and are completely dependent on, our contract manufacturing partners for compliance with the regulatory requirements, known as cGMPs. If our contract manufacturers cannot successfully manufacture material that conforms to our specifications and the strict regulatory requirements of the FDA or comparable regulatory authorities in foreign jurisdictions, we may not be able to rely on their manufacturing facilities for the manufacture or our drug candidates. In addition, we have limited control over the ability of our contract manufacturers to maintain adequate quality control, quality assurance and qualified personnel. If the FDA or a comparable foreign regulatory authority finds these facilities inadequate for the manufacture of our drug candidates or if such facilities are subject to enforcement action in the future or are otherwise inadequate, we may need to find alternative manufacturing facilities, which would significantly impact our ability to develop, obtain regulatory approval for or market our drug candidates.

We currently intend to supply all of our drug candidates in all territories for our clinical development programs. We currently rely on third parties at key stages in our supply chain. For instance, the supply chains for our lead drug candidates involve several manufacturers that specialize in specific operations of the manufacturing process, specifically, raw materials manufacturing, drug substance manufacturing, and drug product manufacturing. As a result, the supply chain for the manufacturing of our drug candidates is complicated and we expect the logistical challenges associated with our supply chain to grow more complex as our drug candidates, such as UBX0101, commence any clinical studies.

We do not have any control over the process or timing of the acquisition or manufacture of materials by our manufacturers. We generally do not begin a preclinical study and we do not intend to initiate any clinical studies unless we believe we have access to a sufficient supply of a drug candidate to complete such study or trial. In addition, any significant delay in, or quality control problems with

respect to, the supply of a drug candidate, or the raw material components thereof, for an ongoing study or trial could considerably delay completion of our preclinical studies or future clinical studies, product testing and potential regulatory approval of our drug candidates.

We have not yet engaged any manufacturers for the commercial supply of our drug candidates. Although we intend to enter into such agreements prior to commercial launch of any of our drug candidates, we may be unable to enter into any such agreement or do so on commercially reasonable terms, which could have a material adverse impact upon our business. Moreover, if there is a disruption to one or more of our third-party manufacturers' or suppliers' relevant operations, or if we are unable to enter into arrangements for the commercial supply of our drug candidates, we will have no other means of producing our lead drug candidates until they restore the affected facilities or we or they procure alternative manufacturing facilities or sources of supply. Our ability to progress our preclinical and clinical programs could be materially and adversely impacted if any of the third party suppliers upon which we rely were to experience a significant business challenge, disruption or failure due to issues such as financial difficulties or bankruptcy, issues relating to other customers such as regulatory or quality compliance issues, or other financial, legal, regulatory or reputational issues. Additionally, any damage to or destruction of our third-party manufacturers' or suppliers' facilities or equipment may significantly impair our ability to manufacture our drug candidates on a timely basis.

In addition, to manufacture our lead drug candidates in the quantities that we believe would be required to meet anticipated market demand, our third-party manufacturers would likely need to increase manufacturing capacity and, in some cases, we plan to secure alternative sources of commercial supply, which could involve significant challenges and may require additional regulatory approvals. In addition, the development of commercial-scale manufacturing capabilities may require us and our third-party manufacturers to invest substantial additional funds and hire and retain the technical personnel who have the necessary manufacturing experience. Neither we nor our third-party manufacturers may successfully complete any required increase to existing manufacturing capacity in a timely manner, or at all. If our manufacturers or we are unable to purchase the raw materials necessary for the manufacture of our drug candidates on acceptable terms, at sufficient quality levels, or in adequate quantities, if at all, the commercial launch of our lead drug candidates or any future drug candidates would be delayed or there would be a shortage in supply, which would impair our ability to generate revenues from the sale of such drug candidates, if approved.

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

We rely on third-party suppliers for the raw materials required for the production of our drug candidates. Our dependence on these third-party suppliers and the challenges we may face in obtaining adequate supplies of raw materials involve several risks, including limited control over pricing, availability, quality and delivery schedules. As a small company, our negotiation leverage is limited and we are likely to get lower priority than our competitors who are larger than we are. We cannot be certain that our suppliers will continue to provide us with the quantities of these raw materials that we require or satisfy our anticipated specifications and quality requirements. Any supply interruption in limited or sole sourced raw materials could materially harm our ability to manufacture our drug candidates until a new source of supply, if any, could be identified and qualified. We may be unable to find a sufficient alternative supply channel in a reasonable time or on commercially reasonable terms. Any performance failure on the part of our suppliers could delay the development and potential commercialization of our drug candidates, including limiting supplies necessary for clinical studies and regulatory approvals, which would have a material adverse effect on our business.

We rely on third parties in the conduct of all of our preclinical studies and intend to rely on third parties in the conduct of all of our future clinical studies. If these third parties do not successfully carry out their contractual duties, fail to comply with applicable regulatory requirements or meet expected deadlines, we may be unable to obtain regulatory approval for our drug candidates.

We currently do not have the ability to independently conduct preclinical studies that comply with the regulatory requirements known as good laboratory practice, or GLP, requirements. We also do not currently have the ability to independently conduct any clinical studies. The FDA and regulatory authorities in other jurisdictions require us to comply with regulations and standards, commonly referred to as good clinical practice, or GCP, requirements for conducting, monitoring, recording and reporting the results of clinical studies, in order to ensure that the data and results are scientifically credible and accurate and that the trial subjects are adequately informed of the potential risks of participating in clinical studies. We rely on medical institutions, clinical investigators, contract laboratories and other third parties, such as CROs, to conduct GLP-compliant preclinical studies and GCP-compliant clinical studies on our drug candidates properly and on time. While we have agreements governing their activities, we control only certain aspects of their activities and have limited influence over their actual performance. The third parties with whom we contract for execution of our GLP-compliant preclinical studies and our GCP-compliant clinical studies play a significant role in the conduct of these studies and trials and the subsequent collection and analysis of data. These third parties are not our employees and, except for restrictions imposed by our contracts with such third parties, we have limited ability to control the amount or timing of resources that they devote to our programs. Although we rely on these third parties to conduct our GLP-compliant preclinical studies and GCP-compliant clinical studies, we remain responsible for ensuring that each of our GLP preclinical studies and clinical studies is conducted in accordance with its investigational plan and protocol and applicable laws and regulations, and our reliance on the CROs does not relieve us of our regulatory responsibilities.

Many of the third parties with whom we contract may also have relationships with other commercial entities, including our competitors, for whom they may also be conducting clinical studies or other drug development activities that could harm our competitive position. If the third parties conducting our preclinical studies or our clinical studies do not adequately perform their contractual duties or obligations, experience significant business challenges, disruptions or failures, do not meet expected deadlines, terminate their agreements with us or need to be replaced, or if the quality or accuracy of the data they obtain is compromised due to their failure to adhere to our protocols or to GCPs, or for any other reason, we may need to enter into new arrangements with alternative third parties. This could be difficult, costly or impossible, and our preclinical studies or clinical studies may need to be extended, delayed, terminated or repeated. As a result we may not be able to obtain regulatory approval in a timely fashion, or at all, for the applicable drug candidate, our financial results and the commercial prospects for our drug candidates would be harmed, our costs could increase, and our ability to generate revenues could be delayed.

We face significant competition in an environment of rapid technological and scientific change, and our drug candidates, if approved, will face significant competition and our failure to effectively compete may prevent us from achieving significant market penetration. Most of our competitors have significantly greater resources than we do and we may not be able to successfully compete.

The biotechnology and pharmaceutical industries in particular are characterized by rapidly advancing technologies, intense competition and a strong emphasis on developing proprietary therapeutics. Numerous companies are engaged in the development, patenting, manufacturing and marketing of healthcare products competitive with those that we are developing. We face competition

from a number of sources, such as pharmaceutical companies, generic drug companies, biotechnology companies and academic and research institutions, many of which have greater financial resources, marketing capabilities, sales forces, manufacturing capabilities, research and development capabilities, clinical study expertise, intellectual property portfolios, experience in obtaining patents and regulatory approvals for drug candidates and other resources than we do. Some of the companies that offer competing products also have a broad range of other product offerings, large direct sales forces and long-term customer relationships with our target physicians, which could inhibit our market penetration efforts. Mergers and acquisitions in the pharmaceutical industry 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 study sites and patient registration for clinical studies, as well as in acquiring technologies complementary to, or necessary for, our programs. In addition, certain of our drug candidates, if approved, may compete with other products that treat age-associated diseases, including over-the-counter, or OTC, treatments, for a share of some patients' discretionary budgets and for physicians' attention within their clinical practices.

We are aware of other companies seeking to develop treatments to prevent or treat aging-related diseases through various biological pathways, including Calico and resTORbio. Calico has not yet disclosed any pipeline candidates or mechanisms of interest, and resTORbio is developing candidates targeting TORC1. Within our three senolytic programs, our drug candidates would compete against current therapies from a wide range of companies and technologies, including:

- symptom management approaches for musculoskeletal diseases, including anti-inflammatory drugs, such as Ibuprofen, Diclofenac and Celecoxib, analgesic pain relief, such as Acetaminophen, and narcotic pain relief, such as Tramadol;
- potentially disease modifying therapeutics for ophthalmology disease that are currently being developed and sold by several large and specialty pharmaceutical and biotechnology companies, including Roche/Genentech and Regeneron; and
- potentially disease modifying therapeutics for pulmonary disease that are currently being developed by several large and specialty pharmaceutical and biotechnology companies and academic institutions, including Genentech, Boehringer-Ingelheim, Cytokinetics and Mallinckrodt, and are in various stages of clinical studies.

Further, we believe that potential competitors may be able to develop senolytic medicines utilizing well-established molecules and pathways, which could enable the development of competitive drug candidates utilizing the same cellular senescent biological theories.

Certain alternative treatments offered by competitors may be available at lower prices and may offer greater efficacy or better safety profiles. Furthermore, currently approved products could be discovered to have application for treatment of age-associated diseases generally, which could give such products significant regulatory and market timing advantages over any of our drug candidates. Our competitors also may obtain FDA, EMA or other regulatory approval for their products more rapidly than we may obtain approval for ours and may obtain orphan product exclusivity from the FDA for indications our drug candidates are targeting, which could result in our competitors establishing a strong market position before we are able to enter the market. Newly developed systemic or non-systemic treatments that replace existing therapies that are currently only utilized in patients suffering from severe disease may also have lessened side effects or reduced prices compared to current therapies, which make them more attractive for patients suffering from mild to moderate disease. Even if a generic product or an OTC product is less effective than our drug candidates, a less

effective generic or OTC product may be more quickly adopted by physicians and patients than our competing drug candidates based upon cost or convenience. For additional information regarding our competition, see the section of this prospectus captioned “Business—Competition.”

The successful commercialization of our drug candidates will depend in part on the extent to which governmental authorities and health insurers establish adequate coverage, reimbursement levels and pricing policies. Failure to obtain or maintain coverage and adequate reimbursement for our drug candidates, if approved, could limit our ability to market those products and decrease our ability to generate revenue.

The availability and adequacy of coverage and reimbursement by governmental healthcare programs such as Medicare and Medicaid, private health insurers and other third-party payors are essential for most patients to be able to afford prescription medications such as our drug candidates, assuming FDA approval. Our ability to achieve acceptable levels of coverage and reimbursement for products by governmental authorities, private health insurers and other organizations will have an effect on our ability to successfully commercialize our drug candidates. Assuming we obtain coverage for our drug candidates by a third-party payor, the resulting reimbursement payment rates may not be adequate or may require co-payments that patients find unacceptably high. We cannot be sure that coverage and reimbursement in the United States, the EU or elsewhere will be available for our drug candidates or any product that we may develop, and any reimbursement that may become available may be decreased or eliminated in the future.

Third-party payors increasingly are challenging prices charged for pharmaceutical products and services, and many third-party payors may refuse to provide coverage and reimbursement for particular drugs or biologics when an equivalent generic drug, biosimilar or a less expensive therapy is available. It is possible that a third-party payor may consider our drug candidates as substitutable and only offer to reimburse patients for the cost of the less expensive product. Even if we show improved efficacy or improved convenience of administration with our drug candidates, pricing of existing third-party therapeutics may limit the amount we will be able to charge for our drug candidates. These payors may deny or revoke the reimbursement status of a given product or establish prices for new or existing marketed products at levels that are too low to enable us to realize an appropriate return on our investment in our drug candidates. If reimbursement is not available or is available only at limited levels, we may not be able to successfully commercialize our drug candidates, and may not be able to obtain a satisfactory financial return on our investment in the development of drug candidates.

There is significant uncertainty related to the insurance coverage and reimbursement of newly-approved products. In the United States, third-party payors, including private and governmental payors, such as the Medicare and Medicaid programs, play an important role in determining the extent to which new drugs and biologics will be covered. The Medicare and Medicaid programs increasingly are used as models in the United States for how private payors and other governmental payors develop their coverage and reimbursement policies for drugs and biologics. Some third-party payors may require pre-approval of coverage for new or innovative devices or drug therapies before they will reimburse healthcare providers who use such therapies. We cannot predict at this time what third-party payors will decide with respect to the coverage and reimbursement for our drug candidates.

No uniform policy for coverage and reimbursement for products exists among third-party payors in the United States. 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 drug candidates to each payor separately, with no assurance that coverage and adequate reimbursement will be applied consistently or obtained in the first instance. Furthermore, rules and regulations regarding reimbursement change frequently, in some cases on short notice, and we believe that changes in these rules and regulations are likely.

Outside the United States, international operations are generally subject to extensive governmental price controls and other market regulations, and we believe the increasing emphasis on cost-containment initiatives in Europe and other countries have and will continue to put pressure on the pricing and usage of our drug candidates. In many countries, the prices of medical products are subject to varying price control mechanisms as part of national health systems. Other countries allow companies to fix their own prices for medical products, but monitor and control company profits. Additional foreign price controls or other changes in pricing regulation could restrict the amount that we are able to charge for our drug candidates. Accordingly, in markets outside the United States, the reimbursement for our drug candidates may be reduced compared with the United States and may be insufficient to generate commercially-reasonable revenue and profits.

Moreover, increasing efforts by governmental and third-party payors in the United States and abroad to cap or reduce healthcare costs may cause such organizations to limit both coverage and the level of reimbursement for newly approved products and, as a result, they may not cover or provide adequate payment for our drug candidates. We expect to experience pricing pressures in connection with the sale of our drug candidates due to the trend toward managed health care, the increasing influence of health maintenance organizations and additional legislative changes. The downward pressure on healthcare costs in general, particularly prescription drugs and biologics and surgical procedures and other treatments, has become intense. As a result, increasingly high barriers are being erected to the entry of new products.

We currently have no sales organization. If we are unable to establish sales capabilities on our own or through third parties, we may not be able to market and sell our drug candidates effectively in the United States and foreign jurisdictions, if approved, or generate product revenue.

We currently do not have a marketing or sales organization. In order to commercialize our drug candidates in the United States and foreign jurisdictions, we must build our marketing, sales, distribution, managerial and other non-technical capabilities or make arrangements with third parties to perform these services, and we may not be successful in doing so. If any of our drug candidates receive regulatory approval, we expect to establish a sales organization with technical expertise and supporting distribution capabilities to commercialize each such drug candidate, which will be expensive and time consuming. We have no prior experience in the marketing, sale and distribution of pharmaceutical products and there are significant risks involved in building and managing a sales organization, including our ability to hire, retain, and incentivize qualified individuals, generate sufficient sales leads, provide adequate training to sales and marketing personnel, and effectively manage a geographically dispersed sales and marketing team. Any failure or delay in the development of our internal sales, marketing and distribution capabilities would adversely impact the commercialization of these products. We may choose to collaborate with third parties that have direct sales forces and established distribution systems, either to augment our own sales force and distribution systems or in lieu of our own sales force and distribution systems. If we are unable to enter into such arrangements on acceptable terms or at all, we may not be able to successfully commercialize our drug candidates. If we are not successful in commercializing our drug candidates or any future drug candidates, either on our own or through arrangements with one or more third parties, we may not be able to generate any future product revenue and we would incur significant additional losses.

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

As of December 31, 2017, we had 67 full-time employees. We will need to continue to expand our managerial, operational, finance and other resources in order to manage our operations and clinical studies, continue our development activities and commercialize our lead drug candidates or any future

drug candidates. Our management and personnel, systems and facilities currently in place may not be adequate to support this future growth. Our need to effectively execute our growth strategy requires that we:

- manage our clinical studies effectively;
- identify, recruit, retain, incentivize and integrate additional employees, including sales personnel;
- manage our internal development and operational efforts effectively while carrying out our contractual obligations to third parties; and
- continue to improve our operational, financial and management controls, reports systems and procedures.

If we fail to attract and retain senior management and key scientific personnel, we may be unable to successfully develop our lead drug candidates or any future drug candidates, conduct our clinical studies and commercialize our current or any future drug candidates.

Our success depends in part on our continued ability to attract, retain and motivate highly qualified management, clinical and scientific personnel. We are highly dependent upon our senior management, particularly our President, Nathaniel E. David, and our Chief Executive Officer, Keith R. Leonard, as well as our senior scientists and other members of our senior management team. The loss of services of any of these individuals could delay or prevent the successful development of our product pipeline, initiation or completion of our planned clinical studies or the commercialization of our lead drug candidates or any future drug candidates.

Competition for qualified personnel in the biotechnology and pharmaceuticals field is intense due to the limited number of individuals who possess the skills and experience required by our industry. We will need to hire additional personnel as we expand our clinical development and if we initiate commercial activities. We may not be able to attract and retain quality personnel on acceptable terms, or at all. In addition, to the extent we hire personnel from competitors, we may be subject to allegations that they have been improperly solicited or that they have divulged proprietary or other confidential information, or that their former employers own their research output.

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

We face an inherent risk of product liability as a result of the clinical testing of our drug candidates and will face an even greater risk if we commercialize any products. For example, we may be sued if any product we develop allegedly causes injury or is found to be otherwise unsuitable during product 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, and a breach of warranty. 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 drug candidates. Even a 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 current or future drug candidates;
- injury to our reputation;
- withdrawal of clinical study participants;
- costs to defend the related litigation;

- a diversion of management's time and our resources;
- substantial monetary awards to trial participants or patients;
- regulatory investigations, product recalls, withdrawals or labeling, marketing or promotional restrictions;
- loss of revenue; and
- the inability to commercialize our current or any future drug candidates.

Our inability to obtain and maintain sufficient product liability insurance at an acceptable cost and scope of coverage to protect against potential product liability claims could prevent or inhibit the commercialization of our current or any future drug candidates we develop. We currently carry product liability insurance covering our clinical studies. Although we maintain such insurance, any claim that may be brought against us could result in a court judgment or settlement in an amount that is not covered, in whole or in part, by our insurance or that is in excess of the limits of our insurance coverage. Our insurance policies also have various exclusions and deductibles, and we may be subject to a product liability claim for which we have no coverage. We will 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 funds to pay such amounts. Moreover, in the future, we may not be able to maintain insurance coverage at a reasonable cost or in sufficient amounts to protect us against losses. If and when we obtain approval for marketing any of our drug candidates, we intend to expand our insurance coverage to include the sale of such drug candidate; however, we may be unable to obtain this liability insurance on commercially reasonable terms or at all.

Our existing collaborations as well as additional collaboration arrangements that we may enter into in the future may not be successful, which could adversely affect our ability to develop and commercialize our drug candidates.

We utilize external collaborations and currently maintain more than a dozen active early-stage research and discovery focused collaborations. In the future, we may seek additional collaboration arrangements for the commercialization, or potentially for the development, of certain of our drug candidates depending on the merits of retaining commercialization rights for ourselves as compared to entering into collaboration arrangements. To the extent that we decide to enter into additional collaboration agreements in the future, we may face significant competition in seeking appropriate collaborators. Moreover, collaboration arrangements are complex and time-consuming to negotiate, document, implement and maintain and challenging to manage. We may not be successful in our efforts to prudently manage our existing collaborations or to enter new ones should we chose to do so. The terms of new collaborations or other arrangements that we may establish may not be favorable to us.

The success of our collaboration arrangements will depend heavily on the efforts and activities of our collaborators. Collaborations are subject to numerous risks, which may include risks that:

- collaborators have significant discretion in determining the efforts and resources that they will apply to collaborations;
- collaborators may not pursue development and commercialization of our drug candidates or may elect not to continue or renew development or commercialization programs based on clinical study results, changes in their strategic focus due to their acquisition of competitive products or their internal development 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 studies, provide insufficient funding for a clinical study program, stop a clinical study, abandon a drug candidate, repeat or conduct new clinical studies or require a new formulation of a drug candidate for clinical testing;
- collaborators could independently develop, or develop with third parties, products that compete directly or indirectly with our products or drug candidates;
- a collaborator with marketing, manufacturing and distribution rights to one or more products may not commit sufficient resources to or otherwise not perform satisfactorily in carrying out these activities;
- we could grant exclusive rights to our collaborators that would prevent us from collaborating with others;
- 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 current or future drug candidates or that result in costly litigation or arbitration that diverts management attention and resources;
- collaborations may be terminated, and, if terminated, this may result in a need for additional capital to pursue further development or commercialization of the applicable current or future drug candidates;
- collaborators may own or co-own intellectual property covering products that results from our collaborating with them, and in such cases, we would not have the exclusive right to develop or commercialize such intellectual property;
- disputes may arise with respect to the ownership of any intellectual property developed pursuant to our collaborations; and
- a collaborator's sales and marketing activities or other operations may not be in compliance with applicable laws resulting in civil or criminal proceedings.

Unfavorable global economic or political conditions could adversely affect our business, financial condition or results of operations.

Our results of operations could be adversely affected by general conditions in the global economy and in the global financial markets. Furthermore, the market for products with the potential to treat age-associated diseases, particularly those affecting large populations, may be particularly vulnerable to unfavorable economic conditions. A global financial crisis or a global or regional political disruption could cause extreme volatility in the capital and credit markets. A severe or prolonged economic downturn or political disruption could result in a variety of risks to our business, including weakened demand for our lead drug candidates or any future drug candidates, if approved, and our ability to raise additional capital when needed on acceptable terms, if at all. A weak or declining economy or political disruption could also strain our manufacturers or suppliers, possibly resulting in supply disruption, or cause our customers to delay making payments for our services. Any of the foregoing could harm our business and we cannot anticipate all of the ways in which the political or economic climate and financial market conditions could adversely impact our business.

We or the third parties upon whom we depend may be adversely affected by earthquakes or other natural disasters and our business continuity and disaster recovery plans may not adequately protect us from a serious disaster.

Our corporate headquarters and other facilities are located in the San Francisco Bay Area, which in the past has experienced both severe earthquakes and wildfires. We do not carry earthquake insurance. Earthquakes, wildfires or other natural disasters could severely disrupt our operations, and have a material adverse effect on our business, results of operations, financial condition and prospects.

If a natural disaster, power outage or other event occurred that prevented us from using all or a significant portion of our headquarters, that damaged critical infrastructure, such as our enterprise financial systems or manufacturing resource planning and enterprise quality systems, or that otherwise disrupted operations, it may be difficult or, in certain cases, impossible, for us to continue our business for a substantial period of time. The disaster recovery and business continuity plans we have in place currently are limited and are unlikely to prove adequate in the event of a serious disaster or similar event. We may incur substantial expenses as a result of the limited nature of our disaster recovery and business continuity plans, which, particularly when taken together with our lack of earthquake insurance, could have a material adverse effect on our business.

Furthermore, integral parties in our supply chain are similarly vulnerable to natural disasters or other sudden, unforeseen and severe adverse events. If such an event were to affect our supply chain, it could have a material adverse effect on our business.

Significant disruptions of information technology systems or breaches of data security could materially adversely affect our business, results of operations and financial condition.

We collect and maintain information in digital form that is necessary to conduct our business, and we are increasingly dependent on information technology systems and infrastructure to operate our business. In the ordinary course of our business, we collect, store and transmit large amounts of confidential information, including intellectual property, proprietary business information and personal information. It is critical that we do so in a secure manner to maintain the confidentiality and integrity of such confidential information. We have established physical, electronic and organizational measures to safeguard and secure our systems to prevent a data compromise, and rely on commercially available systems, software, tools, and monitoring to provide security for our information technology systems and the processing, transmission and storage of digital information. We have also outsourced elements of our information technology infrastructure, and as a result a number of third-party vendors may or could have access to our confidential information. Our internal information technology systems and infrastructure, and those of our current and any future collaborators, contractors and consultants and other third parties on which we rely, are vulnerable to damage from computer viruses, malware, natural disasters, terrorism, war, telecommunication and electrical failures, cyber-attacks or cyber-intrusions over the Internet, attachments to emails, persons inside our organization, or persons with access to systems inside our organization.

The risk of a security breach or disruption, particularly through cyber-attacks or cyber intrusion, including by computer hackers, foreign governments and cyber terrorists, has generally increased as the number, intensity and sophistication of attempted attacks and intrusions from around the world have increased. In addition, the prevalent use of mobile devices that access confidential information increases the risk of data security breaches, which could lead to the loss of confidential information or other intellectual property. The costs to us to mitigate network security problems, bugs, viruses, worms, malicious software programs and security vulnerabilities could be significant, and while we have implemented security measures to protect our data security and information technology systems, our

efforts to address these problems may not be successful, and these problems could result in unexpected interruptions, delays, cessation of service and other harm to our business and our competitive position. If such an event were to occur and cause interruptions in our operations, it could result in a material disruption of our product development programs. For example, the loss of clinical study data from completed or ongoing or planned clinical studies could result in delays in our regulatory approval efforts and significantly increase our costs to recover or reproduce the data. Moreover, if a computer security breach affects our systems or results in the unauthorized release of personally identifiable information, our reputation could be materially damaged. In addition, such a breach may require notification to governmental agencies, the media or individuals pursuant to various federal and state privacy and security laws, if applicable, including the Health Insurance Portability and Accountability Act of 1996, as amended by the Health Information Technology for Clinical Health Act of 2009, and its implementing rules and regulations, as well as regulations promulgated by the Federal Trade Commission and state breach notification laws. We would also be exposed to a risk of loss or litigation and potential liability, which could materially adversely affect our business, results of operations and financial condition.

Our employees and independent contractors, including principal investigators, consultants, commercial collaborators, service providers and other vendors may engage in misconduct or other improper activities, including noncompliance with regulatory standards and requirements, which could have an adverse effect on our results of operations.

We are exposed to the risk that our employees and independent contractors, including principal investigators, consultants, any future commercial collaborators, service providers and other vendors may engage in misconduct or other illegal activity. Misconduct by these parties could include intentional, reckless and/or negligent conduct or other unauthorized activities that violate the laws and regulations of the FDA and other similar regulatory bodies, including those laws that require the reporting of true, complete and accurate information to such regulatory bodies; manufacturing standards; U.S. federal and state healthcare fraud and abuse, data privacy laws and other similar non-U.S. laws; or laws that require the true, complete and accurate reporting of financial information or data. Activities subject to these laws also involve the improper use or misrepresentation of information obtained in the course of clinical studies, the creation of fraudulent data in our preclinical studies or clinical studies, or illegal misappropriation of product, which could result in regulatory sanctions and cause serious harm to our reputation. It is not always possible to identify and deter misconduct by employees and other third-parties, and the precautions we take to detect and prevent this activity may not be effective in controlling unknown or unmanaged risks or losses or in protecting us from governmental investigations or other actions or lawsuits stemming from a failure to be in compliance with such laws or regulations. In addition, we are subject to the risk that a person or government could allege such fraud or other misconduct, even if none occurred. If any such actions are instituted against us, and we are not successful in defending ourselves or asserting our rights, those actions could have a significant impact on our business and financial results, including, without limitation, the imposition of significant civil, criminal and administrative penalties, damages, monetary fines, disgorgements, possible exclusion from participation in Medicare, Medicaid and other U.S. healthcare programs, individual imprisonment, other sanctions, contractual damages, reputational harm, diminished profits and future earnings and curtailment of our operations, any of which could adversely affect our ability to operate our business and our results of operations.

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

Our research and development activities and our third-party manufacturers' and suppliers' activities involve the controlled storage, use and disposal of hazardous materials owned by us,

including the components of our product and drug candidates and other hazardous compounds. We and any third-party manufacturers and suppliers we engage are subject to numerous federal, state and local environmental, health and safety laws, regulations and permitting requirements, including those governing laboratory procedures; the generation, handling, use, storage, treatment, and disposal of hazardous and regulated materials and wastes; the emission and discharge of hazardous materials into the ground, air and water; and employee health and safety. Our operations involve the use of hazardous and flammable materials, including chemicals and biological and radioactive materials. Our operations also produce hazardous waste. In some cases, these hazardous materials and various wastes resulting from their use are stored at our and our manufacturers' facilities pending their use and disposal. We generally contract with third parties for the disposal of these materials and wastes. We cannot eliminate the risk of contamination, which could cause an interruption of our commercialization efforts, research and development efforts and business operations, environmental damage resulting in costly clean-up and liabilities under applicable laws and regulations governing the use, storage, handling and disposal of these materials and specified waste products.

Although we believe that the safety procedures utilized by our third-party manufacturers for handling and disposing of these materials generally comply with the standards prescribed by these laws and regulations, we cannot guarantee that this is the case or eliminate the risk of accidental contamination or injury from these materials. Under certain environmental laws, we could be held responsible for costs relating to any contamination at our current or past facilities and at third-party facilities. In such an event, we may be held liable for any resulting damages and such liability could exceed our resources and state or federal or other applicable authorities may curtail our use of certain materials and/or interrupt our business operations. Furthermore, environmental laws and regulations are complex, change frequently and have tended to become more stringent. We cannot predict the impact of such changes and cannot be certain of our future compliance.

Compliance with applicable environmental laws and regulations may be expensive, and current or future environmental laws and regulations may impair our research, product development and manufacturing efforts. In addition, we cannot entirely eliminate the risk of accidental injury or contamination from these materials or wastes. Although we maintain workers' compensation insurance to cover us for costs and expenses we may incur due to injuries to our employees resulting from the use of hazardous materials, this insurance may not provide adequate coverage against potential liabilities. We do not carry specific biological or hazardous waste insurance coverage, and our property, casualty, and general liability insurance policies specifically exclude coverage for damages and fines arising from biological or hazardous waste exposure or contamination. Accordingly, in the event of contamination or injury, we could be held liable for damages or be penalized with fines in an amount exceeding our resources, and our clinical studies or regulatory approvals could be suspended, which could have a material adverse effect on our business, results of operations and financial condition.

Risks Related to Intellectual Property

Our senolytic medicine platform and any future products that we commercialize could be alleged to infringe patent rights and other proprietary rights of third parties, which may require costly litigation and, if we are not successful, could cause us to pay substantial damages and/or limit our ability to commercialize our products.

Our commercial success depends on our ability to develop, manufacture and market our senolytic medicines and future drug candidates and use our proprietary technology without infringing the patents and other proprietary rights of third parties. Intellectual property disputes can be costly to defend and may cause our business, operating results and financial condition to suffer. We operate in an industry with extensive intellectual property litigation. As the biopharmaceutical and pharmaceutical industries

expand and more patents are issued, the risk increases that there may be patents issued to third parties that relate to our products and technology of which we are not aware or that we may need to challenge to continue our operations as currently contemplated.

Whether merited or not, we may face allegations that we have infringed the trademarks, copyrights, patents and other intellectual property rights of third parties, including patents held by our competitors or by non-practicing entities. We may also face allegations that our employees have misappropriated the intellectual property rights of their former employers or other third parties. Litigation may make it necessary to defend ourselves by determining the scope, enforceability and validity of third-party proprietary rights, or to establish our proprietary rights. Regardless of whether claims that we are infringing patents or other intellectual property rights have merit, the claims can be time consuming, divert management attention and financial resources and are costly to evaluate and defend. Results of any such litigation are difficult to predict and may require us to stop treating certain conditions, obtain licenses or modify our products and features while we develop non-infringing substitutes, or may result in significant settlement costs. For example, litigation can involve substantial damages for infringement (and if the court finds that the infringement was willful, we could be ordered to pay treble damages and the patent owner's attorneys' fees), and the court could prohibit us from selling or licensing our products unless the third party licenses rights to us, which it is not required to do at a commercially reasonable price or at all. If a license is available from a third party, we may have to pay substantial royalties, upfront fees or grant cross-licenses to intellectual property rights for our products. We may also have to redesign our products so they do not infringe third-party intellectual property rights, which may not be possible at all or may require substantial monetary expenditures and time, during which our products may not be available for manufacture, use, or sale.

In addition, patent applications in the United States and many international jurisdictions are typically not published until 18 months after the filing of certain priority documents (or, in some cases, are not published until they issue as patents) and publications in the scientific literature often lag behind actual discoveries. Thus, we cannot be certain that others have not filed patent applications or made public disclosures relating to our technology or our contemplated technology. A third party may have filed, and may in the future file, patent applications covering our products or technology similar to ours. Any such patent application may have priority over our patent applications or patents, which could further require us to obtain rights to issued patents covering such technologies. If another party has filed a U.S. patent application on inventions similar to ours, depending on whether the timing of the filing date falls under certain patent laws, we may have to participate in a priority contest (such as an interference proceeding) declared by the United States Patent and Trademark Office, to determine priority of invention in the United States. The costs of patent and other proceedings could be substantial, and it is possible that such efforts would be unsuccessful if it is determined that the other party had independently arrived at the same or similar invention prior to our own invention, resulting in a loss of our U.S. patent position with respect to such inventions.

From time to time, we may be subject to legal proceedings and claims in the ordinary course of business with respect to intellectual property. Although we are not currently subject to any claims from third parties asserting infringement of their intellectual property rights, in the future, we may receive claims from third parties asserting infringement of their intellectual property rights. Future litigation may be necessary to establish our intellectual property rights or to defend ourselves by determining the scope, enforceability and validity of third-party intellectual property rights. There can be no assurance with respect to the outcome of any current or future litigation brought by or against us, and the outcome of any such litigation could have a material adverse impact on our business, operating results and financial condition. Litigation is inherently unpredictable and outcomes are uncertain. Further, as the costs and outcome of these types of claims and proceedings can vary significantly, it is difficult to estimate potential losses that may occur. Accordingly, we are unable at this time to estimate the effects of these potential future lawsuits on our financial condition, operations or cash flows.

Some of our competitors may be able to sustain the costs of complex patent litigation more effectively than we can because they have substantially greater resources. Even if resolved in our favor, litigation or other legal proceedings relating to intellectual property claims may cause us to incur significant expenses, and could distract our technical and management personnel from their normal responsibilities. In addition, there could be public announcements of the results of hearings, motions or other interim proceedings or developments, and if securities analysts or investors perceive these results to be negative, it could have a material adverse effect on the price of our common stock. Finally, any uncertainties resulting from the initiation and continuation of any litigation could have a material adverse effect on our ability to raise the funds necessary to continue our operations.

If we are unable to obtain, maintain and enforce intellectual property protection directed to our senolytic medicine platform and any future technologies that we develop, others may be able to make, use, or sell products substantially the same as ours, which could adversely affect our ability to compete in the market.

We have not pursued or maintained, and may not pursue or maintain in the future, patent protection for our products in every country or territory in which we may sell our products. In addition, we cannot be sure that any of our pending patent applications or pending trademark applications will issue or that, if issued, they will issue in a form that will be advantageous to us. The United States Patent and Trademark Office, or the USPTO, international patent offices or judicial bodies may deny or significantly narrow claims made under our patent applications and our issued patents may be successfully challenged, may be designed around, or may otherwise be of insufficient scope to provide us with protection for our commercial products. Further, the USPTO, international trademark offices or judicial bodies may deny our trademark applications and, even if published or registered, these trademarks may not effectively protect our brand and goodwill. Like patents, trademarks also may be successfully opposed or challenged.

We cannot be certain that the steps we have taken will prevent unauthorized use or unauthorized reverse engineering of our technology. Moreover, third parties may independently develop technologies that are competitive with ours and such competitive technologies may or may not infringe our intellectual property. The enforcement of our intellectual property rights also depends on the success of our legal actions against these infringers in the respective country or forum, but these actions may not be successful. As with all granted intellectual property, such intellectual property may be challenged, invalidated or circumvented, may not provide specific protection and/or may not prove to be enforceable in actions against specific alleged infringers.

The market for biopharmaceuticals, pharmaceuticals and treatments for age-associated diseases is highly competitive and subject to rapid technological change. Our success depends, in part, upon our ability to maintain a competitive position in the development and protection of technologies and products for use in these fields and upon our ability to obtain, maintain and enforce our intellectual property rights in connection therewith. We seek to obtain and maintain patents and other intellectual property rights to restrict the ability of others to market products that misappropriate our technology and/or infringe our intellectual property to unfairly and illegally compete with our products. If we are unable to protect our intellectual property and proprietary rights, our competitive position and our business could be harmed, as third parties may be able to make, use, or sell products that are substantially the same as ours without incurring the sizeable development and licensing costs that we have incurred, which would adversely affect our ability to compete in the market.

We use a combination of patents, trademarks, know-how, confidentiality procedures and contractual provisions to protect our proprietary technology. However, these protections may not be adequate and may not provide us with any competitive advantage. For example, patents may not issue from any of our currently pending or any future patent applications, and our issued patents and any

future patents that may issue may not survive legal challenges to their scope, validity or enforceability, or provide significant protection for us.

If we or one of our current or future collaborators were to initiate legal proceedings against a third party to enforce a patent covering one of our lead drug candidates or future drug candidates, the defendant could counterclaim that our patent is invalid and/or unenforceable. In patent litigation in the United States, defendant counterclaims alleging invalidity and/or unenforceability are commonplace. Grounds for a validity challenge could be an alleged failure to meet any of several statutory requirements, including lack of novelty, obviousness or non-enablement. Grounds for an unenforceability assertion could be an allegation that someone connected with prosecution of the patent withheld relevant information from the USPTO, or made a misleading statement, during prosecution. Third parties may also raise similar claims before the USPTO, even outside the context of litigation. 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 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 drug candidates. Such a loss of patent protection would have a material adverse impact on our business.

Even if our patents are determined by a court to be valid and enforceable, they may not be interpreted sufficiently broadly to prevent others from marketing products similar to ours or designing around our patents. For example, third parties may be able to make product that are similar to ours but that are not covered by the claims of our patents. Third parties may assert that we or our licensors were not the first to make the inventions covered by our issued patents or pending patent applications. The claims of our issued patents or patent applications when issued may not cover our proposed commercial technologies or the future products that we develop. We may not have freedom to commercialize unimpeded by the patent rights of others. Third parties may have dominating, blocking, or other patents relevant to our technology of which we are not aware. There may be prior public disclosures or art that could be deemed to invalidate one or more of our patent claims. Further, we may not develop additional proprietary technologies in the future, and, if we do, they may not be patentable.

Patent law can be highly uncertain and involve complex legal and factual questions for which important principles remain unresolved. In the United States and in many international jurisdictions, policy regarding the breadth of claims allowed in patents can be inconsistent. The U.S. Supreme Court and the Court of Appeals for the Federal Circuit have made, and will likely continue to make, changes in how the patent laws of the United States are interpreted. Similarly, international courts have made, and will likely continue to make, changes in how the patent laws in their respective jurisdictions are interpreted. We cannot predict future changes in the interpretation of patent laws or changes to patent laws that might be enacted into law by U.S. and international legislative bodies. Those changes may materially affect our patents, our ability to obtain patents or the patents and patent applications of our licensors.

Patent reform legislation in the United States could increase the uncertainties and costs surrounding the prosecution of our patent applications and the enforcement or defense of our issued patents. For example, on September 16, 2011, the Leahy-Smith America Invents Act, or Leahy-Smith Act, was signed into law. The Leahy-Smith Act included a number of significant changes to U.S. patent law. These include provisions that affect the way patent applications are prosecuted, redefine prior art, may affect patent litigation, and switch the U.S. patent system from a “first-to-invent” system to a “first-to-file” system. Under a “first-to-file” system, assuming the other requirements for patentability are met, the first inventor to file a patent application generally will be entitled to the patent on an invention regardless of whether another inventor had made the invention earlier. The United States Patent and Trademark Office recently developed new regulations and procedures to govern administration of the

Leahy-Smith Act, and many of the substantive changes to patent law associated with the Leahy-Smith Act, and in particular, the first-to-file provisions, only became effective on March 16, 2013. The Leahy-Smith Act and its implementation could increase the uncertainties and costs surrounding the prosecution of our patent applications and the enforcement or defense of our issued patents, which could have a material adverse effect on our business and financial condition.

In addition, we have a number of international patents and patent applications, and expect to continue to pursue patent protection in many of the significant markets in which we intend to do business. The laws of some international jurisdictions may not protect intellectual property rights to the same extent as laws in the United States, and many companies have encountered significant difficulties in obtaining, protecting, and defending such rights in international jurisdictions. If we encounter such difficulties or we are otherwise precluded from effectively protecting our intellectual property rights in international jurisdictions, our business prospects could be substantially harmed. Varying filing dates in international countries may also permit intervening third parties to allege priority to certain technology.

Patent terms may be shortened or lengthened by, for example, terminal disclaimers, patent term adjustments, supplemental protection certificates, and patent term extensions. Patent term extensions and supplemental protection certificates, and the like, may be impacted by the regulatory process and may not significantly lengthen patent term. Non-payment or delay in payment of patent fees or annuities, delay in patent filings or delay in extension filing (including any patent term extension or adjustment filing), whether intentional or unintentional, may also result in the loss of patent rights important to our business. Certain countries have compulsory licensing laws under which a patent owner may be compelled to grant licenses to other parties. In addition, many countries limit the enforceability of patents against other parties, including government agencies or government contractors. In these countries, the patent owner may have limited remedies, which could materially diminish the value of any patents.

In addition to the protection afforded by patents, we rely on confidentiality agreements to protect confidential information and proprietary know-how that is not patentable or that we elect not to patent, processes for which patents are difficult to enforce and any other elements of our drug candidate discovery and development processes that involve proprietary know-how, information or technology that is not covered by patents. We seek to protect our proprietary technology and processes, in part, by entering into confidentiality agreements with our employees, consultants, scientific advisors and contractors. We cannot guarantee that we have entered into such agreements with each party that may have or have had access to our confidential information or proprietary technology and processes. We also seek to preserve the integrity and confidentiality of our data and other confidential information by maintaining physical security of our premises and physical and electronic security of our information technology systems. While we have confidence in these individuals, organizations and systems, agreements or security measures may be breached and detecting the disclosure or misappropriation of confidential information and enforcing a claim that a party illegally disclosed or misappropriated confidential information is difficult, expensive and time-consuming, and the outcome is unpredictable. Further, we may not be able to obtain adequate remedies for any breach. In addition, our confidential information may otherwise become known or be independently discovered by competitors, in which case we would have no right to prevent them, or those to whom they communicate it, from using that technology or information to compete with us. We may in the future rely on trade secret protection, which would be subject to the risks identified above with respect to confidential information.

Monitoring unauthorized use of our intellectual property is difficult and costly. From time to time, we review our competitors' products, and may in the future seek to enforce our patents or other rights against potential infringement. However, the steps we have taken to protect our proprietary rights may not be adequate to prevent misappropriation of our intellectual property. We may not be able to detect

unauthorized use of, or take appropriate steps to enforce, our intellectual property rights. Our competitors may also independently develop similar technology. Any inability to meaningfully protect our intellectual property could result in competitors offering products that incorporate our product or service features, which could reduce demand for our products. In addition, we may need to defend our patents from third-party challenges, such as (but not limited to) interferences, derivation proceedings, re-examination proceedings, post-grant review, inter partes review, third-party submissions, oppositions, nullity actions or other patent proceedings. We may need to initiate infringement claims or litigation.

Adverse proceedings such as litigation can be expensive, time consuming and may divert the efforts of our technical and managerial personnel, which could in turn harm our business, whether or not we receive a determination favorable to us. In addition, in an infringement proceeding, a court or other judicial body may decide that the patent we seek to enforce is invalid or unenforceable, or may refuse to stop the other party from using the technology at issue on the grounds that the patent in question does not cover the technology in question. An adverse result in any litigation could put one or more of our patents at risk of being invalidated or interpreted narrowly. Some of our competitors may be able to devote significantly more resources to intellectual property litigation, and may have significantly broader patent portfolios to assert against us if we assert our rights against them. Further, because of the substantial discovery required in connection with intellectual property litigation, there is a risk that some of our confidential information could be disclosed or otherwise compromised during litigation.

We may not be able to correctly estimate or control our future operating expenses in relation to obtaining intellectual property, enforcing intellectual property and/or defending intellectual property, which could affect operating expenses. Our operating expenses may fluctuate significantly in the future as a result of a variety of factors, including the costs of preparing, filing, prosecuting, defending, and enforcing patent and trademark claims and other intellectual property-related costs, including adverse proceedings (such as litigation) costs.

Our intellectual property agreements with third parties may be subject to disagreements over contract interpretation, which could narrow the scope of our rights to the relevant intellectual property or technology or increase our financial or other obligations to our licensors.

Certain provisions in our intellectual property agreements may be susceptible to multiple interpretations. The resolution of any contract interpretation disagreement that may arise could affect the scope of our rights to the relevant intellectual property or technology, or affect financial or other obligations under the relevant agreement, either of which could have a material adverse effect on our business, financial condition, results of operations and prospects.

In addition, while it is our policy to require our employees and contractors who may be involved in the conception or development of intellectual property to execute agreements assigning such intellectual property to us, we may be unsuccessful in executing such an agreement with each party who in fact conceives or develops intellectual property that we regard as our own. Our assignment agreements may not be self-executing or may be breached, and we may be forced to bring claims against third parties, or defend claims they may bring against us, to determine the ownership of what we regard as our intellectual property.

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

We may also be subject to claims that former employees, collaborators or other third parties have an ownership interest in our patents or other intellectual property. Litigation may be necessary to

defend against these and other claims challenging inventorship or ownership. If we fail in defending any such claims, in addition to paying monetary damages, we may lose valuable intellectual property rights. Such an outcome could have a material adverse effect on our business. Even if we are successful in defending against such claims, litigation could result in substantial costs and distraction to management and other employees.

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

Filing, prosecuting and defending patents on drug 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.

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

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

Our registered or unregistered trademarks or trade names may be challenged, infringed, circumvented, declared generic or conflict with third-party rights. We may not be able to protect our rights to these trademarks and trade names, which we need to build name recognition by potential partners or customers in our markets of interest. In addition, third parties may file first for our trademarks in certain countries. If they succeeded in registering such trademarks, and if we were not successful in challenging such third-party rights, we may not be able to use these trademarks to market our products in those countries. In such cases, over the long term, if we are unable to establish name recognition based on our trademarks and trade names, then our marketing abilities may be impacted.

If we are unable to protect the confidentiality of our proprietary information and know-how, the value of our technology and products could be adversely affected.

We may not be able to protect our proprietary information and technology adequately. Although we use reasonable efforts to protect our proprietary information, technology, and know-how, our

employees, consultants, contractors and outside scientific advisors may unintentionally or willfully disclose our information to competitors. Enforcing a claim that a third party illegally obtained and is using any of our proprietary information, technology or know-how is expensive and time consuming, and the outcome is unpredictable. In addition, courts outside the United States are sometimes less willing to protect proprietary information, technology, and know-how. We rely, in part, on non-disclosure and confidentiality agreements with our employees, consultants and other parties to protect our proprietary information, technology, and know-how. These agreements may be breached and we may not have adequate remedies for any breach. Moreover, others may independently develop similar or equivalent proprietary information, and third parties may otherwise gain access to our proprietary knowledge.

Risks Related to Government Regulation

Even if we obtain regulatory approval for a drug candidate, our products will remain subject to regulatory scrutiny.

If our drug candidates are approved, they will be subject to ongoing regulatory requirements for manufacturing, labeling, packaging, storage, advertising, promotion, sampling, record-keeping, conduct of post-marketing studies, and submission of safety, efficacy, and other post- market information, including both federal and state requirements in the United States and requirements of comparable foreign regulatory authorities.

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

We will have to comply with requirements concerning advertising and promotion for our products. Promotional communications with respect to prescription drugs and biologics are subject to a variety of legal and regulatory restrictions and must be consistent with the information in the product's approved label. As such, we may not promote our products for indications or uses for which they do not have approval. The holder of an approved application must submit new or supplemental applications and obtain approval for certain changes to the approved product, product labeling, or manufacturing process. We could also be asked to conduct post-marketing clinical studies to verify the safety and efficacy of our products in general or in specific patient subsets. An unsuccessful post-marketing study or failure to complete such a study could result in the withdrawal of marketing approval.

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

- issue warning letters***;***
- impose civil or criminal penalties;
- suspend or withdraw regulatory approval;
- suspend any of our clinical studies;

- refuse to approve pending applications or supplements to approved applications submitted by us;
- impose restrictions on our operations, including closing our contract manufacturers' facilities; or
- seize or detain products, or require a product recall.

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

Moreover, the policies of the FDA and of other regulatory authorities may change and additional government regulations may be enacted that could prevent, limit or delay regulatory approval of our drug candidates. We cannot predict the likelihood, nature or extent of government regulation that may arise from future legislation or administrative or executive action, either in the United States or abroad. For example, certain policies of the Trump administration may impact our business and industry. Namely, the Trump administration has taken several executive actions, including the issuance of a number of Executive Orders, that could impose significant burdens on, or otherwise materially delay, the FDA's ability to engage in routine oversight activities such as implementing statutes through rulemaking, issuance of guidance, and review and approval of marketing applications. It is difficult to predict how these orders will be implemented, and the extent to which they will impact the FDA's ability to exercise its regulatory authority. If these executive actions impose restrictions on the FDA's ability to engage in oversight and implementation activities in the normal course, our business may be negatively impacted. In addition, if we are slow or unable to adapt to changes in existing requirements or the adoption of new requirements or policies, or if we are not able to maintain regulatory compliance, we may lose any marketing approval that we may have obtained and we may not achieve or sustain profitability.

If any of our small molecule drug candidates obtain regulatory approval, additional competitors could enter the market with generic versions of such drugs, which may result in a material decline in sales of affected products.

Under the Drug Price Competition and Patent Term Restoration Act of 1984, or the Hatch-Waxman Act, a pharmaceutical manufacturer may file an abbreviated new drug application, or ANDA, seeking approval of a generic version of an approved, small molecule innovator product. Under the Hatch-Waxman Act, a manufacturer may also submit a new drug application, or NDA, under section 505(b)(2) of the Federal Food, Drug, and Cosmetic Act that references the FDA's prior approval of the small molecule innovator product. A 505(b)(2) NDA product may be for a new or improved version of the original innovator product. The Hatch-Waxman Act also provides for certain periods of regulatory exclusivity, which preclude FDA approval (or in some circumstances, FDA filing and review) of an ANDA or 505(b)(2) NDA. In addition to the benefits of regulatory exclusivity, an innovator NDA holder may have patents claiming the active ingredient, product formulation or an approved use of the drug, which would be listed with the product in the FDA publication, "Approved Drug Products with Therapeutic Equivalence Evaluations," known as the Orange Book. If there are patents listed in the Orange Book for a product, a generic or 505(b)(2) applicant that seeks to market its product before expiration of the patents must include in their applications what is known as a "Paragraph IV" certification, challenging the validity or enforceability of, or claiming non-infringement of, the listed patent or patents. Notice of the certification must be given to the patent owner and NDA holder and if, within 45 days of receiving notice, either the patent owner or NDA holder sues for patent infringement, approval of the ANDA or 505(b)(2) NDA is stayed for up to 30 months.

Accordingly, if any of our small molecule drug candidates, such as UBX0101 or UBX1967, are approved, competitors could file ANDAs for generic versions of our small molecule drug products or 505(b)(2) NDAs that reference our small molecule drug products. If there are patents listed for our small molecule drug products in the Orange Book, those ANDAs and 505(b)(2) NDAs would be required to include a certification as to each listed patent indicating whether the ANDA applicant does or does not intend to challenge the patent. We cannot predict which, if any, patents in our current portfolio or patents we may obtain in the future will be eligible for listing in the Orange Book, how any generic competitor would address such patents, whether we would sue on any such patents, or the outcome of any such suit.

We may not be successful in securing or maintaining proprietary patent protection for products and technologies we develop or license. Moreover, if any of our owned or in-licensed patents that are listed in the Orange Book are successfully challenged by way of a Paragraph IV certification and subsequent litigation, the affected product could immediately face generic competition and its sales would likely decline rapidly and materially.

Any biologic, or large molecule, drug candidates for which we intend to seek approval may face competition sooner than anticipated.

If we are successful in achieving regulatory approval to commercialize any biologic drug candidate faster than our competitors, such drug candidates may face competition from biosimilar products. In the United States, our large molecule drug candidates are regulated by the FDA as biologic products subject to approval under the biologics license application, or BLA, pathway. The Biologics Price Competition and Innovation Act of 2009, or BPCIA, creates an abbreviated pathway for the approval of biosimilar and interchangeable biologic products following the approval of an original BLA. The abbreviated regulatory pathway establishes legal authority for the FDA to review and approve biosimilar biologics, including the possible designation of a biosimilar as “interchangeable” based on its similarity to an existing brand product. Under the BPCIA, an application for a biosimilar product cannot be approved by the FDA until 12 years after the original branded product was approved under a BLA. The law is complex and is still being interpreted and implemented by the FDA. As a result, its ultimate impact, implementation, and meaning are subject to uncertainty.

Moreover, the extent to which a biosimilar product, once approved, will be substituted for any one of our reference products in a way that is similar to traditional generic substitution for non-biologic products is not yet clear, and will depend on a number of marketplace and regulatory factors that are still developing. In addition, a competitor could decide to forego the biosimilar approval path and submit a full BLA after completing its own preclinical studies and clinical studies. In such cases, any exclusivity to which we may be eligible under the BPCIA would not prevent the competitor from marketing its product as soon as it is approved.

If competitors are able to obtain marketing approval for biosimilars referencing our large molecule drug candidates, if approved, such products may become subject to competition from such biosimilars, with the attendant competitive pressure and potential adverse consequences. Such competitive products may be able to immediately compete with us in each indication for which our drug candidates may have received approval.

We may seek orphan drug designation for certain future drug candidates, but we may be unable to obtain such designations or to maintain the benefits associated with orphan drug designation, including market exclusivity, which may cause our revenue, if any, to be reduced.

We may pursue orphan drug designation for certain of our future drug candidates. Under the Orphan Drug Act, the FDA may designate a drug or biologic product as an orphan drug if it is intended

to treat a rare disease or condition, defined as a patient population of fewer than 200,000 in the United States, or a patient population greater than 200,000 in the United States where there is no reasonable expectation that the cost of developing the drug will be recovered from sales in the United States. In the European Union, the EMA's Committee for Orphan Medicinal Products, or COMP, grants orphan drug designation to promote the development of products that are intended for the diagnosis, prevention, or treatment of a life-threatening or chronically debilitating condition affecting not more than five in 10,000 persons in the European Union. Additionally, designation is granted for products intended for the diagnosis, prevention, or treatment of a life-threatening, seriously debilitating or serious and chronic condition when, without incentives, it is unlikely that sales of the drug in the European Union would be sufficient to justify the necessary investment in developing the drug or biological product or where there is no satisfactory method of diagnosis, prevention, or treatment, or, if such a method exists, the medicine must be of significant benefit to those affected by the condition.

In the United States, orphan drug designation entitles a party to financial incentives such as opportunities for grant funding towards clinical study costs, tax advantages, and application fee waivers. In addition, if a product receives the first FDA approval for the indication for which it has orphan designation, the product is entitled to orphan drug exclusivity, which means the FDA may not approve any other application to market the same drug for the same indication for a period of seven years, except in limited circumstances, such as a showing of clinical superiority over the product with orphan exclusivity or where the manufacturer is unable to assure sufficient product quantity for the orphan patient population. In the European Union, orphan drug designation entitles a party to financial incentives such as reduction of fees or fee waivers and ten years of market exclusivity following drug or biological product approval. This period may be reduced to six years if the orphan drug designation criteria are no longer met, including where it is shown that the product is sufficiently profitable not to justify maintenance of market exclusivity.

Even if we obtain orphan drug designation, we may not be the first to obtain marketing approval for any particular orphan indication due to the uncertainties associated with developing pharmaceutical products. Further, even if we obtain orphan drug exclusivity for a drug candidate, that exclusivity may not effectively protect the product from competition because different drugs with different active moieties can be approved for the same condition. Even after an orphan drug is approved, the FDA or EMA can subsequently approve the same drug with the same active moiety for the same condition if the FDA or EMA concludes that the later drug is clinically superior in that it is safer, more effective, or makes a major contribution to patient care. Orphan drug designation neither shortens the development time or regulatory review time of a drug or biologic nor gives the drug or biologic any advantage in the regulatory review or approval process.

Enacted and future healthcare legislation may increase the difficulty and cost for us to obtain marketing approval of and commercialize our drug candidates and may affect the prices we may set.

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

- an annual, non-deductible fee payable by any entity that manufactures or imports certain branded prescription drugs and biologic agents (other than those designated as orphan drugs),

which is apportioned among these entities according to their market share in certain government healthcare programs;

- a new Medicare Part D coverage gap discount program, in which manufacturers must agree to offer 50% point-of-sale discounts off negotiated prices of applicable brand drugs to eligible beneficiaries during their coverage gap period, as a condition for the manufacturer's outpatient drugs to be covered under Medicare Part D;
- new requirements to report certain financial arrangements with physicians and teaching hospitals, including reporting "transfers of value" made or distributed to prescribers and other healthcare providers and reporting investment interests held by physicians and their immediate family members;
- an increase in the statutory minimum rebates a manufacturer must pay under the Medicaid Drug Rebate Program to 23.1% and 13.0% of the average manufacturer price for branded and generic drugs, respectively;
- a new methodology by which rebates owed by manufacturers under the Medicaid Drug Rebate Program are calculated for drugs that are inhaled, infused, instilled, implanted or injected;
- extension of a manufacturer's Medicaid rebate liability to covered drugs dispensed to individuals who are enrolled in Medicaid managed care organizations;
- expansion of eligibility criteria for Medicaid programs by, among other things, allowing states to offer Medicaid coverage to certain individuals with income at or below 133% of the federal poverty level, thereby potentially increasing a manufacturer's Medicaid rebate liability;
- a new Patient-Centered Outcomes Research Institute to oversee, identify priorities in, and conduct comparative clinical effectiveness research, along with funding for such research;
- creation of the Independent Payment Advisory Board, which, once empaneled, will have the authority to recommend certain changes to the Medicare program that could result in reduced payments for prescription drugs and those recommendations could have the effect of law unless overruled by a supermajority vote of Congress; and
- establishment of a Center for Medicare Innovation at the Centers for Medicare & Medicaid Services, or CMS, to test innovative payment and service delivery models to lower Medicare and Medicaid spending, potentially including prescription drug spending.

Since its enactment, there have been judicial and Congressional challenges to certain aspects of the Affordable Care Act, and we expect there will be additional challenges and amendments to the Affordable Care Act in the future. The current presidential administration and Congress will likely continue to seek to modify, repeal, or otherwise invalidate all, or certain provisions of, the Affordable Care Act. It is uncertain the extent to which any such changes may impact our business or financial condition.

In addition, 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, led to aggregate reductions of Medicare payments to providers of 2% per fiscal year. These reductions went into effect in April 2013 and, due to subsequent legislative amendments to the statute, will remain in effect through 2025 unless additional action is taken by Congress. In January 2013, the American Taxpayer Relief Act of 2012 was signed into law, which, among other things, further reduced Medicare payments to several types of providers, including hospitals, imaging centers and cancer treatment centers, and increased the statute of limitations period for the government to recover overpayments to providers from three to five years.

Individual states in the United States have also become increasingly aggressive in passing legislation and implementing regulations designed to control pharmaceutical and biological product

pricing, including price or patient reimbursement constraints, discounts, restrictions on certain product access and marketing cost disclosure and transparency measures, and, in some cases, designed to encourage importation from other countries and bulk purchasing. Legally-mandated price controls on payment amounts by third-party payors or other restrictions could harm our business, results of operations, financial condition and prospects. In addition, regional healthcare authorities and individual hospitals are increasingly using bidding procedures to determine what pharmaceutical products and which suppliers will be included in their prescription drug and other healthcare programs. This could reduce the ultimate demand for our drug candidates or put pressure on our product pricing. Moreover, payment methodologies may be subject to changes in healthcare legislation and regulatory initiatives. For example, CMS may develop new payment and delivery models, such as bundled payment models. In addition, recently there has been heightened governmental scrutiny over the manner in which manufacturers set prices for their marketed products.

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

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

Our business operations and current and future relationships with investigators, healthcare professionals, consultants, third-party payors, patient organizations and customers will be subject to applicable healthcare regulatory laws, which could expose us to penalties.

Our business operations and current and future arrangements with investigators, healthcare professionals, consultants, third-party payors, patient organizations and customers, may expose us to broadly applicable fraud and abuse and other healthcare laws and regulations. These laws may constrain the business or financial arrangements and relationships through which we conduct our operations, including how we research, market, sell and distribute our drug candidates, if approved. Such laws include:

- the U.S. federal Anti-Kickback Statute, which prohibits, among other things, persons or entities from knowingly and willfully soliciting, offering, receiving or providing any remuneration (including any kickback, bribe, or certain rebate), directly or indirectly, overtly or covertly, in cash or in kind, to induce or reward, or in return for, either the referral of an individual for, or the

purchase, lease, order or recommendation of, any good, facility, item or service, for which payment may be made, in whole or in part, under U.S. federal and state healthcare programs such as Medicare and Medicaid. A person or entity does not need to have actual knowledge of the statute or specific intent to violate it in order to have committed a violation;

- the U.S. federal false claims and civil monetary penalties laws, including the civil False Claims Act, which, among other things, impose criminal and civil penalties, including through civil whistleblower or qui tam actions, against individuals or entities for knowingly presenting, or causing to be presented, to the U.S. federal government, claims for payment or approval that are false or fraudulent, knowingly making, using or causing to be made or used, a false record or statement material to a false or fraudulent claim, or from knowingly making a false statement to avoid, decrease or conceal an obligation to pay money to the U.S. federal government. In addition, the government may assert that a claim including items and services resulting from a violation of the U.S. federal Anti-Kickback Statute constitutes a false or fraudulent claim for purposes of the False Claims Act;
- the U.S. federal Health Insurance Portability and Accountability Act of 1996, or HIPAA, which imposes criminal and civil liability for, among other things, knowingly and willfully executing, or attempting to execute, a scheme to defraud any healthcare benefit program, or knowingly and willfully falsifying, concealing or covering up a material fact or making any materially false statement, in connection with the delivery of, or payment for, healthcare benefits, items or services; similar to the U.S. federal Anti-Kickback Statute, a person or entity does not need to have actual knowledge of the statute or specific intent to violate it in order to have committed a violation;
- HIPAA, as amended by the Health Information Technology for Economic and Clinical Health Act of 2009 and its implementing regulations, which also imposes certain obligations, including mandatory contractual terms, with respect to safeguarding the privacy, security and transmission of individually identifiable health information without appropriate authorization by covered entities subject to the rule, such as health plans, healthcare clearinghouses and healthcare providers as well as their business associates that perform certain services involving the use or disclosure of individually identifiable health information;
- the FDCA, which prohibits, among other things, the adulteration or misbranding of drugs, biologics and medical devices;
- the U.S. Public Health Service Act, which prohibits, among other things, the introduction into interstate commerce of a biological product unless a biologics license is in effect for that product;
- the U.S. Physician Payments Sunshine Act and its implementing regulations, which require certain manufacturers of drugs, devices, biologics and medical supplies that are reimbursable under Medicare, Medicaid, or the Children's Health Insurance Program to report annually to the government information related to certain payments and other transfers of value to physicians and teaching hospitals, as well as ownership and investment interests held by the physicians described above and their immediate family members;
- analogous U.S. state laws and regulations, including: state anti-kickback and false claims laws, which may apply to our business practices, including but not limited to, research, distribution, sales and marketing arrangements and claims involving healthcare items or services reimbursed by any third-party payor, including private insurers; state laws that require pharmaceutical companies to comply with the pharmaceutical industry's voluntary compliance guidelines and the relevant compliance guidance promulgated by the U.S. federal government, or otherwise restrict payments that may be made to healthcare providers and other potential referral sources; state laws and regulations that require drug manufacturers to file reports

relating to pricing and marketing information, which requires tracking gifts and other remuneration and items of value provided to healthcare professionals and entities; and state laws governing the privacy and security of health information in certain circumstances, many of which differ from each other in significant ways and often are not preempted by HIPAA, thus complicating compliance efforts; and

- similar healthcare laws and regulations in the EU and other jurisdictions, including reporting requirements detailing interactions with and payments to healthcare providers.

Ensuring that our internal operations and future business arrangements with third parties comply with applicable healthcare laws and regulations will involve substantial costs. It is possible that governmental authorities will conclude that our business practices do not comply with current or future statutes, regulations, agency guidance or case law involving applicable fraud and abuse or other healthcare laws and regulations. If our operations are found to be in violation of any of the laws described above or any other governmental laws and regulations that may apply to us, we may be subject to significant penalties, including civil, criminal and administrative penalties, damages, fines, exclusion from government-funded healthcare programs, such as Medicare and Medicaid or similar programs in other countries or jurisdictions, disgorgement, individual imprisonment, contractual damages, reputational harm, diminished profits and the curtailment or restructuring of our operations. Further, defending against any such actions can be costly, time-consuming and may require significant personnel resources. Therefore, even if we are successful in defending against any such actions that may be brought against us, our business may be impaired.

Recent U.S. tax legislation and future changes to applicable U.S. tax laws and regulations may have a material adverse effect on our business, financial condition and results of operations.

Changes in laws and policy relating to taxes may have an adverse effect on our business, financial condition and results of operations. For example, the U.S. government recently enacted significant tax reform, and certain provisions of the new law may adversely affect us. Changes include, but are not limited to, a federal corporate tax rate decrease to 21% for tax years beginning after December 31, 2017, a reduction to the maximum deduction allowed for net operating losses generated in tax years after December 31, 2017, eliminating carrybacks of net operating losses, and providing for indefinite carryforwards for losses generated in tax years after December 31, 2017. The legislation is unclear in many respects and could be subject to potential amendments and technical corrections, and will be subject to interpretations and implementing regulations by the Treasury and Internal Revenue Service, any of which could mitigate or increase certain adverse effects of the legislation. In addition, it is unclear how these U.S. federal income tax changes will affect state and local taxation. Generally, future changes in applicable U.S. tax laws and regulations, or their interpretation and application could have an adverse effect on our business, financial conditions and results of operations.

Risks Related to Our Common Stock and This Offering

Our stock price may be volatile and you may not be able to resell shares of our common stock at or above the price you paid.

The trading price of our common stock following this offering could be highly volatile and could be subject to wide fluctuations in response to various factors, some of which are beyond our control. These factors include those discussed in this “Risk Factors” section of this prospectus and others such as:

- results from, and any delays in, our clinical studies for our lead drug candidates, or any other future clinical development programs;
- announcements by academic or other third parties challenging the fundamental premises underlying our approach to treating age-associated diseases and/or drug development;

- announcements of regulatory approval or disapproval of our current or any future drug candidates;
- failure or discontinuation of any of our research and development programs;
- announcements relating to future licensing, collaboration, or development agreements;
- delays in the commercialization of our current or any future drug candidates;
- public misperception regarding the use of our therapies, or public bias of against “anti-aging” companies;
- acquisitions and sales of new products, technologies, or businesses;
- manufacturing and supply issues related to our drug candidates for clinical studies or future drug candidates for commercialization;
- quarterly variations in our results of operations or those of our future competitors;
- changes in earnings estimates or recommendations by securities analysts;
- announcements by us or our competitors of new products, significant contracts, commercial relationships, acquisitions, or capital commitments;
- developments with respect to intellectual property rights;
- our commencement of, or involvement in, litigation;
- changes in financial estimates or guidance, including our ability to meet our future revenue and operating profit or loss estimates or guidance;
- any major changes in our board of directors or management;
- new legislation in the United States relating to the sale or pricing of pharmaceuticals;
- FDA or other U.S. or foreign regulatory actions affecting us or our industry;
- product liability claims or other litigation or public concern about the safety of our drug candidates;
- market conditions in the pharmaceutical, biopharmaceutical and biotechnology sectors; and
- general economic conditions in the United States and abroad.

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

An active, liquid and orderly market for our common stock may not develop, and you may not be able to resell your common stock at or above the public offering price.

Prior to this offering, there has been no public market for shares of our common stock, and an active public market for our shares may not develop or be sustained after this offering. We and the representatives of the underwriters determined the initial public offering price of our common stock through negotiation. This price does not necessarily reflect the price at which investors in the market will be willing to buy and sell our shares following this offering. In addition, an active trading market

may not develop following the consummation of this offering or, if it is developed, may not be sustained. The lack of an active market may impair your ability to sell your shares at the time you wish to sell them or at a price that you consider reasonable. An inactive market may also impair our ability to raise capital by selling shares and may impair our ability to acquire other businesses, applications, or technologies using our shares as consideration.

If securities or industry analysts do not publish research or reports about our business, or if they issue an adverse or misleading opinion regarding our stock, our stock price and trading volume could decline.

The trading market for our common stock will be influenced by the research and reports that industry or securities analysts publish about us or our business. We do not currently have and may never obtain research coverage by securities and industry analysts. If no or few securities or industry analysts commence coverage of us, the trading price for our stock would be negatively impacted. In the event we obtain securities or industry analyst coverage, if any of the analysts who cover us issue an adverse or misleading opinion regarding us, our business model, our intellectual property or our stock performance, or if our clinical studies and operating results fail to meet the expectations of analysts, our stock price would likely decline. If one or more of these analysts cease coverage of us or fail to publish reports on us regularly, we could lose visibility in the financial markets, which in turn could cause our stock price or trading volume to decline.

We are an "emerging growth company" and as a result of the reduced disclosure and governance requirements applicable to emerging growth companies, our common stock may be less attractive to investors.

We are an "emerging growth company," as defined in the JOBS Act, and we intend to take advantage of certain exemptions from various reporting requirements that are applicable to other public companies that are not emerging growth companies including, but not limited to, not being required to comply with the auditor attestation requirements of Section 404, reduced disclosure obligations regarding executive compensation in our periodic reports and proxy statements, and exemptions from the requirements of holding a nonbinding advisory vote on executive compensation and stockholder approval of any golden parachute payments not previously approved. In addition, as an "emerging growth company" the JOBS Act allows us to delay adoption of new or revised accounting pronouncements applicable to public companies until such pronouncements are made applicable to private companies. We have elected to use this extended transition period under the JOBS Act. As a result, our consolidated financial statements may not be comparable to the financial statements of issuers who are required to comply with the effective dates for new or revised accounting standards that are applicable to public companies, which may make comparison of our financials to those of other public companies more difficult.

We cannot predict if investors will find our common stock less attractive because we will 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. We may take advantage of these reporting exemptions until we are no longer an emerging growth company. We will remain an emerging growth company until the earlier of (1) the last day of the year following the fifth anniversary of the consummation of this offering, (2) the last day of the year in which we have total annual gross revenue of at least $1.07 billion, (3) the last day of the year in which we are deemed to be a "large accelerated filer" as defined in Rule 12b-2 under the Exchange Act, which would occur if the market value of our common stock held by non-affiliates exceeded $700.0 million as of the last business day of the second fiscal quarter of such year or (4) the date on which we have issued more than $1.0 billion in non-convertible debt securities during the prior three-year period.

We will incur significant costs as a result of operating as a public company, and our management will devote substantial time to new compliance initiatives. We may fail to comply with the rules that apply to public companies, including Section 404 of the Sarbanes-Oxley Act of 2002, which could result in sanctions or other penalties that would harm our business.

We will incur significant legal, accounting and other expenses as a public company, including costs resulting from public company reporting obligations under the Exchange Act and regulations regarding corporate governance practices. The listing requirements of The Nasdaq Global Select Market and the rules of the Securities and Exchange Commission, or SEC, require that we satisfy certain corporate governance requirements relating to director independence, filing annual and interim reports, stockholder meetings, approvals and voting, soliciting proxies, conflicts of interest and a code of conduct. Our management and other personnel will need to devote a substantial amount of time to ensure that we comply with all of these requirements. Moreover, the reporting requirements, rules and regulations will increase our legal and financial compliance costs and will make some activities more time-consuming and costly. Any changes we make to comply with these obligations may not be sufficient to allow us to satisfy our obligations as a public company on a timely basis, or at all. These reporting requirements, rules and regulations, coupled with the increase in potential litigation exposure associated with being a public company, could also make it more difficult for us to attract and retain qualified persons to serve on our board of directors or board committees or to serve as executive officers, or to obtain certain types of insurance, including directors' and officers' insurance, on acceptable terms.

After this offering, we will be subject to Section 404 of The Sarbanes-Oxley Act of 2002, or Section 404, and the related rules of the SEC, which generally require our management and independent registered public accounting firm to report on the effectiveness of our internal control over financial reporting. Beginning with the second annual report that we will be required to file with the SEC, Section 404 requires an annual management assessment of the effectiveness of our internal control over financial reporting. However, for so long as we remain an emerging growth company as defined in the JOBS Act, we intend to take advantage of certain exemptions from various reporting requirements that are applicable to public companies that are not emerging growth companies, including, but not limited to, not being required to comply with the auditor attestation requirements of Section 404. Once we are no longer an emerging growth company or, if prior to such date, we opt to no longer take advantage of the applicable exemption, we will be required to include an opinion from our independent registered public accounting firm on the effectiveness of our internal controls over financial reporting.

To date, we have never conducted a review of our internal control for the purpose of providing the reports required by these rules. During the course of our review and testing, we may identify deficiencies and be unable to remediate them before we must provide the required reports. Furthermore, if we have a material weakness in our internal controls over financial reporting, we may not detect errors on a timely basis and our financial statements may be materially misstated. We or our independent registered public accounting firm may not be able to conclude on an ongoing basis that we have effective internal control over financial reporting, which could harm our operating results, cause investors to lose confidence in our reported financial information and cause the trading price of our stock to fall. In addition, as a public company we will be required to file accurate and timely quarterly and annual reports with the SEC under the Exchange Act. In order to report our results of operations and financial statements on an accurate and timely basis, we will depend in part on CROs to provide timely and accurate notice of their costs to us. Any failure to report our financial results on an accurate and timely basis could result in sanctions, lawsuits, delisting of our shares from The Nasdaq Global Select Market or other adverse consequences that would materially harm to our business.

Purchasers in this offering will experience immediate and substantial dilution in the book value of their investment.

The initial public offering price of our common stock is substantially higher than the pro forma net tangible book value per share of our common stock before giving effect to this offering. Accordingly, if you purchase our common stock in this offering, you will incur immediate substantial dilution of approximately $11.59 per share based on the initial public offering price of $17.00 per share, and our pro forma net tangible book value as of December 31, 2017. In addition, following this offering, purchasers in this offering will have contributed approximately 27.7% of the total gross consideration paid by stockholders to us to purchase shares of our common stock, through December 31, 2017, but will own only approximately 11.9% of the shares of common stock outstanding immediately after this offering. Furthermore, if the underwriters exercise their option to purchase additional shares, or outstanding options and warrants are exercised, you could experience further dilution. For a further description of the dilution that you will experience immediately after this offering, see the section titled “Dilution.”

If we sell shares of our common stock in future financings, stockholders may experience immediate dilution and, as a result, our stock price may decline.

We may from time to time issue additional shares of common stock at a discount from the current trading price of our common stock. As a result, our stockholders would experience immediate dilution upon the purchase of any shares of our common stock sold at such discount. In addition, as opportunities present themselves, we may enter into financing or similar arrangements in the future, including the issuance of debt securities, preferred stock or common stock. If we issue common stock or securities convertible into common stock, our common stockholders would experience additional dilution and, as a result, our stock price may decline.

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

As of April 11, 2018, our executive officers, directors, holders of 5% or more of our capital stock and their respective affiliates beneficially owned approximately 74.1% of our voting stock and, upon the closing of this offering, that same group will hold approximately 66.1% of our outstanding voting stock (assuming no exercise of the underwriters’ option to purchase additional shares and no exercise of outstanding options). 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.

Sales of a substantial number of shares of our common stock 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 upon the number of shares outstanding as of December 31, 2017 (including the Series C convertible preferred stock issued in March and April 2018), upon the closing of this offering, we will have outstanding a total of 41,903,538 shares of common stock, assuming no exercise of the underwriters’ option to purchase additional shares. Of these shares, substantially all of the shares of our common stock sold in this offering (excluding any shares sold to our employees in the directed share program), 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.

The lock-up agreements pertaining to this offering will expire 180 days from the date of this prospectus. Based upon the number of shares outstanding as of December 31, 2017 (including the Series C convertible preferred stock issued in March and April 2018), after the lock-up agreements expire, up to approximately 36.9 million additional shares of common stock will be eligible for sale in the public market, approximately 14.2 million of which shares are held by directors, executive officers and other affiliates and will be subject to Rule 144 under the Securities Act. Goldman Sachs & Co. LLC, Morgan Stanley & Co. LLC and Citigroup Global Markets Inc. may, however, 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.

In addition, as of December 31, 2017, approximately 4.4 million shares of common stock that are either subject to outstanding options or reserved for future issuance under our equity incentive plans 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. 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.

Based upon the number of shares outstanding as of December 31, 2017 (including the Series C convertible preferred stock issued in March and April 2018), after this offering, the holders of approximately 32.1 million shares of our common stock, or approximately 77% of our total outstanding shares of common stock will be entitled to rights with respect to the registration of their shares under the Securities Act, subject to vesting schedules and to the lock-up agreements described above. Registration of these shares under the Securities Act would result in the shares becoming freely tradable without restriction under the Securities Act, except for shares purchased by affiliates. Any sales of securities by these stockholders could have a material adverse effect on the trading price of our common stock.

We have broad discretion to determine how to use the funds raised in this offering, and may use them in ways that may not enhance our operating results or the price of our common stock.

Our management will have broad discretion over the use of proceeds from this offering, and we could spend the proceeds from this offering in ways our stockholders may not agree with or that do not yield a favorable return, if at all. We currently expect to use substantially all of the net proceeds of this offering to fund our planned clinical development of UBX0101, our planned IND-enabling studies and Phase 1 clinical study of UBX1967, internal research and development activities and for working capital and general corporate purposes. However, our use of these proceeds may differ substantially from our current plans. If we do not invest or apply the proceeds of this offering in ways that improve our operating results, we may fail to achieve expected financial results, which could cause our stock price to decline.

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

We have incurred substantial losses during our history and do not expect to become profitable in the near future, and we may never achieve profitability. To the extent that we continue to generate taxable losses, unused losses will carry forward to offset a portion of future taxable income, if any, until such unused losses expire, if ever. 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 percentage point change (by value) in its equity ownership by certain stockholders over a three-year period, the corporation’s ability to use its pre-change net operating loss carryforwards, or NOLs, and other pre-change tax attributes (such as research and development tax credits) to offset its post-change income or taxes may be limited. We may have experienced ownership changes in the past and may experience ownership changes in the future as a result of this offering and/or subsequent shifts in our stock ownership (some of which shifts are outside our control). As a result, if we earn net taxable

income, our ability to use our pre-change NOLs to offset such taxable income could be subject to limitations. Similar provisions of state tax law may also apply. As a result, even if we attain profitability, we may be unable to use a material portion of our NOLs and other tax attributes.

Additionally, the Tax Act, which was enacted on December 22, 2017, significantly reforms the Code, including changes to the rules governing net operating loss carryforwards. For net operating loss carryforwards arising in tax years beginning after December 31, 2017, the Tax Act limits a taxpayer's ability to utilize such carryforwards to 80% of taxable income. In addition, net operating loss carryforwards arising in tax years ending after December 31, 2017 can be carried forward indefinitely, but carryback is generally prohibited. Net operating loss carryforwards generated by us before January 1, 2018 will not be subject to the taxable income limitation and will continue to have a twenty-year carryforward period. However, the changes in the carryforward and carryback periods as well as the new limitation on use of net operating losses may significantly impact our ability to use net operating loss carryforwards generated after December 31, 2017, as well as the timing of any such use, and could adversely affect our results of operations.

Provisions in our charter documents and under Delaware law could discourage a takeover that stockholders may consider favorable and may lead to entrenchment of management.

Our amended and restated certificate of incorporation and amended and restated bylaws that will be in effect immediately prior to the consummation of this offering will contain provisions that could delay or prevent changes in control or changes in our management without the consent of our board of directors. These provisions will include the following:

- a classified board of directors with three-year staggered terms, which may delay the ability of stockholders to change the membership of a majority of our board of directors;
- no cumulative voting in the election of directors, which limits the ability of minority stockholders to elect director candidates;
- the exclusive right of our board of directors to elect a director to fill a vacancy created by the expansion of the board of directors or the resignation, death or removal of a director, which prevents stockholders from being able to fill vacancies on our board of directors;
- the ability of our board of directors to authorize the issuance of shares of preferred stock and to determine the price and other terms of those shares, including preferences and voting rights, without stockholder approval, which could be used to significantly dilute the ownership of a hostile acquiror;
- the ability of our board of directors to alter our amended and restated bylaws without obtaining stockholder approval;
- the required approval of at least 66 2/3% of the shares entitled to vote at an election of directors to adopt, amend or repeal our amended and restated bylaws or repeal the provisions of our amended and restated certificate of incorporation regarding the election and removal of directors;
- a prohibition on stockholder action by written consent, which forces stockholder action to be taken at an annual or special meeting of our stockholders;
- the requirement that a special meeting of stockholders may be called only by the chief executive officer or the president or the board of directors, which may delay the ability of our stockholders to force consideration of a proposal or to take action, including the removal of directors; and
- advance notice procedures that stockholders must comply with in order to nominate candidates to our board of directors or to propose matters to be acted upon at a stockholders' meeting,

which may discourage or deter a potential acquiror from conducting a solicitation of proxies to elect the acquiror's own slate of directors or otherwise attempting to obtain control of us.

We are also subject to the anti-takeover provisions contained in Section 203 of the Delaware General Corporation Law. Under Section 203, a corporation may not, in general, engage in a business combination with any holder of 15% or more of its capital stock unless the holder has held the stock for three years or, among other exceptions, the board of directors has approved the transaction. For a description of our capital stock, see the section titled "Description of Capital Stock."

Claims for indemnification by our directors and officers may reduce our available funds to satisfy successful third-party claims against us and may reduce the amount of money available to us.

Our amended and restated certificate of incorporation and amended and restated bylaws will provide that we will indemnify our directors and officers, in each case to the fullest extent permitted by Delaware law.

In addition, as permitted by Section 145 of the Delaware General Corporation Law, our amended and restated bylaws to be effective immediately prior to the completion of this offering and our indemnification agreements that we have entered into with our directors and officers will provide that:

- We will indemnify our directors and officers for serving us in those capacities or for serving other business enterprises at our request, to the fullest extent permitted by Delaware law. Delaware law provides that a corporation may indemnify such person if such person acted in good faith and in a manner such person reasonably believed to be in or not opposed to the best interests of the registrant and, with respect to any criminal proceeding, had no reasonable cause to believe such person's conduct was unlawful.
- We may, in our discretion, indemnify employees and agents in those circumstances where indemnification is permitted by applicable law.
- We are required to advance expenses, as incurred, to our directors and officers in connection with defending a proceeding, except that such directors or officers shall undertake to repay such advances if it is ultimately determined that such person is not entitled to indemnification.
- We will not be obligated pursuant to our amended and restated bylaws to indemnify a person with respect to proceedings initiated by that person against us or our other indemnitees, except with respect to proceedings authorized by our board of directors or brought to enforce a right to indemnification.
- The rights conferred in our amended and restated bylaws are not exclusive, and we are authorized to enter into indemnification agreements with our directors, officers, employees and agents and to obtain insurance to indemnify such persons.
- We may not retroactively amend our amended and restated bylaw provisions to reduce our indemnification obligations to directors, officers, employees and agents.

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 amended and restated certificate of incorporation will provide that the Court of Chancery of the State of Delaware is the exclusive forum for any derivative action or proceeding brought on our behalf, any action asserting a breach of fiduciary duty, any action asserting a claim against us arising

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 amended and restated certificate of incorporation or amended and restated 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 that will be contained in our amended and restated 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.

We do not currently intend to pay dividends on our common stock, and, consequently, your ability to achieve a return on your investment will depend on appreciation in the price of our common stock.

We do not currently intend to pay any cash dividends on our common stock for the foreseeable future. We currently intend to invest our future earnings, if any, to fund our growth. Therefore, you are not likely to receive any dividends on your common stock for the foreseeable future. Since we do not intend to pay dividends, your ability to receive a return on your investment will depend on any future appreciation in the market value of our common stock. There is no guarantee that our common stock will appreciate or even maintain the price at which our holders have purchased it.

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus contains forward-looking statements concerning our business, operations and financial performance and condition, as well as our plans, objectives and expectations for our business operations and financial performance and condition. Any statements contained herein that are not statements of historical facts may be deemed to be forward-looking statements. In some cases, you can identify forward-looking statements by terminology such as “aim,” “anticipate,” “assume,” “believe,” “contemplate,” “continue,” “could,” “due,” “estimate,” “expect,” “goal,” “intend,” “may,” “objective,” “plan,” “predict,” “potential,” “positioned,” “seek,” “should,” “target,” “will,” “would” and other similar expressions that are predictions of or indicate future events and future trends, or the negative of these terms or other comparable terminology. These forward-looking statements include, but are not limited to, statements about:

- our expectations regarding the potential benefits, activity, effectiveness and safety of our drug candidates;
- our expectations with regard to the results of our clinical studies, preclinical studies and research and development programs, including the timing and availability of data from such studies;
- our preclinical, clinical and regulatory development plans for our drug candidates, including the timing or likelihood of regulatory filings and approvals for our drug candidates;
- our expectations with regard to our ability to acquire, discover and develop additional drug candidates and advance such drug candidates into, and successfully complete, clinical studies;
- our expectations regarding the potential market size and size of the potential patient populations for our drug candidates, if approved for commercial use;
- our intentions and our ability to establish collaborations and/or partnerships;
- the timing and amount of any milestone payments we are obligated to make pursuant to our existing license agreements and any future license or collaboration agreements that we may enter into;
- our commercialization, marketing, and manufacturing capabilities and expectations;
- our intentions with respect to the commercialization of our drug candidates;
- the pricing and reimbursement of our drug candidates, if approved;
- the implementation of our business model and strategic plans for our business and drug candidates, including additional indications for which we may pursue;
- the scope of protection we are able to establish and maintain for intellectual property rights covering our drug candidates, including the projected terms of patent protection;
- estimates of our expenses, future revenue, capital requirements, our needs for additional financing, and our ability to obtain additional capital;
- our anticipated use of proceeds from this offering;
- our future financial performance;
- developments and projections relating to our competitors and our industry, including competing therapies; and
- other risks and uncertainties, including those listed under the caption “Risk Factors.”

These forward-looking statements are based on management’s current expectations, estimates, forecasts and projections about our business and the industry in which we operate and management’s

beliefs and assumptions and are not guarantees of future performance or development and involve known and unknown risks, uncertainties and other factors that are in some cases beyond our control. As a result, any or all of our forward-looking statements in this prospectus may turn out to be inaccurate. 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. Potential investors are urged to consider these factors carefully in evaluating the forward-looking statements. These forward-looking statements speak only as of the date of this prospectus. Except as required by law, we assume no obligation to update or revise these forward-looking statements for any reason, even if new information becomes available in the future. You should, however, review the factors and risks we describe in the reports we will file from time to time with the SEC after the date of this prospectus. See “Where You Can Find More Information.”

INDUSTRY AND MARKET DATA

This prospectus contains estimates, projections and other information concerning our industry, our business, and the markets for our drug candidates, including data regarding the estimated patient population and market size for our drug candidates, as well as data regarding market research, estimates and forecasts prepared by our management. Information that is based on estimates, forecasts, projections, market research or similar methodologies is inherently subject to uncertainties and actual events or circumstances may differ materially from events and circumstances that are assumed in this information. Unless otherwise expressly stated, we obtained this industry, business, market and other data from reports, research surveys, studies and similar data prepared by market research firms and other third parties, industry, medical and general publications, government data and similar sources. In some cases, we do not expressly refer to the sources from which this data is derived. In that regard, when we refer to one or more sources of this type of data in any paragraph, you should assume that other data of this type appearing in the same paragraph is derived from the same sources, unless otherwise expressly stated or the context otherwise requires.

USE OF PROCEEDS

We estimate that the net proceeds from the sale of 5,000,000 shares of common stock in this offering will be approximately $76.1 million at the initial public offering price of $17.00 per share, after deducting the underwriting discounts and commissions and estimated offering expenses payable by us. If the underwriters exercise their option to purchase an additional 750,000 shares from us in full, we estimate that net proceeds will be approximately $87.9 million at the initial public offering price of $17.00 per share after deducting the underwriting discounts and commissions and estimated offering expenses payable by us.

We intend to use the net proceeds from this offering together with our cash, cash equivalents and marketable securities on hand as follows:

- approximately $10.0 million to $20.0 million to fund our planned Phase 1 clinical study and subsequent clinical development of UBX0101;
- approximately $15.0 million to $25.0 million to fund our planned IND-enabling studies and Phase 1 clinical study of UBX1967 in an opthalmologic indication;
- approximately $30.0 million to $50.0 million to advance our research and development efforts, including conducting additional preclinical and IND-enabling studies, as well as an additional Phase 1 clinical study, in our other senolytic pipeline programs and advancing our programs targeting other aging mechanisms; and
- any remaining proceeds for working capital and general corporate purposes.

We estimate that our current cash, cash equivalents and marketable securities will be sufficient for us to fund our operating expenses and capital expenditure requirements through at least the next 12 months. We expect our existing capital resources together with the proceeds from this offering will fund our planned operating expenses into 2021, including through clinical data readout from our Phase 1 clinical study of UBX0101 and data readouts from two additional Phase 1 clinical studies of our lead programs for ophthalmologic and/or pulmonary disorders.

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 completion 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 our research and development activities may vary significantly depending on numerous factors, including the progress of our development efforts, the status of and results from any pre-clinical or clinical studies we may commence in the future, our ability to take advantage of expedited programs or to obtain regulatory approval for any other drug candidates we may identify and pursue, the timing and costs associated with the manufacture and supply of any other drug candidates we may identify and pursue for clinical development or commercialization, 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 the net proceeds from this offering, we intend to invest the net proceeds in interest-bearing, investment-grade instruments and 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, if any, to fund the development and expansion of our business and we do not anticipate paying any cash dividends in the foreseeable future. Any future determination related to dividend policy will be made at the discretion of our board of directors.

CAPITALIZATION

The following table sets forth our cash, cash equivalents, and marketable securities and capitalization as of December 31, 2017:

- on an actual basis;
- on a pro forma basis to give effect to: (i) the sale and issuance in March and April 2018 of 3,913,425 shares of our Series C convertible preferred stock at $15.3317 per share for net proceeds of $59.9 million, (ii) the conversion of all shares of our outstanding Series A-1, Series A-2, Series B, and Series C convertible preferred stock into an aggregate of 32,073,149 shares of common stock immediately prior to the consummation of this offering; and (iii) the filing and effectiveness of our amended and restated certificate of incorporation, which will occur immediately prior to the consummation of this offering; and
- on a pro forma as adjusted basis to give further effect to the sale of 5,000,000 shares of common stock in this offering at the initial public offering price of $17.00 per share, after deducting the underwriting discounts and commissions and estimated offering expenses payable by us.

You should read this information together with our audited financial statements and related notes appearing elsewhere in this prospectus and the information set forth under the headings “Selected Financial Data” and “Management’s Discussion and Analysis of Financial Condition and Results of Operations.”

	As of December 31, 2017		
	Actual	Pro Forma	Pro Forma As Adjusted
	(In thousands, except share and per share amounts)		
Cash, cash equivalents, and marketable securities	$ 91,628	$ 151,508	$ 227,558
Convertible preferred stock, $0.0001 par value—91,739,149 shares authorized; 28,159,724 shares issued and outstanding, actual; no shares authorized, issued or outstanding, pro forma or pro forma as adjusted	$ 173,956	$ —	$ —
Stockholders’ (deficit) equity:			
Common stock, $0.0001 par value—122,000,000 shares authorized; 4,830,389 shares issued and outstanding, actual; 300,000,000 shares authorized, pro forma and pro forma as adjusted; 36,903,538 shares issued and outstanding, pro forma; 41,903,538 shares issued and outstanding, pro forma as adjusted	1	4	5
Preferred stock, $0.0001 par value—no shares authorized, issued and outstanding, actual; 10,000,000 shares authorized, pro forma and pro forma as adjusted; no shares issued and outstanding, pro forma and pro forma as adjusted	—	—	—
Additional paid-in capital	4,072	237,905	313,954
Related party promissory notes for purchase of common stock	(202)	(202)	(202)
Accumulated other comprehensive loss	(104)	(104)	(104)
Accumulated deficit	(86,880)	(86,880)	(86,880)
Total stockholders’ (deficit) equity	(83,113)	150,723	226,773
Total capitalization	$ 90,843	$ 150,723	$ 226,773

The number of shares of common stock issued and outstanding actual, pro forma and pro forma as adjusted in the table above excludes the following:

- 4,365,694 shares of our common stock issuable upon the exercise of stock options to purchase common stock that were outstanding as of December 31, 2017, with a weighted average exercise price of $3.07 per share;
- 918,595 shares of our common stock reserved for issuance pursuant to future awards under our 2013 Equity Incentive Plan, or the Plan, and associated amendments as of December 31, 2017;
- 96,610 shares of our common stock issuable upon the exercise of an outstanding warrant with an exercise price of $0.18 per share;

- 763,501 shares of our common stock issuable upon the exercise of outstanding convertible preferred stock warrants with a weighted-average exercise price of $0.65 per share;
- 739,551 shares of our common stock that we may be obligated to issue under our license agreements;
- 4,289,936 shares of common stock reserved for issuance pursuant to future awards under our 2018 Equity Incentive Award Plan, as well as any automatic increases in the number of shares of our common stock reserved for future issuance under this plan, which became effective upon the effectiveness of the registration statement to which this prospectus relates; and
- 536,242 shares of common stock reserved for issuance pursuant to future awards under our Employee Stock Purchase Plan, as well as any automatic increases in the number of shares of our common stock reserved for future issuance under this plan, which became effective upon the effectiveness of the registration statement to which this prospectus relates.

DILUTION

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

As of December 31, 2017, we had a historical net tangible book value (deficit) of $(83.1) million, or $(17.21) per share of common stock. Our net tangible book value (deficit) represents total tangible assets less total liabilities and convertible preferred stock all divided by the number of shares of common stock outstanding on December 31, 2017. Our pro forma net tangible book value as of December 31, 2017, before giving effect to this offering, was $150.7 million, or $4.08 per share of our common stock. Pro forma net tangible book value, before the issuance and sale of shares in this offering, gives effect to:

- the conversion of all shares of our outstanding Series A-1, Series A-2, and Series B, convertible preferred stock as of December 31, 2017 and the conversion of all shares of our Series C convertible preferred stock issued in March and April 2018 into an aggregate of 32,073,149 shares of common stock immediately prior to the consummation of this offering; and
- the filing and effectiveness of our amended and restated certificate of incorporation, which will occur immediately prior to the consummation of this offering.

Net tangible book value dilution per share to new investors represents the difference between the amount per share paid by purchasers of shares of common stock in this offering and the pro forma as adjusted net tangible book value per share of common stock immediately after completion of this offering. After giving effect to the sale of shares of common stock in this offering at the initial public offering price of $17.00 per share and after deducting the underwriting discounts and commissions and estimated offering expenses, our pro forma as adjusted net tangible book value as of December 31, 2017 would have been approximately $226.8 million, or $5.41 per share. This represents an immediate increase in pro forma as adjusted net tangible book value of $1.33 per share to existing stockholders and an immediate dilution of $11.59 per share to new investors. The following table illustrates this per share dilution:

Initial public offering price per share		$17.00
Historical net tangible book value (deficit) per share as of December 31, 2017	$(17.21)	
Pro forma increase in net tangible book value (deficit) per share	21.29	
Pro forma net tangible book value per share as of December 31, 2017	4.08	
Increase in pro forma net tangible book value per share attributable to new investors	1.33	
Pro forma as adjusted net tangible book value per share after this offering		5.41
Dilution per share to new investors participating in this offering		$11.59

If the underwriters fully exercise their option to purchase additional shares, pro forma as adjusted net tangible book value after this offering would increase to approximately $5.59 per share, and the dilution to new investors purchasing shares in this offering would be $11.41 per share.

To the extent that outstanding options with an exercise price per share that is less than the pro forma as adjusted net tangible book value per share are exercised, new investors will experience further dilution. In addition, we may choose to raise additional capital due to market conditions or strategic considerations even if we believe we have sufficient funds for our current or future operating

plans. To the extent that 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.

The following table shows, as of December 31, 2017, on a pro forma as adjusted basis, the number of shares of common stock purchased from us, the total consideration paid to us and the average price paid per share by existing stockholders and by new investors purchasing common stock in this offering at the initial public offering price of $17.00 per share, before deducting the underwriting discounts and commissions and estimated offering expenses payable by us (in thousands, except share and per share amounts and percentages):

	Shares Purchased		Total Consideration		Average Price Per Share
	Number	Percent	Amount	Percent	
Existing stockholders	36,903,538	88.1%	$222,387	72.3%	$ 6.03
Investors participating in this offering	5,000,000	11.9	85,000	27.7	17.00
Total	41,903,538	100%	$307,387	100%	$ 7.34

The number of shares of common stock to be outstanding after this offering is based on 4,830,389 shares of common stock outstanding as of December 31, 2017, and includes an aggregate of 28,159,724 shares of common stock issuable upon conversion of our outstanding Series A-1, A-2 and B convertible preferred stock as of December 31, 2017 and 3,913,425 shares of our Series C convertible preferred stock issued in March and April 2018, and excludes the following:

- 4,365,694 shares of our common stock issuable upon the exercise of stock options to purchase common stock that were outstanding as of December 31, 2017, with a weighted average exercise price of $3.07 per share;
- 918,595 shares of our common stock reserved for issuance pursuant to future awards under our 2013 Equity Incentive Plan, or the Plan, and associated amendments as of December 31, 2017;
- 96,610 shares of our common stock issuable upon the exercise of an outstanding warrant with an exercise price of $0.18 per share;
- 763,501 shares of our common stock issuable upon the exercise of outstanding convertible preferred stock warrants with a weighted-average exercise price of $0.65 per share;
- 739,551 shares of our common stock that we may be obligated to issue under our license agreements;
- 4,289,936 shares of common stock reserved for issuance pursuant to future awards under our 2018 Equity Incentive Award Plan, as well as any automatic increases in the number of shares of our common stock reserved for future issuance under this plan, which became effective upon the effectiveness of the registration statement to which this prospectus relates; and
- 536,242 shares of common stock reserved for issuance pursuant to future awards under our Employee Stock Purchase Plan, as well as any automatic increases in the number of shares of our common stock reserved for future issuance under this plan, which became effective upon the effectiveness of the registration statement to which this prospectus relates.

SELECTED FINANCIAL DATA

You should read the following selected historical financial data below together with "Management's Discussion and Analysis of Financial Condition and Results of Operations" and our audited financial statements, related notes and other financial information included elsewhere in this prospectus. The selected financial data in this section are not intended to replace the financial statements and are qualified in their entirety by the audited financial statements and related notes included elsewhere in this prospectus.

We derived our selected statements of operations data for the years ended December 31, 2016 and 2017 and the balance sheet data as of December 31, 2016 and 2017 from our audited financial statements included elsewhere in this prospectus. Our historical results are not necessarily indicative of the results that may be expected in any future period. The selected financial data below should be read in conjunction with the section entitled "Management's Discussion and Analysis of Financial Condition and Results of Operations" and our financial statements and related notes included elsewhere in this prospectus.

	Year Ended December 31,	
	2016	2017
	(in thousands, except share and per share data)	
Summary of Operations Data:		
Contribution revenue	$ —	$ 1,382
Operating expenses:		
Research and development	13,707	37,373
General and administrative	5,137	9,617
Total operating expenses	18,844	46,990
Loss from operations	(18,844)	(45,608)
Loss on extinguishment of promissory notes	(9,377)	—
Interest income (expense), net	(2,183)	1,055
Other expense, net	—	(103)
Net loss	$ (30,404)	$ (44,656)
Net loss per share, basic and diluted(1)	$ (11.42)	$ (13.97)
Weighted average number of shares used in computing net loss per share, basic and diluted(1)	2,662,841	3,197,516
Pro forma net loss per share, basic and diluted(1)		$ (1.49)
Weighted average number of shares used in computing pro forma net loss per share, basic and diluted(1)		30,039,385

(1) See Notes 2 and 14 to our audited financial statements for an explanation of the calculations of our basic and diluted net loss per common share, pro forma net loss per common share, and the weighted-average number of common shares used in the computation of the per share amounts.

	As of December 31,	
	2016	2017
	(in thousands)	
Balance Sheet Data:		
Cash and cash equivalents	$ 89,286	$ 7,298
Marketable securities	—	84,330
Working capital	89,718	80,983
Total assets	96,648	102,024
Convertible preferred stock	131,089	173,956
Accumulated deficit	(42,224)	(86,880)
Total stockholders' deficit	(41,536)	(83,113)

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 section entitled "Selected Financial Data" and our audited financial statements and related notes included elsewhere in this prospectus. This discussion and other parts of this prospectus contain forward-looking statements that involve risks and uncertainties, such as our plans, objectives, expectations, intentions and beliefs. Our actual results could differ materially from those discussed in these forward-looking statements. Factors that could cause or contribute to such differences include, but are not limited to, those identified below and those discussed in the section entitled "Risk Factors" included elsewhere in this prospectus.

Overview

We are a preclinical biotechnology company engaged in researching and developing therapeutics with a mission to extend human healthspan, the period of one's life unburdened by the diseases of aging. Enabled by foundational scientific insights, we have devoted over six years to identifying multiple mechanisms that we believe to be root causes of age-associated disease. We are utilizing these insights to develop a broad portfolio of drug candidates to treat these diseases of aging, and we plan to initiate our first clinical study of our lead drug candidate in the second quarter of 2018.

Since the commencement of our operations, we have invested a significant portion of our efforts and financial resources in research and development activities, and we have incurred net losses each year since inception. Our net losses were $30.4 million and $44.7 million for the years ended December 31, 2016 and 2017, respectively. We do not have any products approved for sale, and we have never generated any revenue from contracts with customers. As of December 31, 2017, we had an accumulated deficit of $86.9 million, and we do not expect positive cash flows from operations in the foreseeable future. We expect to continue to incur net operating losses for at least the next several years as we continue our research and development efforts, advance our drug candidates through preclinical and clinical development, seek regulatory approval, prepare for and, if approved, proceed to commercialization.

We have funded our operations to date primarily from the issuance and sale of convertible preferred stock and convertible promissory notes. We do not expect to generate revenue from any drug candidates that we develop until we obtain regulatory approval for one or more of such drug candidates and commercialize our products or enter into collaboration agreements with third parties. Substantially all of our net losses have resulted from costs incurred in connection with our research and development programs and from general and administrative costs associated with our operations. As a result, we will need to raise additional capital. If sufficient funds on acceptable terms are not available when needed, we could be required to significantly reduce our operating expenses and delay, reduce the scope of, or eliminate one or more of our development programs.

We rely on third parties in the conduct of our preclinical studies and clinical studies and for manufacturing and supply of our drug candidates. We have no internal manufacturing capabilities, and we will continue to rely on third parties, many of whom are single-source suppliers, for our preclinical and clinical study materials. In addition, we do not yet have a marketing or sales organization or commercial infrastructure. Accordingly, we will incur significant expenses to develop a marketing and sales organization and commercial infrastructure in advance of generating any product sales.

Components of Our Results of Operations

Contribution Revenue

Contribution revenue to date has been derived from an agreement with a third-party organization under which we received funding in 2017 for the performance of certain research and development activities in pursuit of the third-party organization's philanthropic mission.

Research and Development Expenses

Research and development expenses consist primarily of costs incurred for the development of our drug candidates, which include:

- personnel-related expenses, including salaries, benefits and stock-based compensation for personnel contributing to research and development activities;
- laboratory expenses including supplies and services;
- expenses incurred under agreements with third-party contract manufacturing organizations, contract research organizations, research and development service providers, academic research institutions, and consultants;
- expenses related to license and sponsored research agreements; and
- facilities and other allocated expenses, including expenses for rent and facilities maintenance, and depreciation and amortization.

We expect our research and development expenses to increase substantially in the future as we advance our drug candidates into and through clinical studies and pursue regulatory approval of our drug candidates. The process of conducting the necessary clinical studies to obtain regulatory approval is costly and time-consuming. Clinical studies generally become larger and more costly to conduct as they advance into later stages and, in the future, we will be required to make estimates for expense accruals related to clinical study expenses. The actual probability of success for our drug candidates may be affected by a variety of factors including: the safety and efficacy of our drug candidates, early clinical data, investment in our clinical program, the ability of collaborators, if any, to successfully develop any drug candidates we license to them, competition, manufacturing capability and commercial viability. We may never succeed in achieving regulatory approval for any of our drug candidates. As a result of the uncertainties discussed above, we are unable to determine the duration and completion costs of our research and development projects or when and to what extent we will generate revenue from the commercialization and sale of our drug candidates. Due to the early-stage nature of our lead programs, we do not track costs on a project-by-project basis. As our programs enter clinical studies, we intend to track the cost of each program.

General and Administrative Expenses

Our general and administrative expenses consist primarily of personnel costs, allocated facilities costs and other expenses for outside professional services, including legal, audit and accounting services. Personnel costs consist of salaries, benefits and stock-based compensation. We expect to incur additional expenses associated with operating as a public company, including expenses related to compliance with the rules and regulations of the Securities and Exchange Commission, or SEC, and standards applicable to companies listed on a national securities exchange, additional insurance expenses, investor relations activities and other administrative and professional services. We also expect to increase the size of our administrative headcount to support the growth of our business and operate as a public company.

Loss on Extinguishment of Promissory Notes

Loss on extinguishment of promissory notes consists of the difference between the fair value of the convertible notes elected to be accounted for under the fair value option and the fair value of the shares of convertible preferred stock for which these notes were settled.

Interest Income (Expense), net

Interest expense is primarily related to the discount created from a contingent beneficial conversion on our promissory notes that was recognized in 2016 upon the conversion of these promissory notes to convertible preferred stock. Interest income is primarily related to interest earned on our marketable securities in 2017.

Results of Operations

Comparison of the year ended December 31, 2016 and 2017

The following table sets forth the significant components of our results of operations:

	Year Ended December 31,		
	2016	2017	Change
	(in thousands)		
Summary of Operations Data:			
Contribution revenue	$ —	$ 1,382	$ 1,382
Operating expenses:			
Research and development	13,707	37,373	23,666
General and administrative	5,137	9,617	4,480
Total operating expenses	18,844	46,990	28,146
Loss from operations	(18,844)	(45,608)	(26,764)
Loss on extinguishment of promissory notes	(9,377)	—	9,377
Interest income (expense), net	(2,183)	1,055	3,238
Other expense, net	—	(103)	(103)
Net loss	$(30,404)	$(44,656)	$(14,252)

Contribution Revenue

Contribution revenue for the year ended December 31, 2017 was related to funding we recognized from a third-party organization in 2017 for the performance of certain research and development activities in pursuit of that organization's philanthropic mission.

Research and Development

Research and development expenses increased by $23.7 million from $13.7 million for the year ended December 31, 2016 to $37.4 million for the year ended December 31, 2017. The increase was primarily due to an increase of $10.4 million for direct research and development costs related to consultants, third-party contract research organizations, and preclinical studies as we expanded and continued to progress our development programs. Additionally, we had a $8.6 million increase in personnel-related expenses, of which $1.5 million related to stock-based compensation due to an increase in our headcount, an increase of $1.9 million in lab supplies as we expanded our lab space, $1.0 million in facility-related costs, and a $1.0 million increase in depreciation and amortization primarily related to leasehold improvements associated with our new space.

General and Administrative

General and administrative expenses increased by $4.5 million from $5.1 million for the year ended December 31, 2016 to $9.6 million for the year ended December 31, 2017. The increase was primarily due to an increase in personnel-related expenses of $2.9 million, of which $1.3 million related to stock-based compensation, as a result of an increase in our headcount and an increase of $1.3 million related to unconditional funding provided to academic institutions in 2017.

Loss on Extinguishment of Promissory Notes

We recognized a loss on extinguishment of promissory notes issued in July, September, and October 2016 of $9.4 million upon the settlement of such notes in 2016 for shares of Series B convertible preferred stock.

Interest Income (Expense), net

Our interest income was $1.1 million for the year ended December 31, 2017 as we invested our cash in marketable securities.

We recognized interest expense of $2.2 million for the year ended December 31, 2016 primarily related to the discount created from a contingent beneficial conversion on the February, April, and May 2016 promissory notes which was recognized upon the conversion of such notes in 2016 into shares of Series B preferred stock.

Liquidity, Capital Resources and Capital Requirements

Sources of Liquidity

We have incurred net losses each year since inception. Our net losses were $30.4 million and $44.7 million for the years ended December 31, 2016 and 2017. We do not have any products approved for sale, and have never generated any revenue from contracts with customers. As of December 31, 2017, we had $91.6 million in cash, cash equivalents, and marketable securities and an accumulated deficit of $86.9 million. In March and April 2018, we received net proceeds of $59.9 million from the sale and issuance of shares of our Series C convertible preferred stock. Additionally, we do not expect positive cash flows from operations in the foreseeable future. Historically, we have incurred operating losses as a result of ongoing efforts to develop our drug candidates, including conducting ongoing research and development, preclinical studies and providing general and administrative support for these operations. We expect our operating losses and net cash used in operating activities will increase over at least the next several years as we continue our research and development activities, advance our drug candidates through preclinical and clinical testing and move into later and more costly stages of drug development, hire personnel and prepare for regulatory submissions and the commercialization of our drug candidates.

We have historically financed our operations primarily through issuance and sale of convertible preferred stock and convertible promissory notes and will continue to be dependent upon equity and/or debt financing until we are able to generate positive cash flows from our operations.

Future Funding Requirements

To date we have not generated any revenue for contracts with customers and have only received a contribution from a third party organization for certain research and development activities to support their philanthropic mission. We expect to continue to incur significant losses for the foreseeable future, and we expect the losses to increase as we continue the development of, and seek regulatory

approvals for, our drug candidates, and begin to commercialize any approved products. We are subject to all of the risks typically related to the development of new drug candidates, and we may encounter unforeseen expenses, difficulties, complications, delays and other unknown factors that may adversely affect our business. Moreover, following the completion of this offering, we expect to incur additional costs associated with operating as a public company. We anticipate that we will need substantial additional funding in connection with our continuing operations.

Until we can generate a sufficient amount of revenue from the commercialization of our drug candidates or from collaboration agreements with third parties, if ever, we expect to finance our future cash needs through public or private equity or debt financings. Additional capital may be raised through the sale of our equity securities, incurring debt, entering into licensing or collaboration agreements with partners, receiving research contributions, grants or other sources of financing to fund our operations. There can be no assurance that sufficient funds will be available to us on attractive terms or at all. If we are unable to obtain additional funding from these or other sources, it may be necessary to significantly reduce our rate of spending through reductions in staff and delaying, scaling back, or stopping certain research and development programs. Insufficient liquidity may also require us to relinquish rights to drug candidates at an earlier stage of development or on less favorable terms than we would otherwise choose.

Since our inception, we have incurred significant losses and negative cash flows from operations. We have an accumulated deficit of $86.9 million through December 31, 2017. We expect to incur substantial additional losses in the future as we conduct and expand our research and development activities. We believe that our existing cash, cash equivalents, and marketable securities will be sufficient to enable us to fund our projected operations through at least the next 12 months. We expect our existing capital resources together with the proceeds from this offering will fund our planned operating expenses into 2021, including through clinical data readout from our Phase 1 clinical study of UBX0101 and data readouts from two additional Phase 1 clinical studies of our lead programs for ophthalmologic and pulmonary disorders.

We have based our projections of operating capital requirements on assumptions that may prove to be incorrect and we may use all our available capital resources sooner than we expect. Because of the numerous risks and uncertainties associated with research, development and commercialization of biotechnology products, we are unable to estimate the exact amount of our operating capital requirements. Our future funding requirements will depend on many factors, including, but not limited to:

- the scope, progress, results and costs of researching and developing UBX0101, UBX1967 or any other drug candidates, and conducting preclinical studies and clinical studies, including our planned Phase 1 clinical study of UBX0101, which we expect to initiate in the second quarter of 2018;
- the timing of, and the costs involved in, obtaining regulatory approvals for our lead drug candidates or any future drug candidates;
- the number and characteristics of any additional drug candidates we develop or acquire;
- the timing and amount of any milestone payments we are required to make pursuant to our license agreements;
- the cost of manufacturing our lead drug candidates or any future drug candidates and any products we successfully commercialize;
- the cost of building a sales force in anticipation of product commercialization;
- the cost of commercialization activities if our lead drug candidates or any future drug candidates are approved for sale, including marketing, sales and distribution costs;

- our ability to maintain existing, and establish new, strategic collaborations, licensing or other arrangements and the financial terms of any such agreements, including the timing and amount of any future milestone, royalty or other payments due under any such agreement;
- any product liability or other lawsuits related to our products;
- the expenses needed to attract, hire and retain skilled personnel;
- the costs associated with being a public company;
- our efforts to enhance operational, financial and information management systems and hire additional personnel, including personnel to support development of our drug candidates;
- the costs involved in preparing, filing, prosecuting, maintaining, defending and enforcing our intellectual property portfolio; and
- the timing, receipt and amount of sales of any future approved or cleared products, if any.

Cash Flows

The following table sets forth a summary of the primary sources and uses of cash for each of the periods presented below:

	Year Ended December 31,	
	2016	2017
	(in thousands)	
Cash used in operating activities	$ (16,398)	$(38,358)
Cash used in investing activities	(2,744)	(86,305)
Cash provided by financing activities	107,938	42,775
Net increase (decrease) in cash	$ 88,796	$(81,888)

Cash Flows Used in Operating Activities

Cash used in operating activities of $38.4 million for the year ended December 31, 2017 consisted primarily of a net loss of $44.7 million, which was partially offset by non-cash charges of $4.0 million and a decrease in our net operating assets of $2.3 million. Our non-cash charges primary consisted of $1.3 million for depreciation and amortization expense and $3.0 million for stock-based compensation expense. The decrease in our net operating assets of $2.3 million was primarily due to an increase in accrued compensation of $1.6 million related to our bonus accrual and increases in accounts payable of $1.2 million and accrued and other current liabilities of $1.3 million as we expand our operations, partially offset by an increase in our contribution receivable of $1.4 million.

Cash used in operating activities of $16.4 million for the year ended December 31, 2016 consisted primarily of a net loss of $30.4 million, which was partially offset by non-cash charges of $12.0 million and a decrease in our net operating assets of $2.0 million. Our non-cash charges primarily consisted of $9.4 million for loss on extinguishment of our July, September, and October 2016 promissory notes and $2.2 million for interest expense related to our February, April and May 2016 promissory notes. The decrease in our net operating assets was due primarily to an increase in accrued and other current liabilities of $1.0 million primarily related to deferred rent for our facility lease entered into in 2016 and an increase in our accrued compensation of $0.5 million.

Cash Flows Used in Investing Activities

Cash used in investing activities of $86.3 million for the year ended December 31, 2017 was related to purchases of marketable securities of $134.5 million and purchases of property and

equipment of $1.7 million, which were partially offset by maturities of marketable securities of $49.8 million.

Cash used in investing activities of $2.7 million for the year ended December 31, 2016 was related to the purchases of property and equipment of $2.2 million and the purchase of a cost method investment of $0.5 million.

Cash Flows Provided by Financing Activities

Cash provided by financing activities of $42.8 million for the year ended December 31, 2017 was primarily related to net proceeds from the issuance of shares of our convertible preferred stock.

Cash provided by financing activities of $107.9 million for the year ended December 31, 2016 was primarily related to net proceeds of $91.0 million from the issuance of shares of our convertible preferred stock and proceeds of $16.9 million from the issuance of convertible promissory notes which have since been converted into or settled with shares of convertible preferred stock.

Contractual Obligations and Other Commitments

The following table summarizes our contractual obligations as of December 31, 2017:

	Payments due by period				
	Less than 1 year	1 to 3 years	3 to 5 years	More than 5 years	Total
	(in thousands)				
Contractual obligations:					
Operating lease(1)	$1,846	$4,084	$3,756	$ —	$9,686
Capital lease	78	124	—	—	202
Total contractual obligations	$1,924	$4,208	$3,756	$ —	$9,888

(1) Our contractual obligations and commitments primarily relate to our facilities lease agreement. We have a lease for laboratory and office space in Brisbane, California. The current lease is for approximately 39,000 square feet and the lease period expires in October 2022.

We are party to various license agreements pursuant to which we have in-licensed rights to various technologies, including patents, research “know-how” and proprietary research tools, for the discovery, research, development and commercialization of drug products to treat diseases of aging. The license agreements obligated us to make certain milestone payments related to specified clinical development and sales milestone events, as well as tiered royalties in the low-single digits based on sales of licensed products. This table does not include any milestone payments or royalty payments to third parties as the amounts, timing and likelihood of such payments are not known. See Note 5 to our Financial Statements “License Agreements” for additional information.

Off-Balance Sheet Arrangements

We have not entered into any off-balance sheet arrangements. Our license and compound library and option agreement with a privately held clinical-stage biopharmaceutical company represents a variable interest in a variable interest entity, or VIE. However, we do not consolidate this entity in our financial statements because we are not considered to be its primary beneficiary.

Critical Accounting Polices and Estimates

This discussion and analysis of our financial condition and results of operations is based on our financial statements, which have been prepared in accordance with GAAP. The preparation of these financial statements requires us to make estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities at the date of the financial statements, as well as the reported expenses incurred during the reporting periods. Our estimates are based on our historical experience and on various other factors that we believe are reasonable under the circumstances, the results of which form the basis for making judgments about the carrying value of assets and liabilities that are not readily apparent from other sources. Actual results may differ from these estimates under different assumptions or conditions. While our significant accounting policies are described in more detail in the notes to our financial statements included elsewhere in this prospectus, we believe that the following accounting policies are critical to understanding our historical and future performance, as these policies relate to the more significant areas involving management's judgments and estimates.

Research and Development Expenses

Costs related to research and development of drug candidates are charged to research and development expense as incurred. Research and development costs include, but are not limited to, payroll and personnel expenses for personnel contributing to research and development activities, laboratory supplies, outside services, licenses acquired to be used in research and development and allocated overhead, including rent, equipment, depreciation and utilities. Payments made prior to the receipt of goods or services to be used in research and development are deferred and recognized as expense in the period in which the related goods are received or services are rendered.

We have and may continue to enter into license agreements to access and utilize certain technology. We evaluate if the license agreement is an acquisition of an asset or a business. To date none of our license agreements have been considered to be an acquisition of a business. For asset acquisitions, the upfront payments to acquire such licenses, as well as any future milestone payments made before product approval, are immediately recognized as research and development expense when due, provided there is no alternative future use of the rights in other research and development projects. These license agreements may also include contingent consideration in the form of cash and additional issuances of our common stock. We assess whether such contingent consideration meets the definition of a derivative. To date, we have determined that such contingent consideration are not derivatives. We will continuously reassess this determination until such time that the contingency is met or expires.

Variable Interest Entities

We assess whether we are the primary beneficiary of a variable interest entity, or VIE, at the inception of the arrangement we enter into with third party entities and at each reporting date. This assessment is based on our power to direct the activities of the VIE that most significantly impact the VIE's economic performance and our obligation to absorb losses or the right to receive benefits from the VIE that could potentially be significant to the VIE.

Stock-Based Compensation

We recognize compensation costs related to stock options granted to employees and nonemployees based on the estimated fair value of the awards on the date of grant, and we recognize forfeitures as they occur. For awards that vest solely based on service conditions or a combination of service and performance conditions, we estimate the grant date fair value, and the resulting stock-

based compensation expense, using the Black-Scholes option-pricing model. The grant date fair value of the awards is generally recognized on a straight-line basis over the requisite service period, which is typically their vesting period.

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

- *Expected term*—The expected term represents the period that the stock-based awards are expected to be outstanding. We use the simplified method to determine the expected term, which is based on the average of the time-to-vesting and the contractual life of the options.
- *Expected volatility*—Since we are not yet a public company and do not have any trading history for our common stock, the expected volatility is estimated based on the average historical volatilities of common stock of comparable publicly traded entities over a period equal to the expected term of the stock option grants. The comparable companies are chosen based on their size, stage in the product development cycle or area of specialty. We will continue to apply this process until a sufficient amount of historical information regarding the volatility of our own stock price becomes available.
- *Risk-free interest rate*—The risk-free interest rate is based on the U.S. Treasury yield in effect at the time of grant for zero-coupon U.S. Treasury notes with maturities approximately equal to the expected term of the awards.
- *Expected Dividend*—We have never paid dividends on our common stock and have no plans to pay dividends on our common stock. Therefore, we used an expected dividend yield of zero.

For options granted to non-employee consultants, the fair value of these options is also remeasured using the Black-Scholes option-pricing model reflecting consistent assumptions as applied to employee options in each of the reported periods, other than the expected term, which is assumed to be the remaining contractual life of the option.

We have also granted stock options to certain key employees that vest in conjunction with certain performance and market conditions. We estimate the fair value of these awards using a lattice model, taking into consideration the market conditions. No expense will be recorded related to these awards until the achievement of the performance condition becomes probable. Once the achievement of the performance condition becomes probable, expense related to these awards is recognized using the accelerated attribution method with a cumulative catch-up adjustment over the derived service period relating to the market conditions, if the market conditions have not been met. As these awards vest in their entirety upon achievement of the market conditions, any unrecognized expense would be accelerated if the market conditions are achieved prior to the completion of the derived service period.

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, 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 factors that may have changed from the date of the most recent valuation through the date of the grant. These factors include, but are not limited to: the prices at which we sold shares of our convertible preferred stock to outside investors in arms-length transactions; the rights, preferences and privileges of our convertible preferred stock relative to those of our common stock; our results of operations, financial position and capital resources; current business conditions and projections; the lack of marketability of our common stock; the hiring of key personnel and the experience of management; progress of our research and development activities; our stage of development and material risks related to its business; the fact that the option grants involve illiquid securities in a private company; and the likelihood of achieving a liquidity event, such as an initial public offering or sale, in light of prevailing market conditions.

We have periodically determined the estimated fair value of our common stock at various dates using contemporaneous valuations 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*, or the Practice Aid. The Practice Aid identifies various available methods for allocating enterprise value across classes and series of capital stock to determine the estimated fair value of common stock at each valuation date. In accordance with the Practice Aid, our board of directors considered the following methods:

- *Current Value Method.* Under the Current Value Method, or CVM, our value is determined based on our balance sheet. This value is then first allocated based on the liquidation preference associated with preferred stock issued as of the valuation date, and then any residual value is assigned to the common stock.
- *Option-Pricing Method.* Under the option-pricing method, or OPM, shares are valued by creating a series of call options with exercise prices based on the liquidation preferences and conversion terms of each equity class. The estimated fair values of the preferred and common stock are inferred by analyzing these options.
- *Probability-Weighted Expected Return Method.* The probability-weighted expected return method, or PWERM, is a scenario-based analysis that estimates value per share based on the probability-weighted present value of expected future investment returns, considering each of the possible outcomes available to us, as well as the economic and control rights of each share class.

Our board of directors and management develop best estimates based on application of these approaches and the assumptions underlying these valuations, giving careful consideration to the advice from our third-party valuation expert. Such estimates involve inherent uncertainties and the application of significant judgment. As a result, if factors or expected outcomes change and we use significantly different assumptions or estimates, our equity-based compensation could be materially different. Following the closing of this offering, our board of directors will determine the fair market value of our common stock based on its closing price as reported on the date of grant on the primary stock exchange on which our common stock is traded.

The intrinsic value of all outstanding options as of December 31, 2017 was approximately $60.8 million, based on the initial public offering price of $17.00 per share, of which approximately $13.3 million is related to vested options and approximately $47.5 million is related to unvested options.

Income Taxes

We use the asset and liability method of accounting for income taxes, in which deferred tax assets and liabilities are recognized for future tax consequences attributable to the differences between the financial statement carrying amounts of existing assets and liabilities and their respective tax bases. Deferred tax assets and liabilities are measured using the enacted tax rates expected to apply to taxable income in the years in which those temporary differences are expected to be reversed. The effect on deferred tax assets and liabilities of a change in tax rates is recognized as income in the period that includes the enactment date. A valuation allowance is established if it is more likely than not that all or a portion of the deferred tax asset will not be realized.

Our tax positions are subject to income tax audits. We recognize the tax benefit of an uncertain tax position only if it is more likely than not that our position is sustainable upon examination by the taxing authority, based on the technical merits. The tax benefit recognized is measured as the largest amount of benefit which is more likely than not to be realized upon settlement with the taxing authority.

We recognize interest accrued and penalties related to unrecognized tax benefits in our tax provision. We evaluate uncertain tax positions on a regular basis. The evaluations are based on a number of factors, including changes in facts and circumstances, changes in tax law, correspondence with tax authorities during the course of the audit, and effective settlement of audit issues. Our provision for income taxes includes the effects of any accruals that we believe are appropriate, as well as the related net interest and penalties.

On December 22, 2017, the Tax Cuts and Jobs Act ("Tax Act") was signed into law. The Tax Act lowered the Federal corporate tax rate from 35% to 21% and made numerous other tax law changes. The Company has measured deferred tax assets at the enacted tax rate expected to apply when these temporary differences are expected to be realized or settled. U.S. GAAP requires companies to recognize the effect of tax law changes in the period of enactment.

On December 22, 2017, the SEC staff issued Staff Accounting Bulletin No. 118 ("SAB 118") that allows us to record provisional amounts during a measurement period not to extend beyond one year of the enactment date. We are currently analyzing the impact of the various provisions of the 2017 Tax Act. The ultimate impact may differ from the provisional amounts recorded. We expect to complete our analysis within the measurement period in accordance with SAB 118.

Reasonable estimates were made based on the Company's analysis of the Tax Act. These provisional amounts may be adjusted during 2018 when additional information is obtained. Additional information that may affect our provisional amounts would include further clarification and guidance on how the Internal Revenue Service will implement the Tax Act, including guidance with respect to guidance on how state taxing authorities will implement tax reform and the related effect on our state income tax returns, completion of our 2017 tax return filings, and the potential for additional guidance from the Financial Accounting Standards Board related to the Tax Act. Under the Tax Act, net operating losses ("NOLs") arising after December 31, 2017 may be carried forward indefinitely. However, NOLs arising after December 31, 2017 will be limited to 80% of taxable income. Our NOLs generated in 2017 and in prior years will not be subject to the limitations under the Tax Act.

JOBS Act Accounting Election

We are an "emerging growth company," as defined in the Jumpstart Our Business Startups Act of 2012, or the JOBS Act. Under the JOBS Act, emerging growth companies can delay adopting new or revised accounting standards issued subsequent to the enactment of the JOBS Act until such time as those standards apply to private companies.

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

Quantitative and Qualitative Disclosures about Market Risk

We are exposed to market risks in the ordinary course of our business. These risks primarily relate to interest rate sensitivities. We had cash, cash equivalents and marketable securities of $91.6 million as of December 31, 2017, which consist of bank deposits, money market funds, and marketable securities. The primary objective of our investment activities is to preserve capital to fund our operations. We also seek to maximize income from our investments without assuming significant risk. Because our investments are primarily short-term in duration, we believe that our exposure to

interest rate risk is not significant, and a 1% movement in market interest rates would not have a significant impact on the total value of our portfolio. We had no debt outstanding as of December 31, 2017.

Recent Accounting Pronouncements

See Note 2 to our Financial Statements “Summary of Significant Accounting Policies” for information.

BUSINESS

Overview

Our mission is to extend human healthspan. We define healthspan, or healthy longevity, as the period of one's life unburdened by the diseases of aging. Enabled by foundational scientific insights, we have devoted over six years to identifying multiple mechanisms that we believe to be root causes of age-associated disease. We are utilizing these insights to develop a broad portfolio of drug candidates to treat these diseases of aging, and we plan to initiate our first clinical study of our lead drug candidate in the second quarter of 2018. We believe our team of scientific, clinical, and business leaders and our strong culture of collaboration with external scientists make us uniquely qualified to accomplish our ambitious mission.

Age-associated diseases such as arthritis, vision loss, and cognitive decline cause considerable economic, personal, and societal burden. As individuals age, the prevalence of chronic disease increases, with 80% of older Americans having at least one chronic disease and 50% having two or more. Age-associated diseases negatively impact quality of life, are typically chronic, and progress from the time of onset until death. It is estimated that providing healthcare for people over the age of 65 costs four to five times more than for younger individuals. According to the Centers for Disease Control and Prevention, this elderly population of Americans is expected to nearly double by 2050, increasing the economic burden of aging dramatically. Any success increasing longevity without treating underlying diseases of aging would only serve to increase this burden.

Over the last three decades, knowledge of the fundamental mechanisms of aging has advanced considerably. As a result of these advances, aging is no longer characterized as a single, over-arching process but rather as multiple biological and cellular processes working concurrently. We now have evidence that one of these mechanisms, the accumulation of senescent cells, is a fundamental mechanism of aging and a major driver of many common age-associated diseases. Further, we believe that we have developed the tools required to target this mechanism. We have demonstrated in preclinical studies published in *Nature* ("Naturally occurring P16lnk4a-positive cells shorten healthy lifespan," *Nature* (2016) and "Clearance of p16lnk4a-positive senescent cells delays ageing associated disorders," *Nature* (2011)) and *Science* ("Senescent intimal foam cells are deleterious at all stages of atherosclerosis," *Science* (2016)) that the selective elimination of accumulated senescent cells extends both the healthspan and lifespan of animals and slows, halts, or reverses particular diseases of aging.

With these tools in hand we have developed a portfolio of programs targeting specific biological mechanisms implicated in diseases of aging and a pipeline of drug candidates to attack specific age-associated diseases, beginning with musculoskeletal, ophthalmologic, and pulmonary indications.

Cellular Senescence

Cellular senescence is a natural biological state in which a cell permanently halts division. These cells are referred to as senescent. As senescent cells accumulate with age, they begin secreting large quantities of more than 100 proteins, including inflammatory factors, proteases, fibrotic factors, and growth factors that disturb the tissue micro-environment. This collection of secreted proteins is referred to as the Senescence Associated Secretory Phenotype, or SASP. In addition to its effects on tissue function, the SASP contains factors that induce senescence in neighboring cells, setting off a cascade of events that culminates in the formation of the functionally aged and/or diseased tissue that underlies a variety of age-associated diseases.

Senolytic medicines selectively eliminate senescent cells and stop the production of the SASP at its source, which we believe addresses a root cause of diseases of aging. Existing therapeutics, such as antibodies, target single SASP factors, but fail to remove the cells that continually produce multiple SASP factors. By stopping the production of the SASP at it source, we believe senolytic medicines

could have a more durable impact on disease and could slow, halt, or reverse particular diseases of aging, and shift the treatment paradigm from chronic to intermittent dosing. Less frequent dosing may also improve drug tolerability and patient adherence. We are developing a number of molecules that we refer to as senolytic medicines.

Our Pipeline

We are developing a portfolio of programs targeting specific biological mechanisms implicated in diseases of aging. Our core therapeutic approach targets cellular senescence, and we are currently advancing programs in musculoskeletal, ophthalmologic, and pulmonary disorders. Our clinical development strategy is initially focused on the development of senolytic medicines designed to be administered locally into diseased tissue. After demonstrating efficacy in indications amenable to localized therapy, we plan to pursue the development of senolytic medicines that could be administered systemically to treat additional diseases of aging, such as kidney, liver, and heart disease. In addition to our efforts to eliminate senescent cells, we are also advancing other programs with the potential to extend human healthspan, including the administration of circulating youth factors and the enhancement of mitochondrial health.

Our current pipeline of programs is illustrated below:

Within our cellular senescence programs, our lead senolytic molecules, UBX0101 and UBX1967, designed for local treatment for the removal of accumulated senescent cells, are described below:

- UBX0101 is our lead drug candidate for musculoskeletal disease with an initial focus on osteoarthritis. This drug candidate is a potent senolytic small molecule inhibitor of the MDM2/p53 protein interaction. Disruption of this protein interaction can trigger the elimination of senescent cells. Our Investigational New Drug, or IND, application for UBX0101 was cleared by the U.S. Food and Drug Administration, or FDA, in April 2018, and we plan to initiate a Phase 1 clinical study in osteoarthritis in the second quarter of 2018. We expect to receive data from this clinical study in the first quarter of 2019.
- UBX1967 is our lead drug candidate for ophthalmologic diseases. This drug candidate is a potent senolytic small molecule inhibitor of specific members of the Bcl-2 family of apoptosis regulatory proteins. Senescent cells utilize pro-survival mechanisms to remain viable and rely on specific Bcl-2 protein family members to persist and accumulate in tissues. In our preclinical

studies, we have demonstrated that by targeting this pathway our molecule exhibits selectivity for senescent cells while sparing non-senescent cells in preclinical studies. We plan to submit our IND application and commence a Phase 1 clinical study in an ophthalmologic indication in the second half of 2019.

In addition to the above, we expect to file one additional IND application in the second half of 2019 for a Phase 1 clinical study in either an additional ophthalmologic indication or an initial pulmonary indication. We retain worldwide rights to UBX0101 and have an option to an exclusive license for UBX1967 pursuant to our compound library and option agreement with Ascentage Pharma Group Corp. Ltd., or Ascentage. See "—Licenses and Collaborations"

Our Team

We have assembled an executive team of scientific, clinical, and business leaders with broad expertise in biotechnology. Our co-founder and President, Nathaniel (Ned) E. David, Ph.D., is a biochemist and experienced entrepreneur, having founded four biotechnology companies, including Syrrx (acquired by Takeda Pharmaceuticals), Achaogen, Inc. (a public biopharmaceutical company), and KYTHERA Biopharmaceuticals (acquired by Allergan). Our Chief Executive Officer, Keith R. Leonard Jr., M.S., M.B.A., was CEO of KYTHERA Biopharmaceuticals from its founding through its acquisition in 2015 and held numerous leadership roles over thirteen years at Amgen, including Senior Vice President and General Manager of Amgen Europe. Our Chief Medical Officer, Jamie Dananberg, M.D., has held leadership roles at Takeda Pharmaceuticals and Eli Lilly & Co. and has overseen the development of eight FDA-approved products. Our Chief Scientific Officer, Daniel G. Marquess, D.Phil., served as Vice President and Head of Medicinal Chemistry at Theravance Biopharma, where he led the chemistry department to leverage Theravance's multivalent approach to create Theravance's pipeline of differentiated medicines. We have approximately 70 employees, over 65% of whom hold advanced degrees.

We have built a strong culture of teamwork with emphasis on external collaboration, providing us with access to rapidly-evolving science. We were co-founded by three leading scientists, Judith Campisi, Ph.D., Jan Van Deursen, Ph.D., and Daohong Zhou, M.D., and maintain more than a dozen active early-stage research and discovery focused collaborations with leading external academic institutions, including: the Buck Institute for Research on Aging; Massachusetts General Hospital; Mayo Clinic; the Medical Research Council (MRC, Imperial College); The University of California, San Francisco; and Yale University.

Our Strategy

To achieve our objective of building Unity into a leading healthspan company, we focus on two parallel efforts. First, we are committed to developing senolytic medicines that slow, halt, or reverse specific diseases of aging. Second, we dedicate significant resources and effort to better understand fundamental aging mechanisms and translate these insights into human medicines. This pioneering work is supported by valuable collaborations with leading academics. By investing early in the science of aging, we believe we are positioned to transition the field of aging biology from fundamental scientific insights to the development and commercialization of medicines. Our core strategies to achieve this objective include:

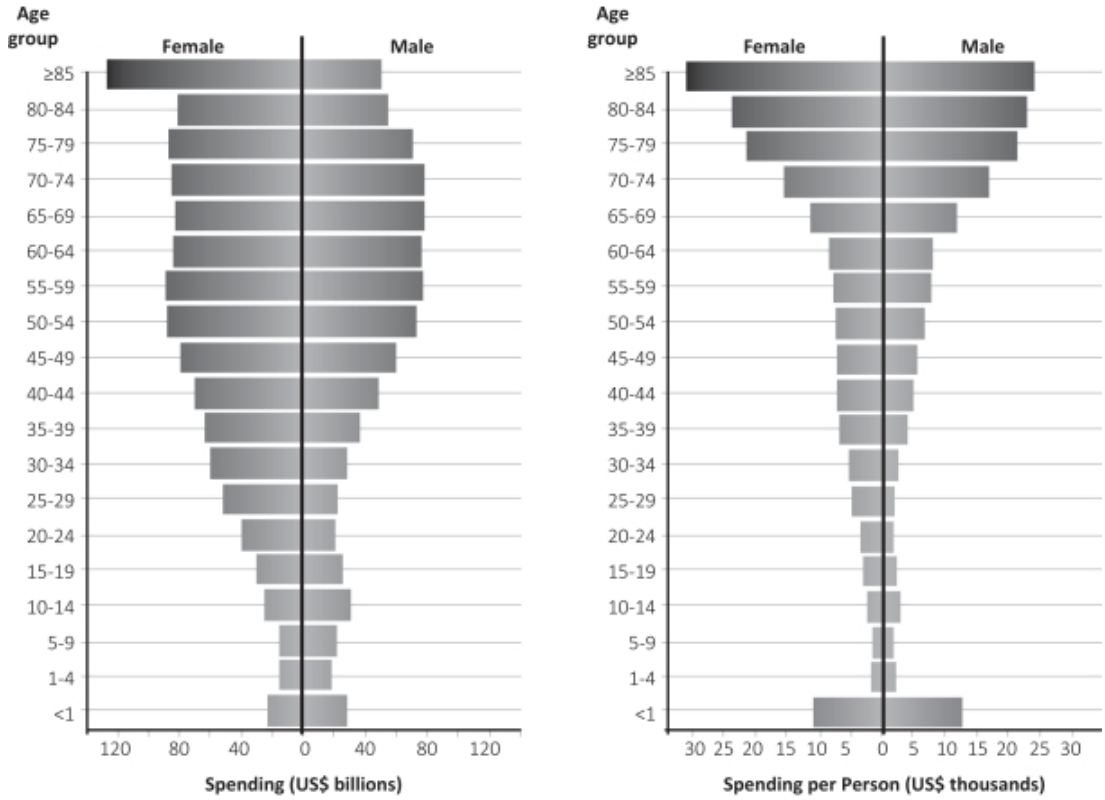
- ***Demonstrate in our clinical studies that local treatment with senolytic medicines can alter the course of an age-associated disease***. We believe that local treatment with senolytic medicines has the potential to slow, halt, or reverse aspects of aging. If we prove this concept in a localized setting, we will be well-positioned to expand upon that success with numerous additional applications.

- ***Continue research into the development of systemic senolytic medicines***. We believe that harnessing the full potential of senolysis, or the selective elimination of senescent cells, to alter many diseases of aging will require systemic senolytic medicines. We intend to explore the development of systemic senolytic medicines using multiple modalities, including small molecules and biologics.
- ***Target aging mechanisms beyond cellular senescence***. While cellular senescence and senolysis have been shown to affect the course of multiple diseases of aging, we believe achieving our broader goal of extending human healthspan will require intervention in additional aging mechanisms beyond cellular senescence. We will continue to conduct fundamental research into these other aging mechanisms, including loss of circulating youth factors and mitochondrial dysfunction. We will also continue to partner with the most forward-thinking aging researchers in the world to foster a collaborative environment to bring their insights, innovation, and technologies into our powerful research and drug development infrastructure.
- ***Leverage our core science and biotechnology experience***. We strive to attract, retain, and incentivize a unique team with significant strengths and experience in basic science, biotechnology, medicinal chemistry, and clinical development. Over the last six years, our team has identified multiple mechanisms that can selectively eliminate senescent cells, created potent senolytic molecules, and developed proprietary animal models to monitor senescent cell clearance. We have developed significant insight into the relationship between senescent cells and diseased tissues. Further, our management team has extensive biotechnology and pharmaceutical experience, and has played a leadership role in the creation of numerous FDA-approved medicines.
- ***Opportunistically expand our product portfolio***. Our internal research has identified multiple biological pathways that are potential targets for diseases of aging. We will search for opportunities for potential in-licensing of novel medicines with rapid access to clinical development. We expect that our current leadership in the biology of cellular senescence will serve as a foundation for us to develop numerous products to treat human disease.
- ***Continue to build a robust and defensible patent portfolio***. We are an innovative biotechnology company focused on developing novel insights into the biology and diseases of aging. Our current patent portfolio consists, on a worldwide basis, of nine issued or allowed patents and over 60 additional pending patent applications which we own, co-own or have exclusively licensed. We intend to continue to aggressively develop, file, and pursue additional patent protection for our innovative technologies.

Healthspan and Diseases of Aging

Age-associated diseases such as arthritis, vision loss, and cognitive decline cause considerable economic, personal and societal burden. As individuals age, the prevalence of chronic disease increases, with 80% of older Americans having at least one chronic disease and 50% having two or more. This deterioration of health negatively impacts quality of life, and age-associated diseases generally persist from the time of onset until death.

Diseases of aging drive significant healthcare spending. It is estimated that providing healthcare for people over the age of 65 costs four to five times more than for younger individuals. The Centers for Medicare and Medicaid Services expect US health spending to exceed $5.2 trillion by 2025, which is equal to approximately 20% of the projected US gross national product for the same year. According to the Centers for Disease Control and Prevention, the population of Americans aged 65 years or older is expected to nearly double by 2050, dramatically increasing the economic burden of aging. The chart below represents total (left) and per capita (right) spending on health care in the United States during 2013 (in 2015 dollars) as a function of age.



Moreover, diseases associated with aging have a detrimental impact on quality of life and older adults are often less optimistic about their future. Of the 34 million family caregivers in the United States who support aging relatives, many find a deterioration in their own health and well-being as a result.

We believe that by creating medicines that target fundamental aging mechanisms, we can reduce the economic, personal, and societal burden of aging and enhance quality of life.

Historical Approaches

As highlighted in *Nature Medicine*, a number of compounds have been developed to target fundamental aging mechanisms, including rapamycin, resveratrol, and metformin. These approaches were motivated by empirical observations in humans and data from the treatments of lower species (worms, flies, and mice) with these compounds. We believe that the lack of meaningful clinical data, potential serious side effects, and limited, if any, efficacy make these approaches less suitable for

widespread age-associated disease intervention and the extension of human healthspan on a large scale.

Compounds Targeting Drivers of Aging

Compound	Potential Target/Treatment	Use	Risks
Rapamycin	mTORC1, mTORC2	Treatment of cancer, metabolic disease, and cardiovascular disease	Immunosuppression, insulin resistance, cataract formation, degeneration of testis
Metformin	Mitochondria AMPK, mTOR	Treatment of hyperglycemia, cancer, & metabolic disease	Unknown
Resveratrol	SIRT AMPK	Extension of healthy aging	Unknown
Anti-CGRP	CGRP, CGRP receptors such as calcitonin receptor-like (CALCRL)	Migraine treatment, metabolic diseases reduction, reduction of low-grade inflammation in healthy aging	Pain insensitivity, hypothermia
Unknown compound	Methionine restriction	Metabolic disease treatment, extension of healthy aging	Hepatic steatosis, weight loss, depression
LY2405319 (Lilly), avimer polypeptide against FGF-21, FGFR-1c, and ß-Klotho (Amgen)	Reduced IIS, reduced FGF-21, Klotho, PAPP-A protein levels	Metabolic disease treatment, extension of healthy aging	Reduced bone mass, hyperinsulinemia, insulin resistance, somatic growth

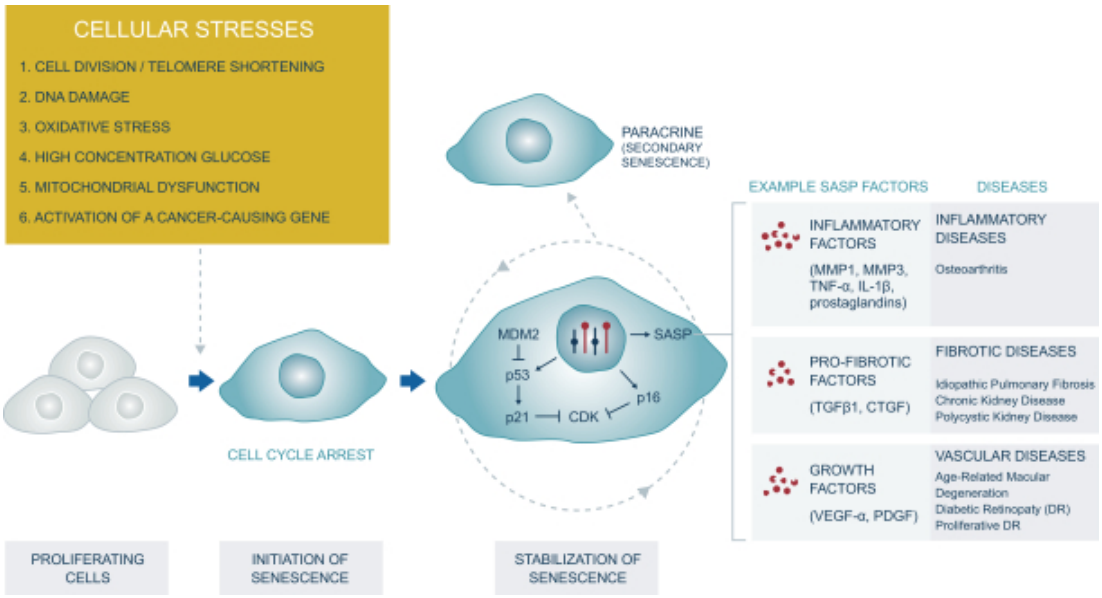
Our Approach to Extending Human Healthspan

Causes of Cellular Senescence

Cellular senescence is a natural biological state in which a cell permanently halts division. Cells become senescent when they experience some form of unresolvable cellular stress. To date, six stress mechanisms have been identified that can cause a cell to become senescent, including (i) extensive cell division and telomere shortening, (ii) DNA damage, (iii) oxidative stress, (iv) high concentration glucose, (v) mitochondrial dysfunction, and (vi) activation of a cancer-causing gene.

These cellular stress events result in the activation of the tumor suppressor protein p53, which drives the production of two cell-cycle dependent kinase inhibitors (CDK inhibitors) p21 and p16. These two molecules are required for the establishment and subsequent maintenance of the senescent cell state. The first CDK inhibitor to be produced is p21, which works through subsequent pathways to block the production of numerous proteins that cells need to divide. The initial p21-driven signal is an acute response to cell damage and eventually decreases. In contrast, p16 permanently locks the cell into a non-dividing state, and the production of p16 continues as long as the cell lives. Given that p16 production continues indefinitely and is believed to be produced only in senescent cells, it is a widely used marker to identify and quantify senescent cells.

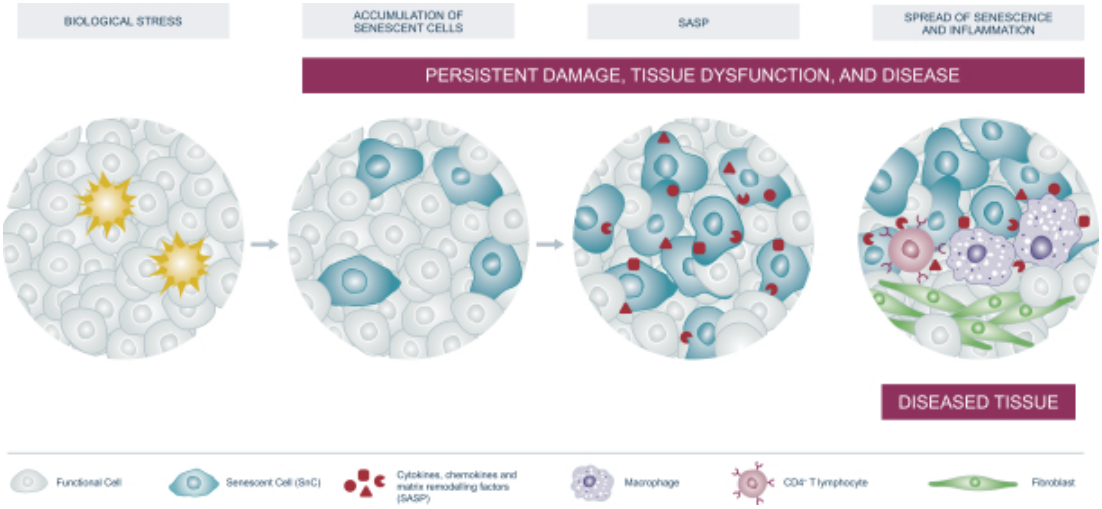
The process through which stress mechanisms can induce cells to become senescent is illustrated in the figure below.



How Senescent Cells Drive Diseases of Aging: The SASP

Once cells become senescent, they begin secreting large quantities of more than 100 proteins, including pro-inflammatory factors that recruit the immune system, proteases that remodel the extra-cellular matrix, pro-fibrotic factors that drive the formation of dysfunctional matrix, and growth factors that perturb the function of the tissue micro-environment. This collection of secreted proteins is referred to as the Senescence Associated Secretory Phenotype, or SASP(s). In addition to its effects on tissue function, the SASP contains factors that induce senescence in neighboring cells, setting off a cascade

of events that ultimately culminates in the formation of a functionally aged and/or diseased tissue that underlies a variety of age-associated diseases. This process is illustrated in the figure below.



Numerous SASP factors have been implicated as potentially contributing to human disease and it is now believed that the SASP is the primary means by which senescent cells drive specific diseases of aging. For example, a variety of single SASP factors (TNFa and VEGFa) have been demonstrated to drive human diseases by themselves and have been the target of well-known antibody therapeutics, including HUMIRA® and EYLEA®. While these antibodies are able to modify human disease by removing the activity of a single SASP factor, we believe the clearance of senescent cells will remove the source of numerous SASP factors, providing both improved efficacy and duration-of-effect.

A History of the Science of Senescent Cells and Their Role in Diseases of Aging

In 1961, Leonard Hayflick, Ph.D. demonstrated that human cells have a finite capacity to divide, a concept now referred to as the "Hayflick Limit." Dr. Hayflick suggested that humans age because senescent cells are unable to participate in tissue repair.

In 1993, Manuel Serrano, Ph.D. et al. discovered the p16 gene and described its role as an anti-cancer mechanism. In 1996, David Alcorta, Ph.D. recognized that p16 induced a state of cellular senescence by binding to and inhibiting the function of cycle-dependent kinases. These two discoveries laid the groundwork for the use of p16 as a universal marker of senescent cells and the use of the p16 promoter to selectively remove senescent cells from living animals.

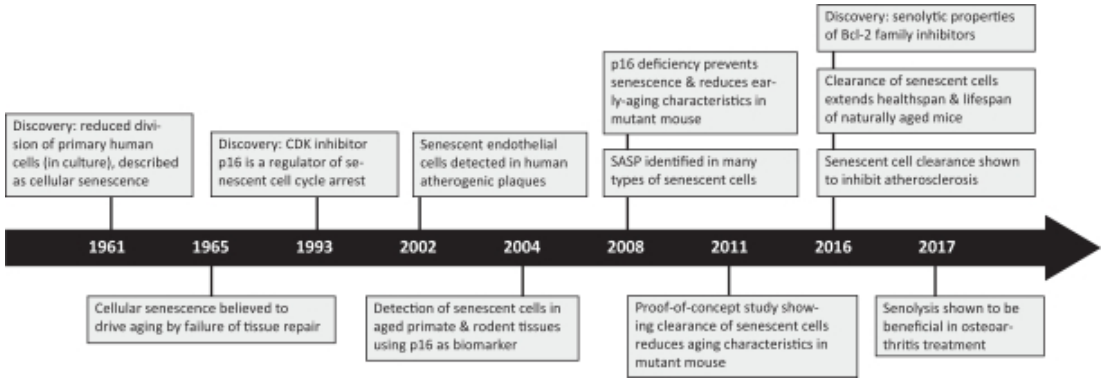
In 2008, Judith Campisi, Ph.D. (of the Buck Institute for Research on Aging and one of our scientific co-founders) demonstrated that senescent cells produce the SASP. Also in 2008, Jan van Deursen, Ph.D. (of Mayo Clinic and one of our scientific co-founders) demonstrated that mice engineered to produce large numbers of senescent cells age rapidly and that the deletion of p16 reduced some of these aging effects. In 2011, Dr. van Deursen and Darren Baker, Ph.D. extended this work, demonstrating that mice allowed to accumulate senescent cells aged more rapidly, and that the elimination of these accumulated cells blunted multiple aspects of aging. For these efforts, *Science* listed the work of Drs. Baker and van Deursen as one of the top breakthroughs of 2011.

In 2015, Daohong Zhou, Ph.D. (one of our scientific co-founders while at the University of Arkansas Medical Center) and a Unity scientist demonstrated that a single drug-like molecule could

eliminate senescent cells from a living animal. While the molecule used for this demonstration, a Bcl-2 family inhibitor, was not ideally suited to become a medicine, the work demonstrated that the findings of Drs. Campisi, van Deursen, and Baker could be achieved with a small molecule. The molecule utilized was also one of the world's first demonstrably senolytic molecules and has led to the design of more potent and selective senolytics.

In 2016 and 2017, significant scientific advancements in senescence biology were reported, with publications demonstrating that senescent cells mediated the effects of aging in naturally aged mice. In particular, *Science* again acknowledged the field of senescence, highlighting research finding that senolytic molecules could potentially blunt the senescence-driven effects of the cardiovascular disease atherosclerosis as one of the top breakthroughs of 2016. In addition, we (in collaboration with investigators at Johns Hopkins) reported that osteoarthritis was potentially driven by senescent cells and that senolytic molecules could mitigate, and potentially reverse, the disease.

The following figure illustrates the chronology of key scientific findings in senescence biology underlying our senolytic medicine approach.



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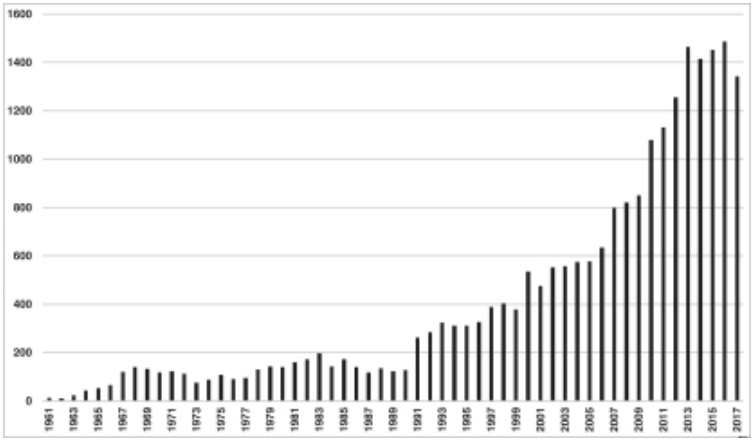
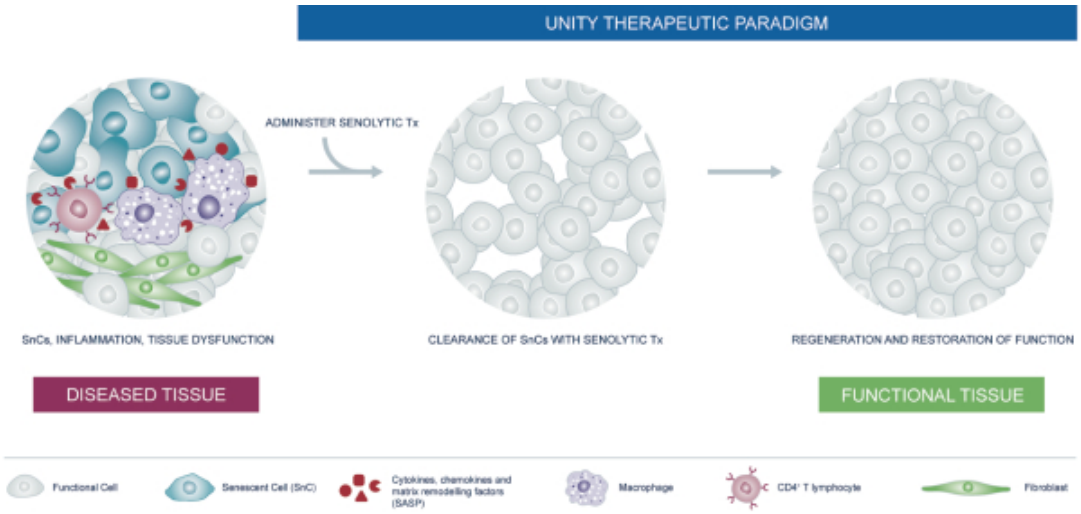
Concurrent with these advances, there has been a rapid increase in the number of scientific papers in the field. The substantial increase in the number of scientific publications including the term "cellular senescence" (on a yearly basis) is reflected in the chart below.



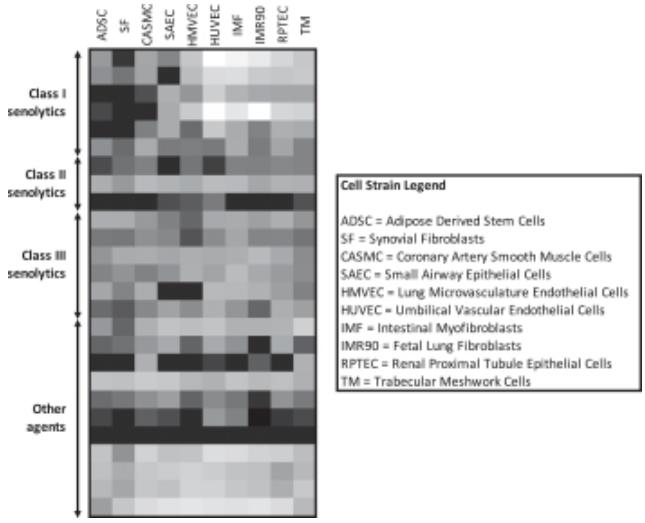
Our Therapeutic Paradigm

We were founded on the principle that the selective elimination of senescent cells and their accompanying SASP has the potential to slow, halt, or reverse diseases of aging. Our insights into senescent cell biology allow us to identify senescence-driven diseases, target the senescent cells driving a particular disease, and selectively eliminate these cells. The figure below illustrates this process.



In developing this approach, we have acquired significant expertise with respect to senescent cell survival pathways, which are the signaling systems that senescent cells rely on for survival. When these pathways are inhibited with specifically designed molecules, senescent cells undergo programmed cell death. Through our research, we have identified several of these mechanistically distinct survival pathways, which differ depending on cell type and the tissue in which the senescent cells reside.

Using small molecules, we have cataloged these survival pathways on a cell-type-by-cell-type basis into a database we refer to as the ATLAS, shown in the simplified figure below. The database indicates which senescent cell types implicated in various diseases of aging rely on which survival pathways, and thus which senolytic molecules may be used to trigger the elimination of these cells. The ATLAS provides us with a map of chemical starting points for the creation of senolytic medicines.



Advantages of Our Approach

We believe that senolytic medicines—medicines that selectively eliminate senescent cells from diseased tissues—may have four advantages over other efforts to treat age-associated diseases:

- ***Senolytic medicines target a root cause of diseases of aging.*** We believe that the accumulation of senescent cells is a root cause of many diseases of aging. Unlike treatments that inhibit the activity of a single factor (such as antibodies targeting single pro-inflammatory proteins), we believe a senolytic medicine that selectively eliminates accumulated senescent cells and their associated SASP could simultaneously blunt the activity of numerous factors contributing to disease. As a result, senolytic medicines could have significantly advantaged efficacy because they target diseases at their source and are able to normalize tissue levels of numerous disease-causing factors simultaneously.
- ***Senolytic medicines are dosed intermittently***. The administration of senolytic medicines would remove senescent cells from diseased tissue. As new senescent cells may take months or even years to re-accumulate, senolytic medicines could potentially be dosed infrequently. We believe that intermittent dosing (rather than ongoing chronic dosing) could restore normal tissue function such that further drug administration would not be required until senescent cells have re-accumulated. Intermittent dosing may also improve drug tolerability and patient adherence when compared to chronic therapies.
- ***Senescent cells accumulate at sites of disease, simplifying multiple aspects of clinical development***. Senescent cells accumulate at sites of disease and drive disease through their accompanying SASP. Our ability to quantify senescent cells and accompanying SASP factors in sites of disease may simplify clinical development in a number of ways. First, we can simplify indication selection to pursue the development of senolytic medicines for diseases in which we observe the local accumulation of senescent cells. Second, it is possible to identify patients that

may better respond to senolytic medicines based on p16 expression and other biomarkers of senescence. Third, we can potentially monitor for response to therapy by tracking the reduction of senescence-associated biomarkers.

- ***Senolytic medicines restore tissues to a healthy state.*** We believe senescent cells generally do not accumulate in young individuals and that the accumulation of senescent cells is unnecessary for normal tissue function. Our goal for the administration of senolytic medicines is to restore tissue to a functionally younger state.

Our Discovery and Development Strategy

Our clinical development strategy is initially to develop senolytic medicines designed to be administered locally into diseased tissue (either by injection or inhalation), which reduces systemic toxicological risks by limiting drug exposure largely to the treated tissue. We believe that each of our senolytic programs has the potential to address a root cause of an age-associated disease. After demonstrating efficacy in indications amenable to localized therapy, we plan to pursue the development of senolytic medicines that could be administered systemically, initially acting on specific tissues for which direct local administration is challenging. Ultimately, we envision the potential for systemic administration of senolytic medicines to selectively eliminate senescent cells throughout the body to treat systemic diseases of aging, such as kidney, liver, and heart disease. We are also developing medicines that act on aging mechanisms beyond cellular senescence, such as those that address the loss of circulating youth factors and enhance mitochondrial health. By targeting specific biological mechanisms that are implicated in diseases of aging, our vision is to address the body as a whole, reducing age-associated diseases and extending human healthspan. We plan to initiate our first clinical study for our lead drug candidate in the second quarter of 2018.

Statistical Significance

In the description of our preclinical studies below, n represents the number of patients in a particular group and p or p-values represent the probability that random chance caused the result (e.g., a p-value = 0.001 means that there is a 0.1% probability that the difference between the placebo group and the treatment group is purely due to random chance). A p-value £ 0.05 is a commonly used criterion for statistical significance, and may be supportive of a finding of efficacy by regulatory authorities.

Cellular Senescence Biology Program

Musculoskeletal/Osteoarthritis Programs

Unmet Need and Therapeutic Rationale

Diseases of the musculoskeletal system represent one the leading causes of disability in the world, particularly among the aging population. According to the 2015 World Health Organization World Report on Ageing and Health, musculoskeletal diseases accounted for the most years spent living with a disability by those over age 50 in the developed world. To date, senescence has been linked with osteoarthritis of the knee, hip, and intervertebral (spine) facet joints, degeneration of intervertebral discs, and loss of bone density.

Osteoarthritis, or OA, is a degenerative disease that negatively impacts subchondral bone and the synovial tissue surrounding the joint, causing pain and physical impairment. The effect of tissue degeneration causes the normally smooth joint layers to become fragmented and pitted, the synovial tissue to become inflamed and thickened, and the bone to develop abnormal morphology, all of which lead to a decrease in joint function and mobility, pain, and physical impairment. OA is a highly

prevalent disease, symptomatically affecting as many as 10% to 15% of the world's population over age 60 and results in a decline in quality of life. The most common joint affected by OA is the knee, followed by the hip, ankle, and shoulder. Importantly, the current standard of care begins with symptomatic treatment that temporarily addresses joint inflammation or pain control. The natural progression of treatment often results in joint replacement surgery. Based on data from the Agency for Healthcare Research and Quality (US HHS) for 2009, the aggregate cost of knee and hip replacements in the United States was $42.3 billion. The overall cost of OA is estimated to be greater than $150 billion per year in the United States.

We believe that the accumulation of senescent cells and associated SASP are significant contributing factors in OA disease. A number of SASP factors are secreted by senescent cells into the tissue and synovial fluid surrounding an affected joint, including inflammatory cytokines, such as the interleukins IL-1ß and IL-6; matrix metallopeptidases, such as MMP-1, MMP-3 and -13; tumor necrosis factor alpha (TNF-a); and prostanoids, such as prostaglandin E2. We believe these SASP factors lead to cartilage loss, inflammation of the synovial membrane, abnormalities to bone, degeneration of the joint cartilage, and pain.

Evidence for Cellular Senescence Burden in Human Disease and Human Biomarker Discovery

To evaluate the link between cellular senescence, SASP accumulation and OA disease, we conducted a non-interventional biomarker study in 30 patients with primary OA of the knee. The enrolled patients displayed a range of OA disease between grades 1 and 4 based on an X-ray scoring system called the Kellgren-Lawrence, or KL, grade, which is a common research tool used to classify grades of OA utilizing a classification range between 0, referring to no disease, and 4, referring to severe disease. During the study, patients underwent knee MRI imaging with contrast enhancement and arthroscopy, a fiber optic surgical device inserted into the knee joint, for biopsy of synovial membrane and non-weight bearing cartilage. They also provided blood and urine, and underwent pain scoring, as measured by the WOMAC-A sub-scale, a commonly used standardized questionnaire that includes questions about pain, to evaluate their OA disease status and its relationship to senescent cell burden.

Immunohistochemistry, or IHC, of the sampled tissue demonstrated p16-positive cells affecting a number of cell types within the synovial membrane (Figure 1). The degree of senescence was quantified in these samples by measuring the percentage of p16 positive cells relative to the total cell number in the specimen.

Figure 1.

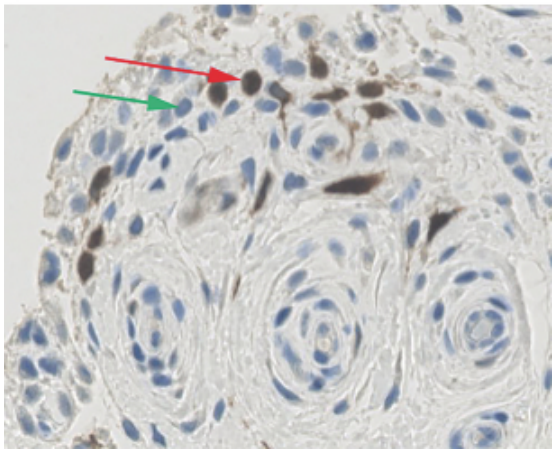
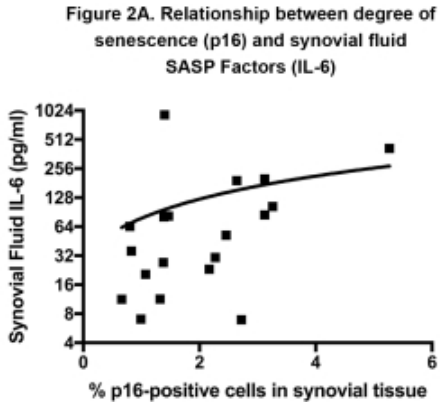


Figure 1. Human biomarker study demonstrated presence of senescent cells (p16 positive, red arrow) in patients with osteoarthritis. Non-senescent cells are depicted by the green arrow.

Several significant findings were identified by assessing the relationship between the percent of p16-positive cells and other measures in this study. First, the extent of senescence was significantly correlated with the concentration of a well-established inflammatory marker associated with OA, namely IL-6 (Figure 2A). Second, the extent of senescence in the synovial membrane from each patient showed statistically significant correlation to the amount of pain each of those patients experienced at the start of the study, based on the WOMAC-A pain sub-scale (Figure 2B). Third, the extent of senescence in the synovial membrane, including examining specific individual areas within the knee, showed statistically significantly correlation with the MRI-based synovitis score that evaluates 11 different regions within the knee (Figure 2C). Finally, a relationship trend was identified when assessing the correlation between the extent of senescence and the grade of disease based on the KL grade. When evaluating the relationship in patients with mild to moderately severe disease (KL grades 1-3), this relationship was statistically significant (Figure 2D).



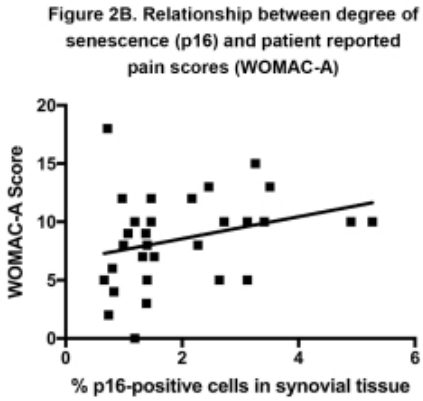
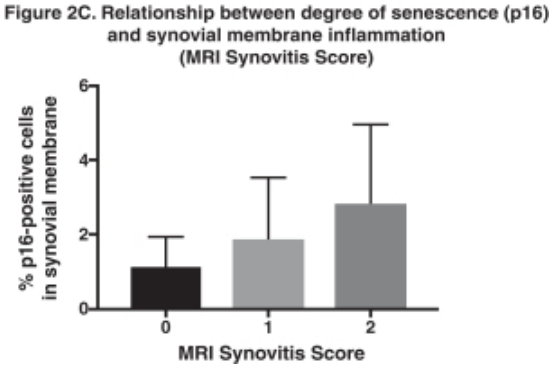


Figure 2A. Relationship between concentration of IL-6 and percent of p16 positive cells within the synovial membrane. Regression adjusted partial R, rank = 0.5888, p-value = 0.0137. The regression adjusted partial R is the correlation after adjustment for body mass index (BMI), age, and KL grade.

Figure 2B. Relationship between WOMAC-A Score and percent of p16 positive cells within the synovial membrane. Regression adjusted partial R, rank = 0.4554, p-value = 0.0147.



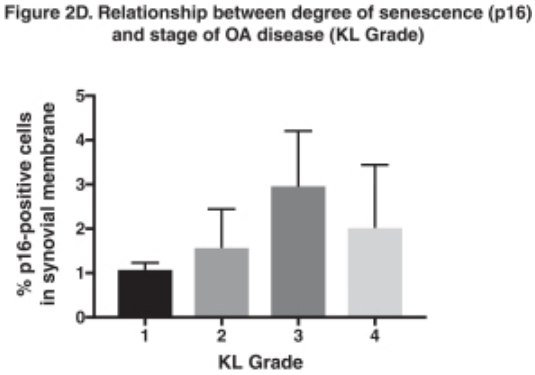


Figure 2C. Relationship between MRI synovitis score and percent of p16 positive cells within the synovial membrane; p-value overall = 0.0008; Score 0 vs 2, p = 0.0043; Score 1 vs 2, p = 0.0656.

Figure 2D. Relationship between KL grade and percent of p16 positive cells within the synovial membrane. Trend observed across all grades; across grades 1-3, p=0.005 in an unadjusted regression model.

Mechanism of Action of UBX0101

Our drug candidate, UBX0101, is a small molecule inhibitor of the MDM2/p53 protein interaction. The tumor suppressor p53 is a transcription factor that regulates a broad set of genes that control cellular functions including cell cycle arrest, cell death (or apoptosis), and senescence. MDM2 is a protein-ubiquitin ligase that marks proteins for destruction. UBX0101 binds to MDM2, raising p53 levels and causing senescent cells to undergo apoptosis.

Preclinical Studies with UBX0101

We conducted *in vitro* experiments to study the potency of UBX0101 and its ability to eliminate senescent cells. *In vitro* studies demonstrate that UBX0101 is a potent inducer of p53 expression and senescent cell apoptosis (Figure 3). This confirmed that UBX0101 elevates p53 and eliminates senescent cells.

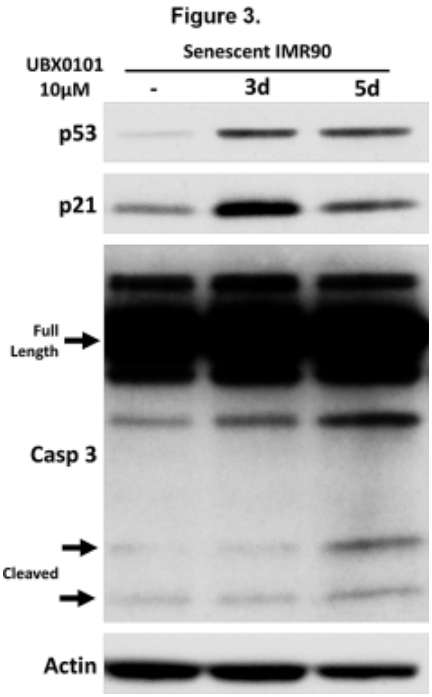
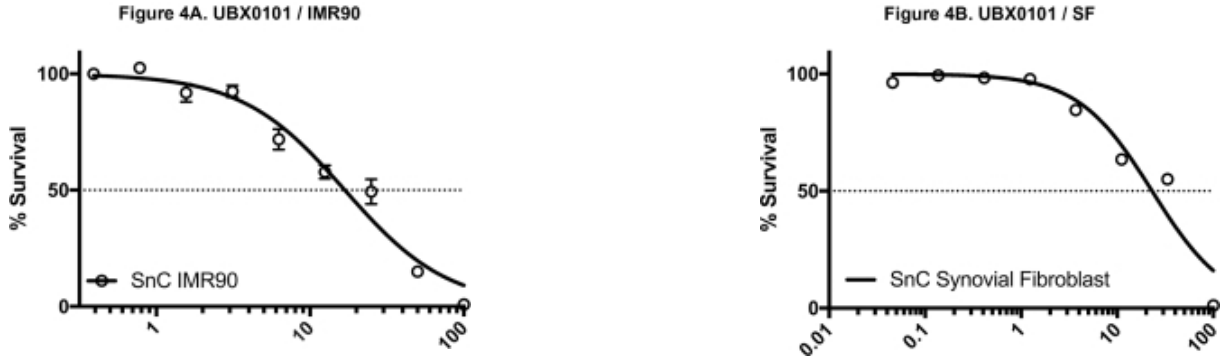


Figure 3. Induction of p53, p21, and caspase 3 activation by treatment with UBX0101 in senescent IMR90 cells.

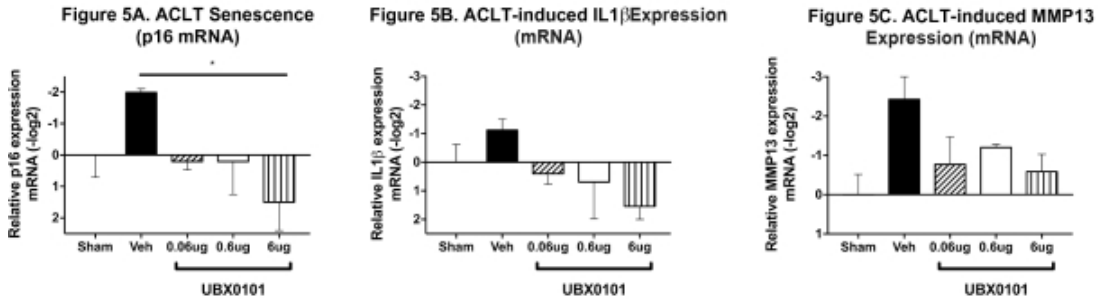
In particular, treatment of irradiated human fetal lung fibroblasts, or IMR90 (Figure 4A), and irradiated human primary synovium fibroblasts, or SF (Figure 4B), exhibited a dose-dependent potent reduction of senescent cell survival.



Figures 4A and 4B. Dose-dependent induction of apoptosis by UBX0101 (µM) in senescent IMR90 cells and senescent synovial fibroblast (SF) cells.

IMR90 cells have been the cell line used to study senescence biology for the past 30 years. They present a useful model to study senescence *in vitro* because they are normal cells without acquired mutations that could drive resistance to drug-induced apoptosis. We use IMR90 and synovial fibroblast cells as our primary screens and complement these two cell types with disease-relevant primary cell cultures to confirm that mechanisms of senescence translate to the relevant cell type.

We next studied the *in vivo* efficacy of UBX0101 in a mouse model of osteoarthritis. We used the mouse anterior cruciate ligament, or ACL, transection model in which the ACL is transected in a surgical procedure after which the mouse is allowed to recover for 14 days. This model induces an aggressive form of OA characterized by inflammation, cartilage degeneration, and pain. We selected this model as it has demonstrated the accumulation of senescent cells. Intra-articular (IA) dosing of our clinical candidate, UBX0101, led to a dose-dependent reduction of senescent cells as measured by lowering the expression of p16 (Figure 5A) and a reduced expression of SASP factors, including IL-1ß (Figure 5B) and MMP13 (Figure 5C). These data further support our hypothesis that elimination of senescent cells with UBX0101 in this model leads to changes in accompanying SASP.



*Figures 5A, 5B and 5C. IA dosing of UBX0101 reduces p16 expression (*p£0.05) and OA-relevant SASP factors, including IL-1ß and MMP13 expression levels in the ACLT murine model.*

Attempts to replicate these findings in different animal models of OA have proven to be challenging, as it is difficult to mimic a disease like OA, which develops over a long period of time in humans, in short-term animal models. For example, a model of OA using the rat medial meniscal-tibial ligament, or MX, transection failed to produce significant senescence, while a recently conducted canine model of OA in which both the ACL and MX were transected produced significantly higher levels of senescence (roughly 10-fold higher than that of the mouse ACL model). In those studies, administration of UBX0101 did not appear to affect either senescence burden or SASP factors.

We also conducted an *ex vivo* study in which cartilage from active OA lesions was obtained from human knees following total knee replacement surgery, placed in culture, and treated with UBX0101. The regions of high OA disease tissue burden correlated well with higher p16 and MMP13 biomarker levels, which we believe is a key indicator of cellular senescence-driven disease. When treated with UBX0101, the number of p16 positive cells and cells expressing MMP13 were greatly reduced. In addition, the expression of two key proteins, type 2 collagen and aggrecan, were significantly upregulated (Figure 6). These two proteins are among the most abundant components of cartilage. These data suggest that chondrocytes from patients with end-stage OA are capable of synthesizing cartilage once accumulated senescent cells are removed. As a result, we believe that intervening *in vivo* in humans could not only slow the progression of OA, but could also induce a reparative state in which more functional tissue is restored.

Figure 6. Increased Expression of Differentiation in Response to UBX0101

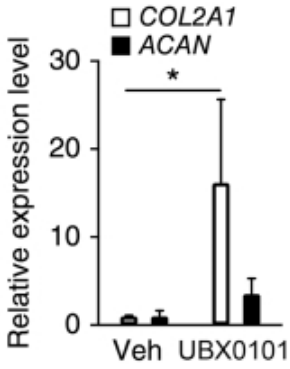


*Figure 6. Treatment with UBX0101 leads to an increase in type 2 collagen (COL2A1) and aggrecan (ACAN) in explants of OA knee samples from total knee arthroplasty (n=4; *p£0.05)*

In 2017, we completed a number of IND-enabling studies of UBX0101 to evaluate the potential local and systemic toxicity via single intra-articular and oral administration.

The potential for local toxicity was assessed in GLP-compliant studies after a single-dose intra-articular injection in both rabbits (doses of 0.1 , 0.3 and 0.6 mg/joint) and canines (doses of 0.1, 0.3 and 1.0 mg/joint). Findings from these rabbit and canine studies showed that a single intra-articular administration of UBX0101 was well tolerated at doses up to 0.6 mg/joint in the rabbit and 1 mg/joint in the canine, the highest doses tested in the GLP toxicity studies. UBX0101-related histopathological findings after a single intra-articular injection were limited to fibrinoid degeneration and mixed cell inflammation of the synovium in canines. Neither the degeneration nor the inflammation was considered adverse at any dose level due to the minimal severity of the changes. There was no evidence of systemic toxicity in the canines following intra-articular injection. Although histopathological findings were noted in earlier exploratory rabbit studies performed at high doses (up to 9 mg/joint), no UBX0101-related findings in the joint or evidence of systemic toxicity were noted in the 2017 GLP toxicity study conducted in rabbits.

The potential systemic toxicity was evaluated in GLP-compliant toxicity studies after a single oral administration in both rats (doses of 30, 300 and 600 mg/kg) and canines (doses of 30, 100 and 300 mg/kg). In these studies, the no-observed-adverse-effect level (NOAEL) was 300 mg/kg in rats and 100 mg/kg in canines. At doses of 100 mg/kg and above, adverse effects after oral dosing

consisted of transient, reversible and monitorable clinical signs in canines (300 mg/kg), decrease in body weight in canines (100 and 300 mg/kg) and rats (600 mg/kg) and clinical pathology changes (decrease in hematopoietic populations and increase in hepatic parameters) in both canines (100 and 300 mg/kg) and rats (300 and 600 mg/kg). At pathological examination, changes in hematopoietic organs were noted in both rats (600 mg/kg) and dogs (100 and 300 mg/kg) whereas non-adverse liver-related changes were observed in rats only (300 and 600 mg/kg). These effects were observed at systemic exposures that are greater than 800 fold the anticipated maximum exposure in patient after a single intra articular injection.

The potential genotoxicity of UBX0101 was evaluated in the following GLP studies: (i) a bacterial reverse mutation assay (*in vitro*) at concentrations up to 5000 µg/plate, (ii) a chromosome aberration assay (*in vitro*) at concentrations ranging from 0.25 µg/ml to 300 µg/ml, and (iii) a rat micronucleus assay (oral/once) at doses of 500, 1000 and 2000 mg/kg. In these studies, UBX0101 was non-mutagenic in bacterial species up to a concentration of 5000 ug/plate and it was weakly positive *in vitro* for inducing chromosomal aberrations, which is consistent with the pharmacological activity of UBX0101. It was negative for inducing polyploidy and endoreduplication in cultured human lymphocytes and negative in the *in vivo* rat micronucleus at oral doses up to 2000 mg/kg, the maximum recommended dose based on regulatory guidelines.

We also conducted the following safety pharmacology studies: (i) hERG channel in mammalian cells (*in vitro*) at concentrations of 1, 3, 10 and 30 µM, (ii) central nervous system in rat (oral/once) at doses of 30, 300 and 600 mg/kg, (iii) cardiovascular in canine (oral/once) at doses of 10, 30 and 100 mg/kg, and (iv) respiratory in rat at doses of 30, 300 and 600 mg/kg. These studies indicated that the risk for significant hERG inhibition *in vivo* is minimal. UBX0101 demonstrated a low potential for cardiovascular effects in canines (NOAEL of 30 mg/kg) and did not produce any effect on ventilatory function or neurobehavioral effects in rats at doses up to 30 mg/kg (the no-observed-effect-level, or NOEL) when given as a single oral administration.

The nonclinical exploratory and GLP studies have demonstrated that findings related to the proposed clinical intra-articular route of administration are generally non-adverse and likely to be reversible. There was no systemic toxicity noted after intra-articular injection in safety assessment studies at any dose level tested. Estimated UBX0101 knee concentrations at the NOAEL from the safety studies were 38-fold higher than the exposures required to achieve the EC50 concentration in the *in vitro* OA knee efficacy model. Based on the findings of our preclinical studies, we believe the safety pharmacology and toxicology studies support the evaluation of UBX0101 in the proposed Phase 1 clinical program.

UBX0101 Development Plan

Our IND application for UBX0101 was cleared by the FDA in April 2018, and we plan to initiate a Phase 1 clinical study in OA patients in the second quarter of 2018. The Phase 1 study is planned as a randomized, double-blind, placebo-controlled study to investigate the safety and tolerability of single, ascending intra-articular doses of UBX0101. Additional secondary objectives of the study are to evaluate plasma pharmacokinetics, daily pain intensity using an 11-point numeric rating score of pain, WOMAC osteoarthritis scores derived from the Knee Injury and Osteoarthritis Outcome Score (KOOS) instrument (a patient-reported outcome measurement index), and an 11-point synovitis score during contrast-enhanced MRI imaging from patients. We also plan to measure plasma and synovial fluid biomarkers to qualify biomarkers identified from the previously discussed biomarker study and to identify new biomarkers that can potentially measure the effect of UBX0101 on measures of senescence. At the conclusion of this study, we expect to have the option to use any of the supportive assessments of safety and tolerability along with positive signals of pharmacodynamics to support the expansion of selected cohorts to sufficiently power a proof-of-concept study. Additionally, we could explore higher doses if safety assessments were supportive and we could conduct a repeated dose study to optimize the dosing regime for future trials.

As part of our ongoing commitment to our OA program, we have designed a number of follow-on senolytic molecules that include differing mechanisms of action and that target distinct molecular biological targets.

Ophthalmology Programs

Unmet Need and Therapeutic Rationale

The majority of significant eye diseases are age related, with the prevalence of vision-threatening disease increasing significantly over the age of 75. Of the 285 million individuals worldwide living with visual impairment, 65% are over the age of 50. The individual diseases that are associated with these figures include glaucoma, age-related macular degeneration, and diabetic eye disease, all of which have a high prevalence and significant unmet need in either prevention or therapeutic options. The three diseases that we are evaluating as initial target indications for local administration of senolytic therapy in the eye are diabetic retinopathy, primary open angle glaucoma, and age-related macular degeneration.

Diabetic Retinopathy

Diabetic retinopathy is estimated to affect over 90 million people globally and approximately 28 million have vision-threatening stages of disease. It is a leading cause of vision loss in middle-aged and elderly people and impacts 8% of the U.S. population over age 65. Due to the increasing diabetic population arising from lifestyle changes in developing countries, the disease incidence is predicted to climb.

Diabetic retinopathy is a complex multifactorial disease, characterized by progression through a series of stages of increasing severity. High glucose levels incite a variety of inflammatory and a number of metabolic stress-induced events leading to proliferation of abnormal blood vessels, or neovascularization, with subsequent bleeding and swelling causing visual loss. The risk of developing diabetic retinopathy and its severity increase with the duration of underlying diabetes. It is also associated with poor glycemic control and the presence of additional coexistent diseases, such as high blood pressure, high cholesterol levels, and impaired kidney function.

Current standard of care for diabetic retinopathy (blood sugar control, anti-vascular endothelial growth factor (VEGF) drugs, and laser therapy) is modestly effective. Limitations of existing therapy include general challenges with compliance in diabetes control, the need for frequent intravitreal, or in the eye, injections for the administration of anti-VEGF therapy, a significant percentage of patients not completing or being non-responsive to anti-VEGF therapy, and tissue destruction with permanent side effects from laser therapy. This presents a significant opportunity to design and develop a treatment paradigm that treats a root cause of the disease.

Evidence suggests that diabetic retinopathy is driven by the accumulation of senescent cells that are a direct result of elevated glucose levels in patients with diabetes. These senescent cells are triggered by local stresses in the retina and their accumulation drives the production of the accompanying ocular SASP factors, VEGF and PDGF. Overproduction of VEGF and IL6 leads to ocular inflammation and abnormal blood vessel growth, key signatures of the causes of diabetic retinopathy. Thus, a senolytic approach could target multiple aspects of the underlying causes of diabetic retinopathy and ideally lead to greater therapeutic coverage in a wider range of patients. By eliminating senescent cell accumulation and accompanying SASP factors, one could limit further disease progression, reduce vessel leakage and inflammation, and prevent vision loss.

Primary Open-Angle Glaucoma

Glaucoma is the leading cause of irreversible blindness in the world, with an estimated 60 million cases worldwide. There are approximately 2.7 million people in the United States with glaucoma, with up to 50% of cases undetected as the result of the disease typically being asymptomatic until very late in the course of its progression. This number is projected to reach 6.3 million by 2050 and age is one of the strongest risk factors for the development of the disease. Prevalence in general increases with age, with 2.5% prevalence between the ages of 55 and 64, 5.7% between 65 and 74 and 10.3% over the age of 75.

Primary open-angle glaucoma, or POAG, is a degeneration of nerve cells in the retina characterized by a progressive loss of retinal nerve function. This occurs due to abnormalities in the outflow channels, which are referred to as the trabecular meshwork, or TM, of the front portion of the eye such that removal of aqueous humor, or AH fluid, no longer balances AH production. As a result, intra-ocular pressure, or IOP increases. Before vision loss becomes prominent, POAG is an asymptomatic disease making screening examinations critical for early detection. There are no available therapies that restore lost visual function. With advancing disease, more central vision is lost and, if left untreated, total blindness can occur. There are no curative therapies for glaucoma. Treatment is lifelong and aimed at slowing progression of disease. Even with maximal therapy a proportion of patients will continue to progress, highlighting the significant unmet need in glaucoma treatment.

Current POAG management primarily includes strategies to lower IOP by medical and/or surgical means in an attempt to slow disease progression. IOP is a modifiable risk factor in glaucoma and therefore a target for therapy, yet it is known that IOP is but one of many factors in the complex pathophysiology of POAG. Topical therapeutic options to reduce IOP include prostaglandin analogues, cholinergic agonists, and ß-blockers. The major challenge in topical therapy is non-adherence with regimens that require at least daily dosing and are associated with significant tolerability profiles. Adherence rates with topical regimens at one year following prescription were reported to be between 10% and 40%. Compounding this problem is a greater than 40% incidence rate of intolerability issues and that 40% of patients require more than one medication to control IOP to their individual target range. Surgical options to control IOP include laser therapy, surgery to open the outflow channels, and micro-incisional glaucoma surgery. Surgical interventions are associated with greater risks and are in general reserved for more advanced cases.

Thus, POAG remains a high unmet medical need with significant opportunity for a sustained and durable IOP lowering therapy. We believe that POAG is driven by the accumulation of senescent cells and secretion of the SASP in the TM as a result of cellular stress and injury leading to decreased outflow of AH. A reduction in cellularity leading to changes in TM architecture has been described in glaucoma and supports our belief that a senolytic could have prolonged effect on IOP lowering through the clearance of senescent cells and reduction in SASP.

Age-Related Macular Degeneration

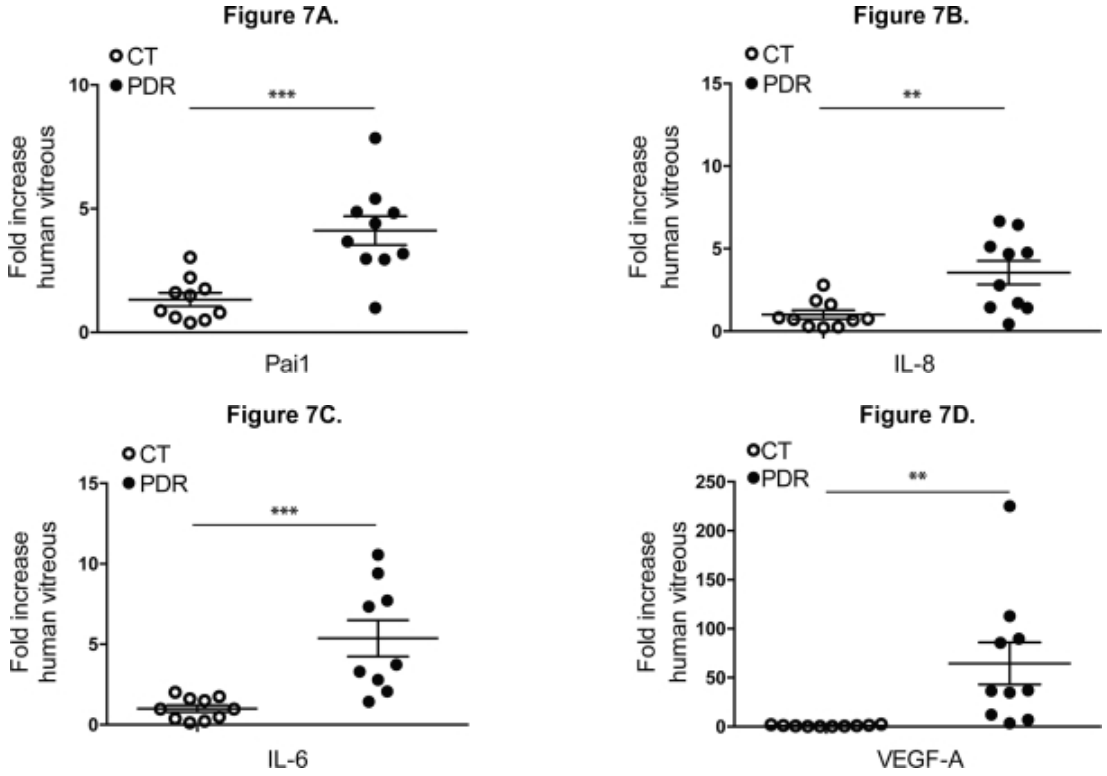
Age-related macular degeneration (AMD) is the leading cause of irreversible vision loss in people over the age of 65 in the United States, where there are currently 2.1 million people with AMD. This number is projected to more than double by 2050, reaching 5.4 million. The prevalence of AMD increases significantly with advancing age, with a prevalence of 2.8% in those aged 65 to 74 years, increasing to 8.7% in those over 75 years. AMD affects central vision, impairing functions such as reading, driving, and facial recognition, and has a major impact on quality of life and the ability to live independently. AMD is defined in 3 stages: “early,” in which visual function is affected in the presence of signs of age-related changes in the retina such as drusen and pigmentary changes, “intermediate,”

in which increasing degrees of macular lipid deposition and structural changes are noted, and “late,” in which central vision is severely compromised due to abnormal blood vessel growth (“wet” AMD) or advanced atrophy of the retina (“dry” AMD). It is a complex multifactorial disease, with inflammatory, degenerative, genetic, and vascular factors all contributing to its development and progression. The potential role of senescent cells and the associated SASP in driving the two main presentations of the disease, both wet and dry forms, could prove a unifying mechanism across this complex disorder.

Standard of care for AMD is limited to anti-VEGF therapy to control aspects of the wet form of the disease. Therapeutic options for the dry AMD have proven challenging with no currently approved therapies available to slow progression or reverse disease. Wet AMD has been significantly impacted by anti-VEGF therapy, but, as in diabetic eye disease, this therapeutic is limited by the need for frequent, long-term eye injections, a significant percentage of patients not completing or being non-responsive to anti-VEGF therapy, and the contribution of multiple other mechanisms at play in the disease beyond VEGF. Thus, there is considerable potential for a senolytic approach to impact disease progression and stabilization in AMD via modulation of senescent cell burden and accompanying SASP. SASP factors include molecules that promote abnormal blood vessel growth and inflammation, all of which have been implicated in various stages of AMD. It is our hypothesis that a senolytic medicine could have a meaningful and prolonged impact on the AMD disease state and help restore the cellular microenvironment toward a more normal pre-senescent state.

Evidence for Senescence Burden in Human Disease and Human Biomarker Discovery: Diabetic Retinopathy

We have evaluated the link of senescence and SASP accumulation in proliferative diabetic retinopathy by measuring the senescent cell signature in diseased patient retina tissue. Nuclear staining revealed gross disorganization of the retina tissue's layers with elevated and co-localized levels of p16. Analysis indicated the elevation of ocular SASP factors, Pai1 (Figure 7A), IL-8 (Figure 7B), IL-6 (Figure 7C), and VEGF-A (Figure 7D) in diabetic retinopathy tissue compared to healthy tissue samples. We believe this data is consistent with our hypothesis that senescent cell accumulation and SASP factors play a central role in diabetic retinopathy. We further investigated this hypothesis by evaluating one of our proprietary senolytic molecules in an animal model of diabetic retinopathy.



*Figures 7A, 7B, 7C and 7D: Graph to show the elevation of ocular SASP factors, Pai1, IL-8, IL-6, and VEGF-A in diabetic retinopathy tissue samples compared to healthy tissue samples (**p<0.01, ***p<0.001; control (CT); progressive diabetic retinopathy (PDR)).*

Evidence for Cellular Senescence Burden in Human Disease and Human Biomarker Discovery: POAG

We also evaluated the presence of senescent cells in the trabecular meshwork (TM) by quantifying the detection of p16 positive cells in control TM versus TM from POAG patients. Analysis of data from more than 11 control and 15 POAG patients showed a significant increase in the number of p16 cells in TMs from POAG patients (Figure 8). We believe this data supports our hypothesis that senescent cell accumulation in the TM provides increased resistance to aqueous humor outflow resulting in increased IOP.

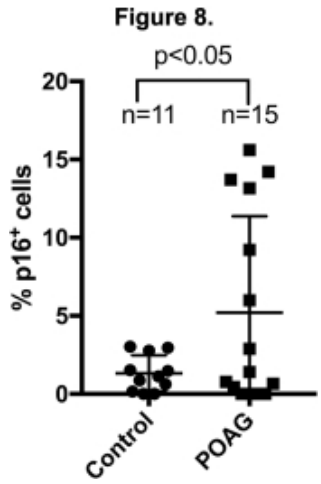


Figure 8. Increased presence of p16 positive cells in TM tissue from POAG patients.

Evidence for Cellular Senescence Burden in Human Disease and Human Biomarker Discovery: AMD

We evaluated the presence of senescent cells in retinal donor tissue from normal and AMD subject samples by IHC staining for p16. An example of a normal subject is seen in Figure 9A, which shows the clear organization of the ganglion cell layer (GCL), inner nuclear layer (INL), outer nuclear layer (ONL), and retinal pigment epithelium (RPE). An example of a subject with AMD is shown in Figure 9B, which shows the disruption of the cell layers associated with the disease pathology and p16 positive cells in the RPE. We believe this data supports our hypothesis that the accumulation of senescent cells is linked to AMD and is seen at the junction between normal retina and AMD affected retina.

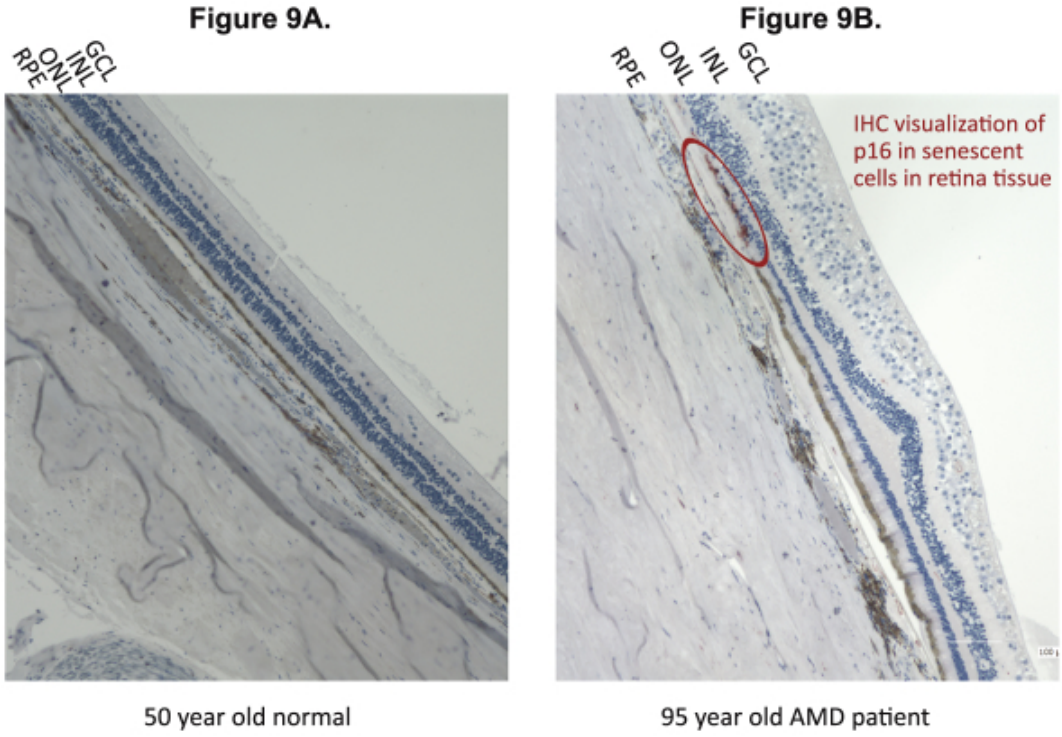


Figure 9: Immunohistochemistry staining for p16 positive cells in diseased retinal tissue of a healthy adult and an older patient with diagnosed AMD. Senescent cells are present in AMD retinas and co-localize with disease histopathology.

Mechanism of Action of UBX1967 (Inhibitors of the Bcl-2 Family)

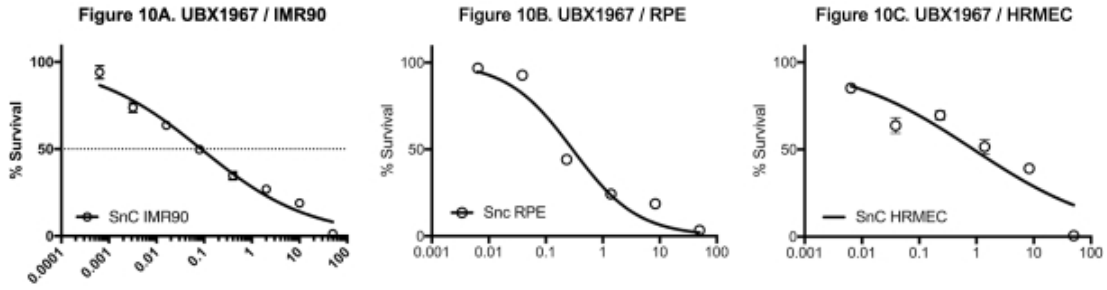
The most advanced senolytic drug candidate in our ophthalmology program, UBX1967, is a potent small molecule inhibitor of specific subtypes within the Bcl-2 family of regulator proteins. The B-cell lymphoma 2 (Bcl-2) gene family encodes more than 20 proteins that regulate the intrinsic apoptosis pathway, and are fundamental to the balance between cell survival and death. Inhibition of certain Bcl-2 family proteins results in cell death. Targeting this pathway has been extensively studied in connection with the search for new oncology medicines.

UBX1967 is currently being evaluated in non-GLP toxicity studies by both intracameral and intravitreal administration. The purpose of the study is to evaluate ocular pharmacokinetics and tolerability. Existing preliminary data supports further advancement of UBX1967 into GLP IND-enabling

ocular toxicology studies. Preliminary results from this study support continued development of UBX1967, and we plan to submit our IND application and commence a clinical study in patients in an ocular indication in the second half of 2019.

In vitro and in vivo Pharmacology Studies with UBX1967

We next conducted an *in vitro* assessment of binding and efficacy to determine the potency of senolytic molecules for the Bcl-2 family protein targets and their potency at eliminating senescent cells. Biochemical assays for Bcl-2, Bcl-XL, and Bcl-W yielded binding affinities in the sub-nM range. In order to assess the activity of UBX1967 on senescent cells, we used a cell-based assay with radiation-induced senescence. Senescent cells were then exposed to increasing concentrations of UBX1967 for 72 hours. In this study, UBX1967 showed potent dose-dependent senolytic activity against IMR90 (Figure 10A), RPE (Figure 10B), and human retinal microvascular endothenial cell, or HRMEC (Figure 10C), cell lines as measured by reduction of senescent cell survival.



Figures 10A, 10B, and 10C. Dose-dependent Induction of apoptosis by UBX1967 (μM) in senescent IMR90 cells, RPE cells, and HRMEC cells.

We next studied the efficacy of UBX1967 in the eye in an *in vivo* model. We employed the mouse oxygen-induced retinopathy (OIR) disease model, which provides an in vivo model of retinopathy of prematurity (ROP) and diabetic retinopathy. In this model, UBX1967 showed statistically significant improvement in the degree of neovascularization at all dose levels (Figure 11). Based on these results, we believe a single ocular injection of UBX1967 can functionally inhibit pathogenic angiogenesis and promote vascular repair in this key OIR disease model. We believe that efficacy of UBX1967 in the OIR model is due to elimination of senescent cells and accompanying SASP that propagates senescence in retinal cells and promotes neovascularization of retinal vessels.

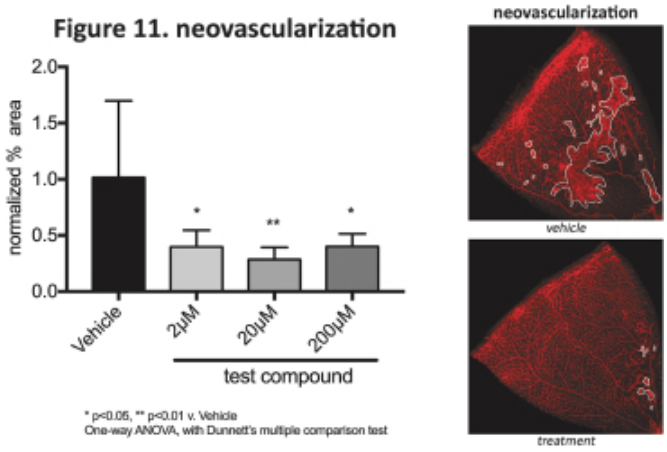
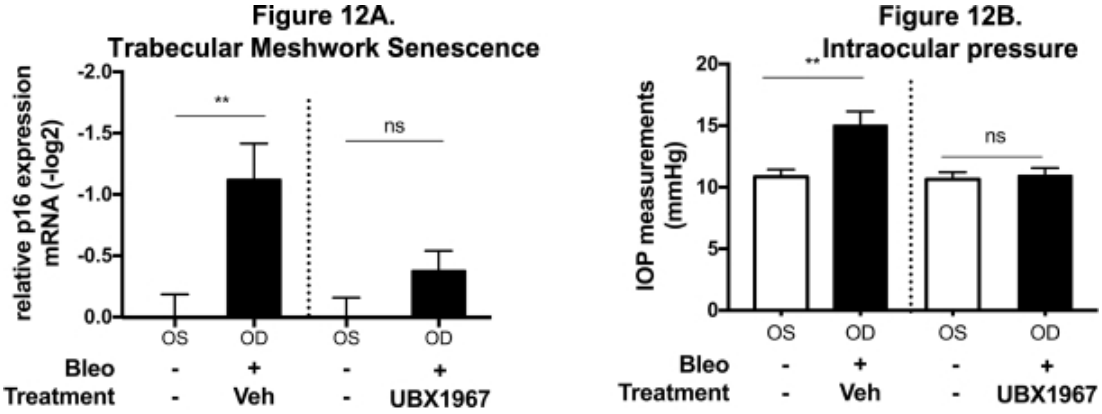


Figure 11. A single administration of UBX1967 reverses neovascularization in the OIR model at all dose levels.

We then studied the *in vivo* efficacy of UBX1967 in a mouse model of elevated intraocular pressure (IOP). An experimental increase in IOP was induced in one eye of a mouse cohort by injection of bleomycin, a DNA damage agent known to cause fibrosis. Within the study design, the left eye (OS) of a single animal was used as a vehicle control (no insult and no treatment) while the right eye (OD) was subjected to insult and treatment with UBX1967. During the study we measured the level of p16 expression (Figure 12A) and intraocular pressure (Figure 12B). Bleomycin induced a significant increase in p16 transcript levels leading to increased measureable IOP relative to the control OS eye. Intervention with UBX1967 normalized p16 transcript and IOP to levels that were non-significant from the OS eye (illustrated in Figure 12B). This study demonstrated that UBX1967 eliminated senescent cells and reduced IOP in this mouse model of efficacy.



Figures 12A and 12B. UBX1967 reverses both bleomycin-induced p16 expression ($p<0.01$ v. uninjected (OS) control; one-tailed t-test) and intraocular pressure ($p<0.01$ v. uninjected (OS) control; one tailed t-test).

UBX1967 is currently being evaluated in non-GLP toxicity studies by both intracameral and intravitreal administration. The purpose of the studies is to evaluate ocular pharmacokinetics and tolerability. Preliminary data supports further advancement of UBX1967 into GLP IND-enabling ocular toxicology studies.

Ophthalmology Development Plan

We plan to submit our IND application and commence a Phase 1 clinical study of UBX1967 for an ophthalmologic indication in the second half of 2019. We are currently evaluating whether this initial Phase 1 clinical study would be focused on diabetic retinopathy, glaucoma, or AMD. In diabetic retinopathy, a Phase 1 clinical study would investigate treatment naïve patients as well those on a background of anti-VEGF standard of care. Primary endpoints are expected to include local ocular and systemic safety and tolerability. Secondary endpoints under consideration include functional outcomes such as best corrected visual acuity (BCVA) and structural outcomes such as retinal thickness and fluid on optical coherence tomography (OCT).

In glaucoma, a Phase 1 study would be expected to primarily assess the safety and tolerability of a single intracameral dose of the senolytic molecule drug candidate. Secondary measures could include the effect on IOP at selected time points throughout the study. Patients could be followed for an extended period of time to assess durability on IOP as measured by the time-to-need for additional IOP lowering agents. In AMD, we will start investigating patients on background anti-VEGF treatment. Like the diabetic retinopathy program, the primary objective of the study is to assess the safety and tolerability of intravitreal administered senolytic molecule. Also, as in diabetic retinopathy, secondary endpoints could include functional outcomes such as BCVA and structural outcomes such as retinal thickness and fluid on OCT.

As part of our continued commitment to our ophthalmology indications, we have also designed a number of alternative senolytic molecules with differing mechanisms of action. We are also focused on the physiochemical properties of our small molecules and are developing approaches to optimize solubility, permeability, and pharmacokinetic parameters to manage ocular absorption, distribution, metabolism, and organ residency duration.

Pulmonary Programs

Unmet Need and Therapeutic Rationale

Data from the World Health Organization from 2015 shows that respiratory diseases make up three of the top five causes of death worldwide, several of which are prevalent in the elderly. In addition, the National Heart, Lung, and Blood Institute of the US National Institutes of Health published a white paper in 2017 highlighting the association of age with lung disease, including idiopathic pulmonary fibrosis, or IPF, and COPD, and underscoring the potential for understanding and developing therapeutics related to aging biology.

Historically, therapies for these diseases have been non-specific in their mode of action, whether anti-inflammatory (e.g., corticosteroids) or immunosuppressive (e.g., cyclophosphamide) or purely supportive in nature (e.g., supplemental oxygen). Increasingly, new therapies have been developed that are more targeted to specific pathogenic factors, such as anti-IL-5 antibody (mepolizumab) in COPD and tyrosine kinase inhibitor (nintedanib) in IPF. In contrast, the goal of senolytics is not just to interrupt specific pathogenic pathways but specifically to target senescent cells and inhibit multiple pathogenic pathways.

We initiated an active discovery and development program in IPF based on a series of observations. These observations include the aggressive nature of the disease and the data suggesting a potentially strong association between IPF and senescence.

IPF is a severely debilitating fibrotic disease of the lung that primarily affects older adults and often leads to a progressive worsening of lung function, eventually leading to respiratory failure or lung transplantation. Increasing organ fibrosis causes a restriction of ventilation that symptomatically is perceived as a constant state of suffocation. While the course of the disease is variable, the prognosis is uniformly poor with a median survival of about three to four years after diagnosis. In the United States, it is estimated to affect up to 90,000 people, with approximately 40,000 people dying each year. While the overall prevalence is not high, it increases substantially in people over the age of 65. The hypoxemia resulting from IPF ultimately necessitates the use of supplemental oxygen. Supplemental oxygen relieves dyspnea and improves functional status, and may play a role in ameliorating associated comorbidities such as secondary pulmonary hypertension. However, the use of supplemental oxygen requires equipment for administration that can place significant burden on patients, limiting their mobility and profoundly reducing quality of life.

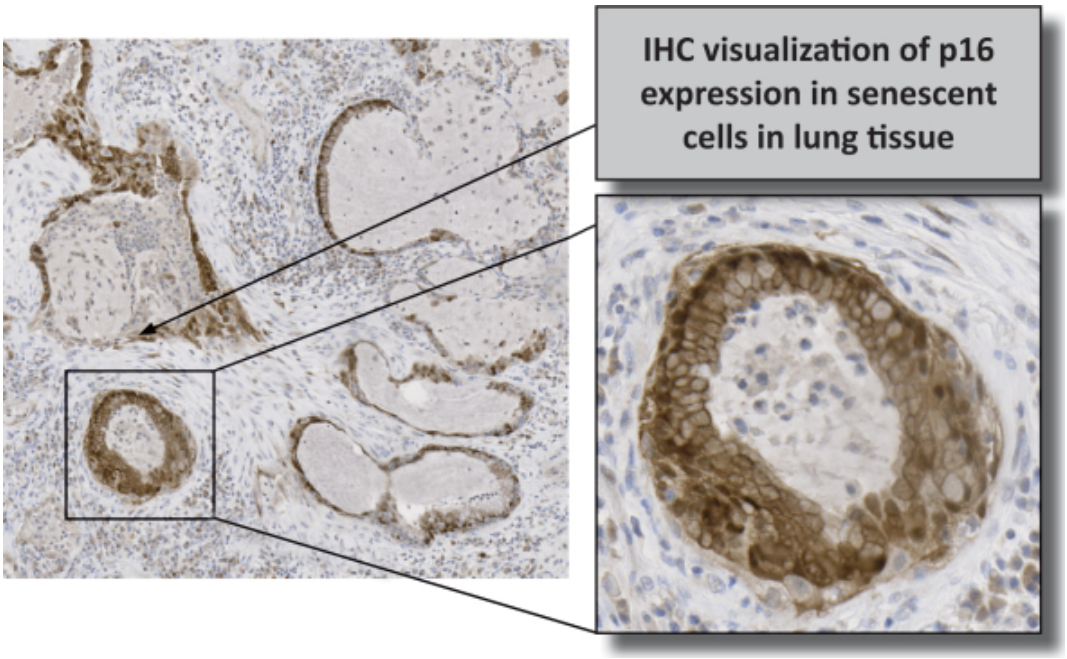
Beyond the use of oxygen, there are two marketed products available for the treatment of IPF, nintedanib and pirfenidone, that are recommended by the American Thoracic Society. In clinical studies, these anti-fibrotic agents slowed the rate of decline in lung function over 52 weeks but did not show a significant effect on survival or disease exacerbations. IPF remains a fatal disease with the need for additional effective therapies that treat the underlying lung fibrosis to improve quality of life and survival.

Resident cell types within the lung, including epithelial cells and macrophages, have been shown to become senescent. Accumulation of these senescent cells followed by SASP secretion may drive IPF disease exacerbation and progression. In the case of senescent lung cells, we propose that the

SASP is enriched with pro-fibrotic factors such as connective tissue growth factors CTGF and TGF-b. We believe that excessive and prolonged exposure to these factors leads to remodeling of the lung, expansion of lung matrix, and fibrosis, all of which deteriorate function and ultimately result in death. Furthermore, these factors may also play a role in suppressing the endogenous capacity of the lung to demonstrate regenerative capacity that has been shown in patients post-removal of lung tissue as well as during recuperation of those patients who survive Acute Respiratory Distress Syndrome, an injury that severely damages the lung.

Evidence for Cellular Senescence Burden in Human Disease and Human Biomarker Discovery

Our exploratory work in IPF resulted in the identification of senescent cells associated with areas of active disease in lung tissue taken from patients with IPF. Immunohistochemistry staining for p16 in human IPF lung tissue demonstrated the presence of senescent cells as shown below. These cells were predominantly epithelial in origin and located in areas of fibrosis and at the leading edge of the disease. These sites are likely amendable to access by inhalation therapeutics.



Importantly, the number of p16 positive cells was greater across all levels of fibrosis (Figure 13) relative to that of normal tissue. Additionally, there was a strong relationship between the extent of disease in a given area and the percentage of senescent cells present in those areas. At its peak, approximately 30% of the total cellularity in an affected region is comprised of senescent cells. These data support the hypothesis that elimination of senescent cells and its associated SASP could halt progressive fibrosis and potentially allow for restoration of pulmonary function. This further supports our hypothesis that IPF is related to SASP proliferation and suggests that treatment with senolytic molecules has the potential to treat the root cause of disease. We further studied our hypothesis regarding cellular senescence accumulation and their accompanying SASP by investigating the cellular senescence signature in a key animal model of lung fibrosis.

Figure 13.

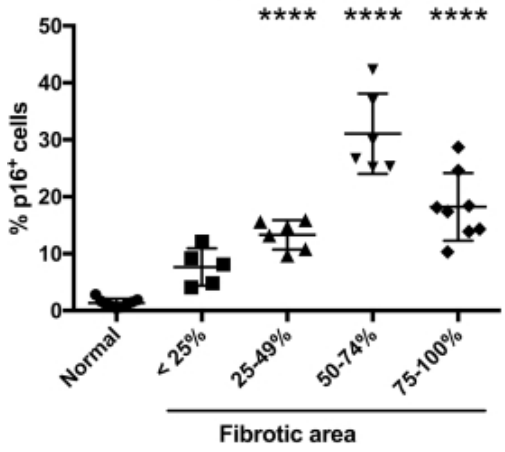
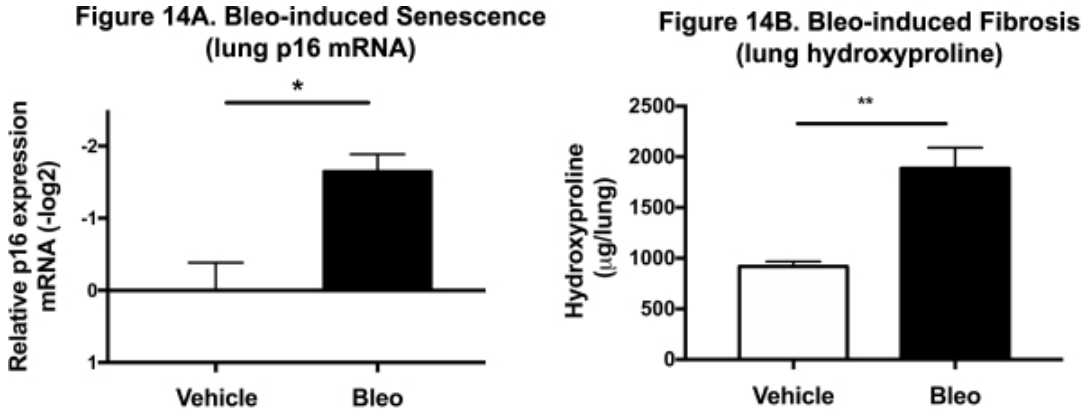


*Figure 13. Increased presence of p16 positive cells in human lung tissue with significant fibrotic area indicative of a significant role in disease progression (****p<0.0001 for group difference among means by one-way ANOVA).*

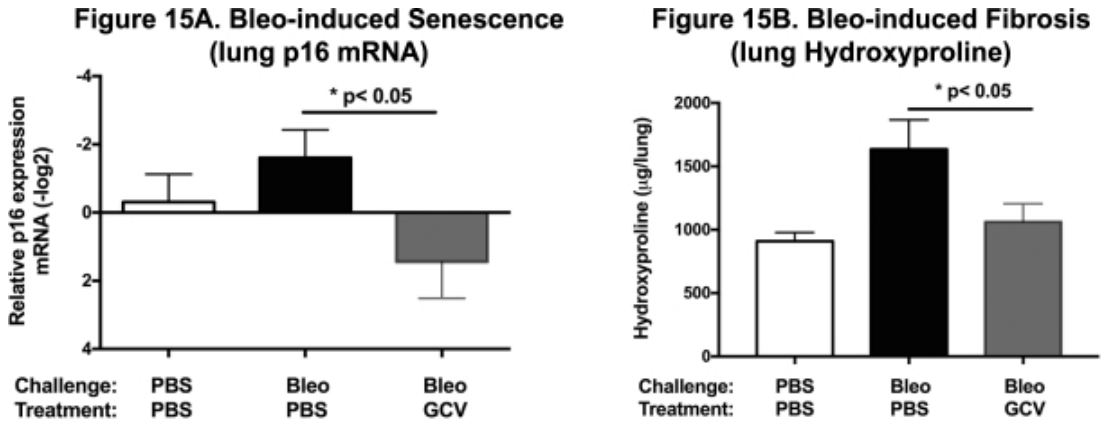
Preclinical Disease Model of Lung Fibrosis

Preclinical studies were conducted to understand the involvement of senescent cells in preclinical models of lung fibrosis. Results from the bleomycin model of lung fibrosis in the mouse were most compelling. Evaluation of p16 in the intra-tracheal bleomycin model of lung fibrosis showed an increase in senescent cell levels (Figure 14A) and the degree of fibrosis, as judged by the well-established hydroxproline biomarker of fibrosis (Figure 14B). IHC staining data from this study also showed increasing levels of type 1 and 2 collagens indicative of new areas of fibrotic tissue growth. We conclude that senescent cells drive the lung fibrosis in this mouse model.



*Figures 14A and 14B. Induction of p16 expression and fibrosis in murine lungs by bleomycin (Bleo) intratracheal instillation (*p<0.05 and **p<0.001 using Welch's t-test between vehicle and Bleo).*

We next evaluated if eliminating senescent cells reduced fibrosis in this mouse model utilizing a p16-3MR transgenic mouse model. The p16-3MR mouse is a transgenic mouse model designed to detect and eliminate senescent cells through the administration of ganciclovir (GCV). The data from this transgenic mouse model of the elimination of p16 positive cells shows a trend towards the reduction of both senescent cell presence (Figure 15A) and hydroxproline tissue content (Figure 15B). The early preclinical and human disease tissue evidence suggests that administration of senolytic molecules has the potential to treat the root cause of cellular senescence-driven lung fibrosis diseases.



*Figures 15A and 15B. Elimination of p16 positive cells fibrosis (*p<0.05 using Welch's t-test between Belo/phosphate buffered saline (PBS) V Bleo/GCV) using ganciclovir in the 3MR genetically engineered mouse model reduces fibrosis (*p<0.05 using unpaired t-test between Belo/PBS V Bleo/GCV).*

Development Plan in Pulmonary Diseases

We plan to submit an IND application to support a Phase 1 clinical study of a senolytic molecule administered by the inhaled route in pulmonary indications. While IPF is currently our lead indication, we are also pursuing inhaled administration opportunities in other lung diseases, such as systemic sclerosis with pulmonary manifestations and hypersensitivity pneumonitis, and in obstructive diseases such as COPD.

Our integrated pulmonary development plan will utilize patient safety data and pharmacological dose responses from the initial clinical study to accelerate the design of next-generation clinical studies in other pulmonary diseases. The Phase 1 program in any of these diseases would closely parallel our work in IPF and would take advantage of any learnings regarding pharmacokinetics following inhaled administration as well as biomarker and imaging responses. This approach should allow us to lay more groundwork for a broader range of pulmonary diseases once we demonstrate the safety, tolerability, and pharmacodynamics of inhaled senolytic administration.

Research and Discovery – Other Anti-Aging Programs

We have secured our lead position in the discovery and development of senolytic medicines through our commitment to fundamental biological research and translational science. We have partnered with key academics and thought leaders to pursue areas of emerging aging science. We continue to recruit top tier scientists with the desire and drive to understand, uncover, and invent. We invest a significant proportion of our resources and effort in emerging fields of aging science in order to transition fundamental scientific observations to the design and development of new therapeutics. We believe that we have built the internal research capabilities and scientific network to continue to be at the forefront of extending human healthspan.

Strategy for Systemically Administered Senolytic Medicines

In addition to our discovery and development of locally administered senolytic medicines for the treatment of local disease, we are similarly investigating the systemic administration of senolytic medicines for the treatment of senescent cell-driven disease within specific organs, tissues, and cell types.

Our first approach to systemic administration is to create a senolytic medicine that is designed to target a specific organ or even specific tissue within that organ. Such a senolytic medicine would selectively eliminate senescent cells within a tissue and reduce the SASP within that tissue. By considering therapeutic areas with unmet need and where there is strong evidence for the role of senescent cells driving disease, we have evaluated both hepatic and renal disease.

Our long-term goal is to use the principles that we establish for the design of systemically administered, targeted senolytic medicines to produce clinical candidates to eliminate senescent cells throughout the body. This could draw on ideas from immunology, senolytic viruses, vaccines, CAR-T type approaches or antibody drug conjugates.

Circulating Youth Factors (Klotho Protein)

We are also evaluating the administration of circulating youth factors in age-associated diseases. Our lead discovery effort in circulating youth factors is focused on the a-Klotho protein. First discovered in 1997, the *klotho* gene was identified in mice as an “aging-suppressor” that accelerates aging when disrupted and extends lifespan when overexpressed. The a-Klotho protein is a circulating hormone primarily produced in the kidneys and choroid plexus of the brain and was recently

discovered to delay and suppress the deleterious effects of aging on multiple organs, including the brain. Circulating levels of a-Klotho protein gradually decline with age, chronic stress, cognitive impairment, and neurodegenerative disease.

A small percentage of the population possesses naturally elevated a-Klotho levels as a result of the a-Klotho-VS heterozygous genetic variation. a-Klotho-VS heterozygosity is associated with extended healthspan, enhanced cognition, and less age-associated cognitive decline. Elevated a-Klotho levels are also associated with greater dorsolateral prefrontal cortex volume and improved connectivity between cortical regions, which in turn correlates with better executive function in normal aging humans. As this brain region is especially susceptible to shrinkage with age and vulnerable in several psychiatric and neurological disorders, its protection may provide clinical benefit in both normal aging and disease.

In 2014, Dena Dubal, of the University of California, San Francisco, and one of our scientific collaborators, first demonstrated that genetically elevated a-Klotho levels significantly enhance cognitive performance and neural resilience independent of age in normal and human amyloid precursor protein mouse models of neurodegenerative disease related to Alzheimer's Disease. a-Klotho is hypothesized to optimize synaptic neurotransmission of NMDA receptors in the brain, effectively combatting the cognitive and synaptic deficits, despite high levels of pathogenic Ab, tau, and phosphorylated tau proteins associated with Alzheimer's Disease.

We are exploring the utility of a-Klotho protein in a variety of preclinical animal models, with the intent of identifying a drug candidate.

Reversing Age-Associated Loss of Mitochondrial Function

Mitochondria are the power plants of eukaryotic cells, providing over 90% of the energy required for life. With the exception of one recently identified organism, mitochondria are essential for all eukaryotic life. Mitochondria enable the flow of electrons from the high energy carbon-to-carbon bonds found in energy-rich food molecules (such as glucose) to molecular oxygen. This "downhill flow" of potential energy from carbon-to-carbon bonds to molecular oxygen provides over 90% of energy used by eukaryotic cells to drive life.

While the mitochondrial genome is small, mutations in it accumulate as we age and have profound effects. Because such mutations result in the diminished production of functional mitochondrial proteins, mitochondria from older organisms produce less energy than mitochondria from younger organisms. Mitochondrial mutations contribute to diseases such as cardiomyopathy, myopathy, dementia, optic atrophy, infertility, fibrosis, Parkinson's Disease, Alzheimer's disease, amyotrophic lateral sclerosis, Huntington's disease, and Duchenne muscular dystrophy. We are in the early stages of developing a technology to reverse age-associated declines in mitochondrial function.

Manufacturing

Our success as a company will depend on our ability to deliver reliable, high-quality preclinical and clinical drug supply. As we mature as a company and approach commercial stage operations, securing reliable high-quality commercial drug supply will be critical. We do not currently own or operate facilities for product manufacturing, storage and distribution, or testing. We contract with third parties for the manufacture of our drug candidates. Because we rely on contract manufacturers, we employ personnel with extensive technical, manufacturing, analytical, and quality experience. Our staff has strong project management discipline to oversee contract manufacturing and testing activities, and to compile manufacturing and quality information for our regulatory submissions.

Manufacturing is subject to extensive regulation that imposes various procedural and documentation requirements and that governs record keeping, manufacturing processes and controls,

personnel, quality control and quality assurance, and more. Our systems and our contractors are required to be in compliance with these regulations, and compliance is assessed regularly through monitoring of performance and a formal audit program.

Our current supply chains for our lead drug candidates involve several manufacturers that specialize in specific operations of the manufacturing process, specifically, raw materials manufacturing, drug substance manufacturing, and drug product manufacturing. We currently operate under purchase order programs for our drug candidates with Material Service Agreements in place, and we intend to establish long-term supply agreements in the future. We believe our current manufacturers have the scale, the systems, and the experience to supply all planned clinical studies.

We do not currently require commercial manufacturing capabilities. Should our needs change, we will likely need to scale up our manufacturing processes to enable commercial launch. To ensure continuity in our supply chain, we plan to establish supply arrangements with alternative larger scale suppliers for certain portions of our supply chain, as appropriate.

Commercialization Plan

We do not currently, nor do we expect to have in the near term, any FDA-approved drugs in our portfolio. Therefore, we have not yet built an infrastructure for sales, marketing, or commercial distribution.

Should any of our drug candidates be approved for commercialization, we intend to develop a plan to commercialize them in the United States and other key markets, through an internal infrastructure or an external partnership.

Competition

The biotechnology and pharmaceutical industries, including the field of research in aging, are typically rife with rapid technological developments, bold competition, and dependence on intellectual property. Like any biotechnology company, we face competition from multiple sources, including large or established pharmaceutical, biotechnology, and wellness companies, academic research institutions, government agencies, and private institutions. We believe our drug candidates will prevail amid the competitive landscape through their efficacy, safety, administration methods, cost, public and institutional demand, intellectual property portfolio, and treatment of the root cause of many age-associated diseases.

We are aware of other companies seeking to develop treatments to prevent or treat aging-associated diseases through various biological pathways, including Calico and resTORbio. Calico has not yet disclosed any pipeline candidates or mechanisms of interest, and resTORbio is developing candidates targeting TORC1. Hence, we believe that we currently have the most advanced program addressing cellular senescence.

Our drug candidates are likely to compete against current therapies from a wide range of companies and technologies, including therapies for our lead indications:

- Musculoskeletal diseases, including osteoarthritis: current standard of care treatments (though not disease-modifying and focused on symptom management) include anti-inflammatory drugs (Ibruprofen, Diclofenac, Celecoxib), analgesic pain relief (Acetaminophen), or narcotic pain relief (Tramadol).

- Ophthalmology diseases, including diabetic retinopathy: potentially disease-modifying therapeutics are being sold and developed by several pharmaceutical and biotechnology companies, including Roche/Genentech and Regeneron.
- Pulmonary disease, including idiopathic pulmonary fibrosis: therapeutics are being sold and developed by several pharmaceutical and biotechnology companies and academic institutions, including Genentech, Boehringer-Ingelheim, Cytokinetics and Mallinckrodt, and are in various stages of clinical studies.

Many of our competitors, either alone or with strategic partners, have substantially greater financial, technical, and human resources than we do. Accordingly, our competitors may be more successful in obtaining approval for treatments and achieving widespread market acceptance, rendering our treatments obsolete or non-competitive. Accelerated merger and acquisition activity in the biotechnology and biopharmaceutical industries may result in even more resources concentrated among a smaller number of our competitors. These companies also compete with us in recruiting and retaining qualified scientific and management personnel, establishing clinical study sites, patient registration for clinical studies, and acquiring technologies complementary to, or necessary for, our programs. Smaller or early-stage companies may also prove to be significant competitors, particularly through collaborative arrangements with large and established companies. Our commercial opportunity could be substantially limited in the event that our competitors develop and commercialize products that are more effective, safer, more tolerable, more convenient, or less expensive than our comparable products. In geographies that are critical to our commercial success, competitors may also obtain regulatory approvals before us, resulting in our competitors building a strong market position in advance of our products' entry. We believe the factors determining the success of our programs will be the efficacy, safety, and convenience of our drug candidates.

Intellectual Property

Our success depends in large part upon our ability to obtain and maintain proprietary protection for our products and technologies and to operate without infringing the proprietary rights of others. Our policy is to protect our proprietary position by, among other methods, filing U.S. and foreign patent applications that relate to our proprietary technologies, inventions and improvements that are important to the development and implementation of our business. We also rely on trademarks, trade secrets, know-how, continuing technological innovation and licensing opportunities to develop and maintain our proprietary position.

Patent Portfolio

Our patent portfolio consists of a combination of issued and allowed patents and pending patent applications that are owned or co-owned by us and/or licensed to us from third parties. The majority of these patents and applications cover our cellular senescence program, and others pertain to our programs that target aging mechanisms beyond cellular senescence, including the administration of circulating youth factors and enhancement of mitochondrial health. As of April 2018, we owned, co-own, or have an exclusive license in certain fields of use to over 80 patents and pending applications in the United States and foreign jurisdictions. This portfolio includes five issued U.S. patents, over 30 pending U.S. applications (including 14 provisional applications), and over 30 granted or pending applications in foreign jurisdictions.

Our cellular senescence patent portfolio includes patents and patent applications that are directed to our senolytic agents and programs, including our lead molecules UBX0101 and UBX1967, related molecules, and other compounds. We also have an option to take an exclusive license to the issued patents and patent applications covering the composition of matter of UBX1967, as well as other Bcl-2 inhibitor compounds under our compound library and option agreement with Ascentage. Our cellular

senescence patent portfolio includes patents and patent applications directed to compositions of matter, use for treating age-related conditions, and methods of manufacture.

Our patent portfolio, including patents and applications that we have exclusively optioned, as well as those we own, co-own or have exclusively licensed, directed to our programs that target aging mechanisms beyond cellular senescence, including the administration of circulating youth factors and enhancement of mitochondrial health, includes five pending U.S. patent applications and six pending patent applications in foreign jurisdictions.

In general, patents have a term of 20 years from the earliest claimed non-provisional priority date. Several of our issued U.S. and foreign patents that relate to UBX0101 and UBX1967 are scheduled to expire between approximately 2032 and 2035. The patent term may be extendible by up to five years in certain countries by means of patent term extension, depending on the regulatory pathway and the remaining term upon marketing approval. Certain other patents and patent applications directed to our cellular senescence patent portfolio, if they were to issue, may have later expiration dates.

Osteoarthritis Program

We co-own a patent family directed to the treatment of senescence-related diseases, including osteoarthritis, by removal of senescent cells in or around the site of the disease. The other co-owners of this patent family are the Buck Institute for Research on Aging, the Johns Hopkins University, and Mayo Clinic, each of which has granted us an exclusive license which extends to the treatment of senescence-related diseases in therapeutic areas. This patent family includes two issued U.S. patents directed toward the use of UBX0101 for the treatment of osteoarthritis. One of these issued U.S. patents covers a unit dose of a pharmaceutical composition as a composition of matter, and the other covers a method of treatment. Applications are also pending in the following 14 foreign jurisdictions: Australia, Brazil, Canada, China, Europe, Hong Kong, Israel, Japan, Korea, Mexico, New Zealand, Russia, Singapore, and South Africa. Patents that issue from this family are expected to expire in 2035, excluding any patent term adjustments or extensions.

We also own a patent family directed to a scalable method of chiral synthesis of UBX0101, which includes one pending U.S. patent application and one international application filed under the patent cooperation treaty, or PCT. Future U.S. and foreign patents issued from this family are expected to expire in 2037, excluding any patent term adjustments and patent term extensions.

We additionally own six composition of matter patent applications directed to alternative drug candidates for osteoarthritis, including five pending provisional U.S. applications (which also cover aspects of our ophthalmology and pulmonary programs) and one pending international application.

Ophthalmology Program

We have an exclusive option to enter a license with Ascentage Pharma Group Corp. Ltd., or Ascentage, to a family of issued composition of matter patents and pending composition of matter applications directed to chemical entities including our lead drug candidate, UBX1967. Our license would be exclusive in all fields outside of oncology. Patents in this family have been granted in the U.S., Korea, New Zealand, and South Africa, and are pending in Australia, Canada, China, Europe, India, Japan, and Singapore. Future U.S. and foreign patents issued from this family are expected to expire in 2032, excluding any patent term adjustments or extensions.

We co-own two families of pending patent applications directed to the use of Bcl-2 inhibitors, including UBX1967 and related chemical entities for the treatment of eye disease, including diabetic retinopathy, age-related macular degeneration, and glaucoma (which also cover aspects of our

osteoarthritis and/or pulmonary programs). One of these patent families is co-owned by the Buck Institute for Research on Aging and us. The patents within the other family that are relevant for opthamology indications are co-owned by the Buck Institute for Research on Aging, the Mayo Clinic and us. We have exclusive licenses from each of the Buck Institute for Research on Aging and the Mayo Clinic to these patent families in the field of senescence. Applications in both of these families are pending in the U.S., Australia, Canada, China, Europe, and Japan. Future U.S. and foreign patents issued from these families are expected to expire in 2035 and 2036, excluding any patent term adjustments and patent term extensions.

We also own composition of matter patent applications directed to alternative drug candidates for the treatment of eye disease, including five pending provisional applications (which also cover aspects of our osteoarthritis and pulmonary programs).

Pulmonary Program

We are currently testing a number of drug candidates for the treatment of pulmonary disease. Several of these compounds are covered as compositions of matter by the issued patents and pending applications that are included in the patent family we have exclusively optioned from Ascentage.

We also co-own two families of pending patent applications directed to the use of these compounds and other Bcl-2 inhibitors for the treatment of pulmonary disease, including IPF and COPD (which also cover aspects of our osteoarthritis and/or ophthalmology programs). One of these patent families is co-owned by the Buck Institute for Research on Aging and us. The patents within the other family that are relevant for pulmonary indications are co-owned by the Buck Institute for Research on Aging, the Mayo Clinic and us. We have exclusive licenses from each of the Buck Institute for Research on Aging and the Mayo Clinic to these patent families in the field of senescence. Patent applications in both these families are pending in the U.S., Australia, Canada, China, Europe, and Japan. Future U.S. and foreign patents issued from these families are expected to expire in 2035 and 2036, excluding any patent term adjustments and patent term extensions.

We additionally own composition of matter patent applications directed to the use of alternative drug candidates for the treatment of lung disease, including five pending provisional applications (which also cover aspects of our osteoarthritis and ophthalmology programs). Future U.S. and foreign patents issued from this family are expected to expire in 2038, excluding any patent term adjustments and patent term extensions.

Other Anti-Aging Programs

We have an option to enter into an exclusive license with The Regents of the University of California for a patent family directed to methods of treatment and the use of klotho protein for the development of human therapeutics. Patent applications in this family are pending in the U.S. and six foreign jurisdictions. Future U.S. and foreign patents issued from this family are expected to expire in 2036, excluding any patent term adjustments and patent term extensions.

We also own three provisional patents and co-own with the Buck Institute for Research on Aging one provisional patents directed toward the enhancement of mitochondrial health.

Other Intellectual Property

Our continuing research and development, technical know-how, and contractual arrangements supplement our intellectual property protection to maintain our competitive position. Our policy is to require inventors who are identified on any Company-owned patent applications to assign rights to us.

We also have confidentiality agreements with our employees, consultants, and other advisors to protect our proprietary information. Our policy is to require third parties that receive material confidential information to enter into confidentiality agreements with us.

We also protect our brand through procurement of trademark rights. As of March 1, 2018, the mark UNITY BIOTECHNOLOGY® is registered in both the United States and the European Union. In order to supplement protection of our brand, we have also registered several internet domain names.

Government Regulation

Government authorities in the United States (including federal, state and local authorities) and in other countries, extensively regulate, among other things, the manufacturing, research and clinical development, marketing, labeling and packaging, storage, distribution, post-approval monitoring and reporting, advertising and promotion, pricing, and export and import of pharmaceutical products, such as those we are developing. The process of obtaining regulatory approvals and the subsequent compliance with appropriate federal, state, local and foreign statutes and regulations require the expenditure of substantial time and financial resources.

U.S. Government Regulation

In the United States, the FDA regulates drugs under the Federal Food, Drug, and Cosmetic Act, or FDCA, and its implementing regulations, and biologics under the FDCA and the Public Health Service Act, or PHSA, and its implementing regulations. FDA approval is required before any new unapproved drug or dosage form, including a new use of a previously approved drug, can be marketed in the United States. Drugs and biologics are also subject to other federal, state and local statutes and regulations. If we fail to comply with applicable FDA or other requirements at any time during the drug development process, clinical testing, the approval process or after approval, we may become subject to administrative or judicial sanctions. These sanctions could include the FDA's refusal to approve pending applications, license suspension or revocation, withdrawal of an approval, warning letters, product recalls, product seizures, total or partial suspension of production or distribution, injunctions, fines, civil penalties or criminal prosecution.

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

- completion of extensive preclinical laboratory tests and preclinical animal studies, all performed in accordance with the Good Laboratory Practices, or GLP, regulations;
- submission to the FDA of an IND, which must become effective before human clinical studies may begin;
- approval by an independent IRB or ethics committee representing each clinical site before each clinical study may be initiated;
- performance of adequate and well-controlled human clinical studies to establish the safety and efficacy, or in the case of a biologic, the safety, purity and potency, of the drug candidate for each proposed indication;
- preparation of and submission to the FDA of a new drug application, or NDA, or biologics license application, or BLA, after completion of all pivotal clinical studies;
- review of the product application by an FDA advisory committee, where appropriate and if applicable;
- a determination by the FDA within 60 days of its receipt of an NDA or BLA to file the application for review;

- satisfactory completion of an FDA pre-approval inspection of the manufacturing facilities where the drug candidate is produced to assess compliance with current Good Manufacturing Practices, or cGMP; and
- FDA review and approval of an NDA or BLA prior to any commercial marketing or sale of the drug or biologic in the United States.

An IND is a request for authorization from the FDA to administer an investigational new drug product to humans. The central focus of an IND submission is on the general investigational plan and the protocol(s) for human studies. The IND also includes results of animal and *in vitro* studies assessing the toxicology, pharmacokinetics, pharmacology and pharmacodynamic characteristics of the product; chemistry, manufacturing and controls information; and any available human data or literature to support the use of the investigational new drug. An IND must become effective before human clinical studies may begin. An IND will automatically become effective 30 days after receipt by the FDA, unless before that time the FDA raises concerns or questions related to the proposed clinical studies. In such a case, the IND may be placed on clinical hold and the IND sponsor and the FDA must resolve any outstanding concerns or questions before clinical studies can begin. Accordingly, submission of an IND may or may not result in the FDA allowing clinical studies to commence.

Clinical Studies

Clinical studies involve the administration of the investigational new drug to human subjects under the supervision of qualified investigators in accordance with Good Clinical Practice regulations, or GCPs, which include the requirement that all research subjects provide their informed consent for their participation in any clinical study. Clinical studies are conducted under protocols detailing, among other things, the objectives of the study, the parameters to be used in monitoring safety and the efficacy criteria to be evaluated. A protocol for each clinical study and any subsequent protocol amendments must be submitted to the FDA as part of the IND. Additionally, approval must also be obtained from each clinical study site's IRB before the studies may be initiated, and the IRB must monitor the study until completed. There are also requirements governing the reporting of ongoing clinical studies and clinical study results to public registries.

The clinical investigation of a drug or biologic is generally divided into three or four phases. Although the phases are usually conducted sequentially, they may overlap or be combined.

- *Phase 1.* The drug or biologic is initially introduced into healthy human subjects or patients with the target disease or condition. These studies are designed to evaluate the safety, dosage tolerance, metabolism and pharmacologic actions of the investigational new drug in humans, the side effects associated with increasing doses, and if possible, to gain early evidence on effectiveness.
- *Phase 2.* The drug or biologic is administered to a limited patient population to evaluate dosage tolerance and optimal dosage, identify possible adverse side effects and safety risks and preliminarily evaluate efficacy.
- *Phase 3.* The drug or biologic is administered to an expanded patient population, generally at geographically dispersed clinical study sites to generate enough data to statistically evaluate dosage, clinical effectiveness and safety, to establish the overall benefit-risk relationship of the investigational product and to provide an adequate basis for product approval.
- *Phase 4*. In some cases, the FDA may condition approval of an NDA or BLA for a drug candidate on the sponsor's agreement to conduct additional clinical studies after approval. In other cases, a sponsor may voluntarily conduct additional clinical studies after approval to gain more information about the drug. Such post-approval studies are typically referred to as Phase 4 clinical studies.

A pivotal study is a clinical study that adequately meets regulatory agency requirements for the evaluation of a drug candidate's efficacy and safety such that it can be used to justify the approval of the product. Generally, pivotal studies are Phase 3 studies, but the FDA may accept results from Phase 2 studies if the study design provides a well-controlled and reliable assessment of clinical benefit, particularly in situations where there is an unmet medical need and the results are sufficiently robust.

The FDA, the IRB or the clinical study sponsor may suspend or terminate a clinical study at any time on various grounds, including a finding that the research subjects are being exposed to an unacceptable health risk. Additionally, some clinical studies are overseen by an independent group of qualified experts organized by the clinical study sponsor, known as a data safety monitoring board or committee. This group provides authorization for whether or not a study may move forward at designated check points based on access to certain data from the study. We may also suspend or terminate a clinical study based on evolving business objectives and/or competitive climate.

Submission of an NDA or BLA to the FDA

Assuming successful completion of all required testing in accordance with all applicable regulatory requirements, detailed investigational new drug product information is submitted to the FDA in the form of an NDA or BLA requesting approval to market the product for one or more indications. Under federal law, the submission of most NDAs and BLAs is subject to a substantial application user fee. Applications for orphan drug products are exempted from the NDA and BLA application user fees.

An NDA or BLA must include all relevant data available from pertinent preclinical and clinical studies, including negative or ambiguous results as well as positive findings, together with detailed information relating to the product's chemistry, manufacturing, controls and proposed labeling, among other things. Data can come from company-sponsored clinical studies intended to test the safety and effectiveness of a use of a product, or from a number of alternative sources, including studies initiated by investigators. To support marketing approval, the data submitted must be sufficient in quality and quantity to establish the safety and effectiveness of the investigational product to the satisfaction of the FDA.

Once an NDA or BLA has been submitted, the FDA's goal is to review the application within ten months after it accepts the application for filing, or, if the application relates to an unmet medical need in a serious or life-threatening indication, six months after the FDA accepts the application for filing. The review process is often significantly extended by FDA requests for additional information or clarification.

Before approving an NDA or 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 compliance with cGMP requirements and adequate to assure consistent production of the product within required specifications. Additionally, before approving an NDA or BLA, the FDA will typically inspect one or more clinical sites to assure compliance with GCP.

The FDA is required to refer an application for a novel drug or biologic to an advisory committee or explain why such referral was not made. 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 and typically follows such recommendations.

The FDA's Decision on an NDA or BLA

After the FDA evaluates the NDA or BLA and conducts inspections of manufacturing facilities, it may issue an approval letter or a Complete Response Letter. An approval letter authorizes commercial marketing of the drug or biologic with specific prescribing information for specific indications. A Complete Response Letter indicates that the review cycle of the application is complete and the application is not ready for approval. A Complete Response Letter may require additional clinical data and/or an additional pivotal Phase 3 clinical study(ies), and/or other significant, expensive and time-consuming requirements related to clinical studies, preclinical studies or manufacturing. Even if such additional information is submitted, the FDA may ultimately decide that the NDA or BLA does not satisfy the criteria for approval. The FDA could also approve the NDA or BLA with a Risk Evaluation and Mitigation Strategy, or REMS, to mitigate risks, which could include medication guides, physician communication plans or elements to assure safe use, such as restricted distribution methods, patient registries and other risk minimization tools. The FDA also may condition approval on, among other things, changes to proposed labeling, development of adequate controls and specifications or a commitment to conduct one or more post-market studies or clinical studies. Such post-market testing may include Phase 4 clinical studies and surveillance to further assess and monitor the product's safety and effectiveness after commercialization. Also, new government requirements, including those resulting from new legislation, may be established, or the FDA's policies may change, which could delay or prevent regulatory approval of our products under development.

Expedited Review and Accelerated Approval Programs

The FDA has various programs, including fast track designation, breakthrough therapy designation, accelerated approval, and priority review, that are intended to expedite the development and approval of new drugs and biologics that address unmet medical needs in the treatment of serious or life-threatening diseases and conditions. To be eligible for a fast track designation, the FDA must determine, based on the request of a sponsor, that a product is intended to treat a serious or life-threatening disease or condition and demonstrates the potential to address an unmet medical need. The FDA may review sections of the NDA for a fast-track product on a rolling basis before the complete application is submitted, if the sponsor provides a schedule for the submission of the sections of the NDA, the FDA agrees to accept sections of the NDA and determines that the schedule is acceptable, and the sponsor pays any required user fees upon submission of the first section of the NDA.

The FDA may give a priority review designation to drugs that offer major advances in treatment, or provide a treatment where no adequate therapy exists. A priority review means that the goal for the FDA to review an application is six months, rather than the standard review of ten months under current. These six and 10 month review periods are measured from the "filing" date rather than the receipt date for NDAs for new molecular entities, which typically adds approximately two months to the timeline for review and decision from the date of submission. Most products that are eligible for fast-track designation are also likely to be considered appropriate to receive a priority review.

In addition, products studied for their safety and effectiveness in treating serious or life-threatening illnesses and that provide meaningful therapeutic benefit over existing treatments may be eligible for accelerated approval and may be approved on the basis of adequate and well-controlled clinical studies establishing that the product has an effect on a surrogate endpoint that is reasonably likely to predict clinical benefit, or on a clinical endpoint that can be measured earlier than irreversible morbidity or mortality, that is reasonably likely to predict an effect on irreversible morbidity or mortality or other clinical benefit, taking into account the severity, rarity or prevalence of the condition and the availability or lack of alternative treatments. As a condition of approval, the FDA may require a sponsor of a drug receiving accelerated approval to perform post-marketing studies to verify and describe the

predicted effect on irreversible morbidity or mortality or other clinical endpoint, and the drug may be subject to accelerated withdrawal procedures.

Moreover, under the provisions of the Food and Drug Administration Safety and Innovation Act, or FDASIA, passed in July 2012, a sponsor can request designation of a drug candidate as a "breakthrough therapy." A breakthrough therapy is defined as a drug or biologic that is intended, alone or in combination with one or more other drugs or biologics, 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. Drugs designated as breakthrough therapies are also eligible for the other expedited review and approval programs, including accelerated approval, priority review, and fast-track designation. The FDA must take certain actions, such as holding timely meetings and providing advice, intended to expedite the development and review of an application for approval of a breakthrough therapy.

Even if a product qualifies for one or more of these programs, the FDA may later decide that the product no longer meets the conditions for qualification or decide that the time period for FDA review or approval will not be shortened.

Post-Approval Requirements

Drugs and biologics marketed pursuant to FDA approvals are subject to pervasive and continuing regulation by the FDA, including, among other things, requirements relating to recordkeeping, periodic reporting, product sampling and distribution, advertising and promotion and reporting of adverse experiences with the product. After approval, most changes to the approved product, such as adding new indications or other labeling claims are subject to prior FDA review and approval. There also are continuing, annual user fee requirements.

Manufacturers are subject to periodic unannounced inspections by the FDA and state agencies for compliance with cGMP requirements. Changes to the manufacturing process are strictly regulated and, depending on the significance of the change, may require prior FDA approval before being implemented. FDA regulations also require investigation and correction of any deviations from cGMP and impose reporting and documentation requirements upon us and any third-party manufacturers that we may decide to use. Accordingly, manufacturers must continue to expend time, money and effort in the area of production and quality control to maintain compliance with cGMP and other aspects of regulatory compliance.

Discovery of previously unknown problems with a product or the failure to comply with applicable requirements may result in restrictions on a product, manufacturer or holder of an approved NDA or BLA, including withdrawal or recall of the product from the market or other voluntary, FDA-initiated or judicial action that could delay or prohibit further marketing. Also, new government requirements, including those resulting from new legislation, may be established, or the FDA's policies may change, which could delay or prevent regulatory approval of our products under development.

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

- restrictions on the marketing or manufacturing of the product;

- complete withdrawal of the product from the market or product recalls;
- fines, warning letters or holds on post-approval clinical studies;
- refusal of the FDA to approve pending NDAs or BLAs or supplements to approved NDAs or BLAs, or suspension or revocation of product licenses or 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. Drugs 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 Designation and Exclusivity

Under the Orphan Drug Act, the FDA may grant orphan designation to a drug or biologic intended to treat a rare disease or condition, defined as a disease or condition with a patient population of fewer than 200,000 individuals in the United States, or a patient population greater than 200,000 individuals in the United States and when there is no reasonable expectation that the cost of developing and making available the drug or biologic in the United States will be recovered from sales in the United States for that drug or biologic. Orphan drug designation must be requested before submitting a BLA or NDA. After the FDA grants orphan drug designation, the generic identity of the therapeutic agent and its potential orphan use are disclosed publicly by the FDA.

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

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

Biosimilars and Exclusivity

The Patient Protection and Affordable Care Act, as amended by the Health Care and Education Reconciliation Act, or the Affordable Care Act, signed into law in 2010, includes a subtitle called the Biologics Price Competition and Innovation Act of 2009, or BPCIA, which created an abbreviated approval pathway for biological products that are biosimilar to or interchangeable with an FDA-licensed

reference biological product. To date, only a handful of biosimilars have been licensed under the BPCIA, although numerous biosimilars have been approved in Europe. The FDA has issued several guidance documents outlining an approach to review and approval of biosimilars.

Biosimilarity, which requires that there be no clinically meaningful differences between the biological product and the reference product in terms of safety, purity and potency, can be shown through analytical studies, animal studies and a clinical study or studies. Interchangeability requires that a product is biosimilar to the reference product and the product must demonstrate that it can be expected to produce the same clinical results as the reference product in any given patient and, for products that are administered multiple times to an individual, the biologic and the reference biologic may be alternated or switched after one has been previously administered without increasing safety risks or risks of diminished efficacy relative to exclusive use of the reference biologic. However, complexities associated with the larger, and often more complex, structures of biological products, as well as the processes by which such products are manufactured, pose significant hurdles to implementation of the abbreviated approval pathway that are still being worked out by the FDA.

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

A biological product can also obtain pediatric market exclusivity in the United States. Pediatric exclusivity, if granted, adds six months to existing exclusivity periods and patent terms. This six-month exclusivity, which runs from the end of other exclusivity protection or patent term, may be granted based on the voluntary completion of a pediatric study in accordance with an FDA-issued "Written Request" for such a study.

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

Hatch-Waxman Amendments and Exclusivity

Section 505 of the FDCA describes three types of marketing applications that may be submitted to the FDA to request marketing authorization for a new drug. A Section 505(b)(1) NDA is an application that contains full reports of investigations of safety and efficacy. A 505(b)(2) NDA is an application that contains full reports of investigations of safety and efficacy but where at least some of the information required for approval comes from investigations that were not conducted by or for the applicant and for which the applicant has not obtained a right of reference or use from the person by or for whom the investigations were conducted. This regulatory pathway enables the applicant to rely, in part, on the FDA's prior findings of safety and efficacy for an existing product, or published literature, in support of its application. Section 505(j) establishes an abbreviated approval process for a generic version of approved drug products through the submission of an Abbreviated New Drug Application, or ANDA. An ANDA provides for marketing of a generic drug product that has the same active

ingredients, dosage form, strength, route of administration, labeling, performance characteristics and intended use, among other things, to a previously approved product. ANDAs are termed “abbreviated” because they are generally not required to include preclinical (animal) and clinical (human) data to establish safety and efficacy. Instead, generic applicants must scientifically demonstrate that their product is bioequivalent to, or performs in the same manner as, the innovator drug through in vitro, in vivo or other testing. The generic version must deliver the same amount of active ingredients into a subject’s bloodstream in the same amount of time as the innovator drug and can often be substituted by pharmacists under prescriptions written for the reference listed drug. In seeking approval for a drug through an NDA, applicants are required to list with the FDA each patent with claims that cover the applicant’s drug or a method of using the drug. Upon approval of a drug, each of the patents listed in the application for the drug is then published in the FDA’s Approved Drug Products with Therapeutic Equivalence Evaluations, commonly known as the Orange Book. Drugs listed in the Orange Book can, in turn, be cited by potential competitors in support of approval of an ANDA or 505(b)(2) NDA.

Upon submission of an ANDA or a 505(b)(2) NDA, an applicant must certify to the FDA that (1) no patent information on the drug product that is the subject of the application has been submitted to the FDA; (2) such patent has expired; (3) the date on which such patent expires; or (4) such patent is invalid or will not be infringed upon by the manufacture, use or sale of the drug product for which the application is submitted. Generally, the ANDA or 505(b)(2) NDA cannot be approved until all listed patents have expired, except where the ANDA or 505(b)(2) NDA applicant challenges a listed patent through the last type of certification, also known as a paragraph IV certification. If the applicant does not challenge the listed patents, or indicates that it is not seeking approval of a patented method of use, the ANDA or 505(b)(2) NDA application will not be approved until all of the listed patents claiming the referenced product have expired.

If the ANDA or 505(b)(2) NDA applicant has provided a Paragraph IV certification to the FDA, the applicant must send notice of the Paragraph IV certification to the NDA and patent holders once the application has been accepted for filing by the FDA. The NDA and patent holders may then initiate a patent infringement lawsuit in response to the notice of the paragraph IV certification. If the paragraph IV certification is challenged by an NDA holder or the patent owner(s) asserts a patent challenge to the paragraph IV certification, the FDA may not approve that application until the earlier of 30 months from the receipt of the notice of the paragraph IV certification, the expiration of the patent, when the infringement case concerning each such patent was favorably decided in the applicant’s favor or settled, or such shorter or longer period as may be ordered by a court. This prohibition is generally referred to as the 30-month stay. In instances where an ANDA or 505(b)(2) NDA applicant files a paragraph IV certification, the NDA holder or patent owner(s) regularly take action to trigger the 30-month stay, recognizing that the related patent litigation may take many months or years to resolve.

The FDA also cannot approve an ANDA or 505(b)(2) application until all applicable non-patent exclusivities listed in the Orange Book for the branded reference drug have expired. For example, a pharmaceutical manufacturer may obtain five years of non-patent exclusivity upon NDA approval of a new chemical entity, or NCE, which is a drug containing an active moiety that has not been approved by FDA in any other NDA. An “active moiety” is defined as the molecule responsible for the drug substance’s physiological or pharmacologic action. During that five-year exclusivity period, the FDA cannot accept for filing (and therefore cannot approve) any ANDA seeking approval of a generic version of that drug or any 505(b)(2) NDA that relies on the FDA’s approval of the drug, provided that that the FDA may accept an ANDA four years into the NCE exclusivity period if the ANDA applicant also files a Paragraph IV certification.

A drug, including one approved under Section 505(b)(2), may obtain a three-year period of exclusivity for a particular condition of approval, or change to a marketed product, such as a new formulation for a previously approved product, if one or more new clinical studies (other than

bioavailability or bioequivalence studies) was essential to the approval of the application and was conducted/sponsored by the applicant. Should this occur, the FDA would be precluded from approving any ANDA or 505(b)(2) application for the protected modification until after that three-year exclusivity period has run. However, unlike NCE exclusivity, the FDA can accept an application and begin the review process during the exclusivity period.

Other Healthcare Laws and Compliance Requirements

Pharmaceutical companies are subject to additional healthcare regulation and enforcement by the federal government and by authorities in the states and foreign jurisdictions in which they conduct their business. Such laws include, without limitation, state and federal anti-kickback, fraud and abuse, false claims, privacy and security and physician sunshine laws and regulations. If their operations are found to be in violation of any of such laws or any other governmental regulations that apply, they may be subject to penalties, including, without limitation, civil and criminal penalties, damages, fines, the curtailment or restructuring of operations, exclusion from participation in federal and state healthcare programs and individual imprisonment.

Coverage and Reimbursement

Sales of any product depend, in part, on the extent to which such product will be covered by third-party payors, such as federal, state and foreign government healthcare programs, commercial insurance and managed healthcare organizations and the level of reimbursement for such product by third-party payors. Decisions regarding the extent of coverage and amount of reimbursement to be provided are made on a plan-by-plan basis. These third-party payors are increasingly reducing reimbursements for medical products, drugs and services. In addition, the U.S. government, state legislatures and foreign governments have continued implementing cost-containment programs, including price controls, restrictions on coverage and reimbursement and requirements for substitution of generic products. Adoption of price controls and cost-containment measures, and adoption of more restrictive policies in jurisdictions with existing controls and measures, could further limit sales of any product. Decreases in third-party reimbursement for any product or a decision by a third-party payor not to cover a product could reduce physician usage and patient demand for the product and also have a material adverse effect on sales.

Healthcare Reform

In March 2010, former President Obama signed the Affordable Care Act, which substantially changed the way healthcare is financed by both governmental and private insurers in the United States, and significantly affected the pharmaceutical industry. The Affordable Care Act contains a number of provisions, including those governing enrollment in federal healthcare programs, reimbursement adjustments and fraud and abuse changes. Additionally, the Affordable Care Act increases the minimum level of Medicaid rebates payable by manufacturers of brand name drugs from 15.1% to 23.1%; requires collection of rebates for drugs paid by Medicaid managed care organizations; requires manufacturers to participate in a coverage gap discount program, under which they must agree to offer 50 percent point-of-sale discounts off negotiated prices of applicable brand drugs to eligible beneficiaries during their coverage gap period, as a condition for the manufacturer’s outpatient drugs to be covered under Medicare Part D; and imposes a non-deductible annual fee on pharmaceutical manufacturers or importers who sell “branded prescription drugs” to specified federal government programs.

Since its enactment, there have been judicial and Congressional challenges to certain aspects of the Affordable Care Act, and we expect there will be additional challenges and amendments to the

Affordable Care Act in the future. Other legislative changes have been proposed and adopted since the Affordable Care Act was enacted, including aggregate reductions of Medicare payments to providers of 2% per fiscal year and reduced payments to several types of Medicare providers. Moreover, there has recently been heightened governmental scrutiny over the manner in which manufacturers set prices for their marketed products, which has resulted in several Congressional inquiries and proposed bills designed to, among other things, bring more transparency to product pricing, review the relationship between pricing and manufacturer patient programs, and reform government program reimbursement methodologies for drug products. Individual states in the United States have also become increasingly active in implementing regulations designed to control pharmaceutical product pricing, including price or patient reimbursement constraints, discounts, restrictions on certain product access and marketing cost disclosure and transparency measures, and, in some cases, designed to encourage importation from other countries and bulk purchasing.

Licenses and Collaborations

Description of Ascentage Agreements

In February 2016, we entered into several related agreements with Ascentage Pharma Group Corp. Ltd., or, Ascentage, an affiliate of Jiangsu Ascentage Pharma Development Ltd., a private clinical-stage biopharmaceutical company based in China. These agreements include (i) a compound library and option agreement, which includes a template form of license agreement, (ii) a license agreement covering an initial compound, and (iii) a research services agreement.

Library Agreement and License Template

The compound library and option agreement, or library agreement, gives us access to Ascentage's existing collection of Bcl-2 inhibitor compounds, as well as any additional Bcl-2 inhibitor compounds developed during the term of the library agreement, in order to screen such compounds for senolytic activity. The library agreement permits us to nominate up to 15 such compounds at any given time for further evaluation and up to 10 of such selected compounds into preclinical development. Prior to commencing IND-enabling toxicology studies on an Ascentage compound of interest, we must formally designate the compound as a development candidate under the library agreement and enter into a separate license agreement with Ascentage covering that compound on the terms set forth in the template form of license agreement. The library agreement includes exclusivity provisions that (i) prohibit us from developing Ascentage Bcl-2 compounds for oncology indications, (ii) prohibit Ascentage from researching or developing certain Bcl-2 compounds for non-oncology indications under any circumstances, and (iii) prohibit Ascentage from researching or developing certain other Bcl-2 compounds for a specified set of non-oncology indications under certain circumstances. The term of the library agreement is determined by a formula that is linked to the term of the research services agreement, with a maximum term of six years. The library agreement may be terminated by either party due to the other party's uncured material breach of the library agreement.

Under the terms of the template form of license agreement, Ascentage will grant us the following rights with respect to a selected Ascentage compound for all non-oncology indications: (i) exclusive worldwide development rights, and (ii) exclusive commercialization rights outside of Greater China (China, Hong Kong, Macau and Taiwan). Inside Greater China, we will be obligated to commercialize the licensed Ascentage compound through a joint venture with Ascentage. Ascentage will also have the right to manufacture at least 50% of our supply requirements of the licensed compound, provided they achieve and maintain certain manufacturing quality standards. We will be obligated to make certain milestone payments in the form of shares of our common stock, subject to the equity cap described below, and other milestone payments in in the form of cash, not to exceed $38 million per licensed product, based in each case, upon the achievement of certain clinical and commercial

milestones. We will also be required to make low-single digit royalty payments on net sales of the licensed product under the agreement. Our royalty payment obligations will expire on a country-by-country basis and licensed product-by-licensed product basis upon the later to occur of (a) the expiration of the last valid claim of a licensed patent covering such licensed product in such country, (b) the expiration of regulatory exclusivity for such licensed product in such country, and (c) the tenth anniversary of the first commercial sale of such licensed product in any country. We have the right to credit certain royalty payments that we pay to third parties with respect to certain licensed products against our royalty obligation to Ascentage. Any license agreement may be terminated by either party due to the other party's uncured material breach of the agreement.

Under the library agreement, we issued 133,333 shares of our common stock as an upfront license fee. Of such shares, 80% were issued to Ascentage and 20% were issued to the University of Michigan in satisfaction of Ascentage's obligation to pay a related sublicense fee to the University of Michigan. In addition to the shares issued pursuant to the APG 1252 license agreement described below, we will also be obligated to issue an additional 133,333 shares of our common stock as an upfront license fee to Ascentage and the University of Michigan for each of the next two license agreements. The aggregate number of shares of our common stock we could be required to issue to Ascentage and the University of Michigan pursuant to the library agreement, the APG 1252 license agreement, and any additional license agreements we enter into pursuant to the library agreement is capped at 1,333,338 shares.

APG 1252 License Agreement

In conjunction with the library agreement, we entered into our first license agreement with Ascentage, which grants us the right to develop and commercialize an Ascentage compound known as APG 1252 on the template license terms described above, including up to $38.0 million of potential cash milestone payments and low-single digit royalties. Under the APG 1252 license agreement, Ascentage retains the right to manufacture APG 1252 compounds for use in our licensed products. In connection with the APG 1252 license agreement, we issued 533,335 shares of our common stock as an upfront license fee to Ascentage and the University of Michigan, in the proportion described above. The APG 1252 license agreement may be terminated by either party due to the other party's uncured material breach of the APG 1252 license agreement, and we may terminate for convenience on a licensed product-by-licensed product basis.

In October 2016, we nominated UBX1967 as a compound of interest for further evaluation under the library agreement. Prior to commencing IND-enabling toxicology studies on UBX1967 we anticipate designating UBX1967 as a development candidate, at which point we will enter into an exclusive license agreement on the template license terms.

Research Agreement

In conjunction with the library agreement we also entered into a research services agreement with Ascentage under which we provide $500,000 per year in funding to Ascentage for the further development of Bcl-2 inhibitor compounds, which we retain the right to access under the library agreement. The research agreement has a term of up to four years, provided that the research agreement may be terminated by us for convenience after the first year, by either party due to the other party's uncured material breach, and by Ascentage if we fail to make the $500,000 payment in any given year.

Additional License Agreements

We are party to three additional license agreements that support our senescence-related patent portfolio. These agreements are with The John Hopkins University, or JHU, an entity affiliated with the

Mayo Clinic, or Mayo, and the Buck Institute for Research on Aging, or Buck, and provide us with a worldwide, exclusive, sublicensable license under those counter-parties' rights to a patent family that is co-owned by JHU, Buck, Mayo and us to develop and commercialize licensed products, including for the treatment of senescence-related diseases in therapeutic areas including osteoarthritis, ophthalmology, and pulmonary disease.

Under our November 2016 license with JHU, which relates to patents that are relevant only to osteoarthritis indications, we may be obligated to make development and sales milestone payments to JHU in the form of equity (22,033 shares of our common stock) and cash (of up to $2.6 million in the aggregate), to pay JHU a low-single digit percentage of certain sublicensing revenue, and to pay JHU a running royalty payment of less than 1% on net sales, in all cases, with respect to licensed products for the treatment of osteoarthritis, which we refer to as Royalty Products. Our obligation to pay running royalties to JHU under the agreement is subject to a non-material minimum annual royalty, and may continue on a country-by-country basis until such time as neither the manufacture, sale, or use of such Royalty Product would infringe a valid claim of a licensed patent in the applicable country. Our agreement with JHU continues on a country-by-country basis until the expiration of the last to expire licensed patent in such country (or until twenty years after the effective date if no licensed patent issues in such country). We may terminate the agreement for convenience (as a whole, with respect to a licensed product, or with respect to a particular licensed patent). Either party may terminate the agreement for the other party's uncured material breach or bankruptcy or insolvency-related events.

Under our June 2013 license with Mayo, we may be obligated to make development and sales milestone payments to Mayo of up to $10.8 million in the aggregate, to pay Mayo a percentage of certain sublicensing revenue that is between the high-single digits and the low-teens, and to pay Mayo running royalty payments ranging from less than 1% to low-single digit percentages on net sales of licensed products. Our obligation to pay running royalties to Mayo under the agreement is subject to a non-material minimum annual royalty, and could potentially extend until January 1, 2037. We also issued 677,966 shares of our common stock to Mayo under this agreement. Our agreement with Mayo continues until the later of (i) the expiration of the last valid claim within the licensed patents and (ii) 13 years after first commercial sale of the first licensed product. We may terminate the agreement for convenience, and either party may terminate the agreement for the other party's uncured material breach.

Under our January 2017 license with Buck, which includes similar rights to a second patent family that is co-owned only by Buck and us, we may be obligated to make development and sales milestone payments to Buck of up to $5.4 million in the aggregate, to pay Buck a mid-single digit percentage of certain sublicensing revenue, and to pay Buck running royalty payments ranging from less than 1% to low-single digit percentages on net sales of licensed products. Our obligation to pay running royalties to Buck under the agreement is subject to a non-material minimum annual royalty, and could potentially extend until January 1, 2037. We also issued 132,203 shares of our common stock to Buck under this agreement. The term of our license agreement with Buck continues until the expiration of all our payment obligations to Buck thereunder. We may terminate the agreement for convenience, and either party may terminate the agreement for the other party's uncured material breach.

Employees

As of December 31, 2017, we had approximately 67 employees, 65 of whom were full-time. Greater than 65% of our employees hold advanced degrees. The majority of our employees work in our Brisbane, California, facility. None of our employees is represented by a labor union or a collective bargaining agreement.

Facilities

Our corporate headquarters are located in Brisbane, California, where we lease approximately 39,000 square feet of office, research and development, laboratory, and vivarium space pursuant to a lease dated May 13, 2016, which continues through October 2022. Substantially all our employees work at this facility. We believe this facility is sufficient for our near-term needs, and expect to expand to new and/or additional space as we grow. We believe the biotechnology environment in the South San Francisco area offers suitable additional space on commercially reasonable terms to enable our expansion.

Legal Proceedings

We are not currently involved in any litigation or legal proceedings that, in management's opinion, are likely to have any material adverse effect on our company. While we know of no imminent legal action in which we are likely to be involved, we may in the future become engaged in litigation or other legal proceedings. Regardless of the outcome, litigation can have an adverse impact due to defense fees, settlement costs, demands on management attention, and other concerns.

MANAGEMENT

Executive Officers and Directors

The following table sets forth information regarding our executive officers, directors and key employees as of April 1, 2018:

Name	Age	Position(s)
Executive Officers and Employee Directors		
Keith R. Leonard Jr.	56	Chairman, Chief Executive Officer and Director
Nathaniel E. David, Ph.D.	50	President and Director
Robert C. Goeltz II	45	Chief Financial Officer
Jamie Dananberg, M.D.	60	Chief Medical Officer
Daniel G. Marquess, D. Phil	49	Chief Scientific Officer
Tamara L. Tompkins, J.D.	53	General Counsel and Corporate Secretary
Significant Employees		
Pedro J. Beltran, Ph.D.	47	Senior Vice President, Biology
Douglas A. Rich	49	Senior Vice President, Operations
Susan L. Smuck	51	Senior Vice President, People
Non-Employee Directors		
Paul L. Berns(1)(2)	51	Director
Kristina M. Burow(2)(3)	44	Director
Graham K. Cooper(1)(2)	48	Director
David L. Lacey M.D.(3)	65	Director
Robert T. Nelsen(3)	54	Director
Camille D. Samuels(1)(3)	46	Director

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

Executive Officers and Employee Directors

Keith R. Leonard Jr., has served as our Chairman since January 2016 and our Chief Executive Officer since October 2016. Mr. Leonard was a co-founder of and served as President and Chief Executive Officer of KYTHERA Biopharmaceuticals, Inc., a public biopharmaceutical company, or KYTHERA, from August 2005 until its acquisition by Allergan plc, a public pharmaceutical company, or Allergan, in October 2015. Prior to that, Mr. Leonard held roles of increasing responsibility at Amgen Inc., a public biotechnology company, or Amgen, from October 1991 to November 2004, including as Senior Vice President and General Manager of Amgen Europe. Mr. Leonard currently serves on the board of directors of Sanifit Laboratories S.L., a biopharmaceutical company, and Intuitive Surgical, Inc., a public medical device company, and is the Chairman of the board of directors for Sienna Biopharmaceuticals, Inc., a public biotechnology company, or Sienna. He previously served on the boards of directors of Affymax, Inc., a public biotechnology company, Anacor Pharmaceuticals, Inc., a public biopharmaceutical company, and ARYx Therapeutics, Inc., a public biopharmaceutical company. Mr. Leonard was formerly an active duty officer in the United States Navy. Mr. Leonard received a B.S. in Engineering from the University of California, Los Angeles, a B.A. in History from the University of Maryland, an M.S. in Engineering from the University of California, Berkeley, and an M.B.A. from the Anderson School of Management at the University of California, Los Angeles. We believe that Mr. Leonard is qualified to serve on our board of directors due to his extensive executive

management and leadership experience in the life science industry, as well as experience as a director of public companies.

Nathaniel E. David, Ph.D., is our co-founder and has served as a member of our board of directors since its inception in November 2011, our President since January 2016, and as our Chief Executive Officer from our inception until January 2016. Dr. David was a co-founder of and served as Chief Science Officer of KYTHERA from January 2005 to September 2009 and a member of the board of directors from its inception until its acquisition by Allergan. He was a co-founder of Syrrx, Inc., a biotechnology company, or Syrrx, which was acquired by Takeda Pharmaceutical Company Limited, a public pharmaceutical company, or Takeda, where he was Director of Business Development from 1999 to 2003. Dr. David was also a co-founder of Achaogen, Inc., a public biotechnology company, and Sapphire Energy, Inc., an energy company. Dr. David currently serves on the board of trustees of the University of California Foundation. Dr. David previously served on the board of trustees of the Buck Institute for Research on Aging, and on the board of directors of Sapphire Energy, Inc. Dr. David received an B.A. in Biology from Harvard University and a Ph.D. in Molecular and Cellular Biology from the University of California, Berkeley. We believe that Dr. David is qualified to serve on our board of directors due to his extensive scientific and operational background gained as a research scientist, founder, and executive focused on life science and pharmaceutical companies.

Robert C. Goeltz II has served as our Chief Financial Officer since September 2017. Previously, he served as Chief Financial Officer of CytomX Therapeutics, Inc., a public biotechnology company, from May 2015 to May 2017. Prior to that, Mr. Goeltz served as Chief Financial Officer of Onyx Pharmaceuticals, Inc. after its acquisition by Amgen Inc., from October 2013 until May 2015. Previously, Mr. Goeltz held roles of increasing responsibility at Amgen, including in Business Development, Commercial Finance, R&D Finance and Corporate Accounting from August 2004 to November 2013. He began his career working in the audit practice of Ernst & Young LLP. Mr. Goeltz received a B.B.A. in Business from Emory University and an M.B.A. from the UCLA Andersen School of Management. He is also a Certified Public Accountant (inactive).

Jamie Dananberg, M.D., has served as our Chief Medical Officer since January 2016. Prior to that, Dr. Dananberg held roles of increasing responsibility at Takeda from August 2012 to October 2015, including as Executive Vice President, and at Eli Lilly & Co., a public pharmaceutical company, from October 2000 to September 2012, including as Vice President for Translational Medicine and Tailored Therapeutics. At the University of Michigan, Dr. Dananberg practiced medicine in Endocrinology & Metabolism and ran a basic science laboratory from 1983 to 1996. Dr. Dananberg received a B.S. in Biology and an M.D. from Tufts University.

Daniel G. Marquess,* D. Phil.*, has served as our Chief Scientific Officer since December 2015. Prior to that, Dr. Marquess held roles of increasing responsibility at Theravance Biopharma, Inc., a public biopharmaceutical company, from June 1998 to December 2015, including as Vice President and Head of Medicinal Chemistry, and at GlaxoSmithKline, plc, a public pharmaceutical company from 1994 to 1998, including as a research scientist. Since November 2011, he has served as pharmaceutical discovery advisor to the Wellcome Trust, the second largest biomedical charitable organization in the world. Mr. Marquess received a B.S. in Chemistry from the Queen's University, Belfast, Northern Ireland, and a D. Phil in Organic Chemistry from the University of Oxford.

Tamara L. Tompkins, J.D., has served as our General Counsel and Corporate Secretary since June 2017. Prior to that, Ms. Tompkins served as an Operating Partner, General Counsel, and Chief Administrative Officer of Khosla Ventures, a venture capital firm, from January 2013 to December 2016. From February 2005 to May 2012, Ms. Tompkins served as General Counsel of Amyris, Inc., a public bio-renewables company. She began her career in private practice, first with Shearman & Sterling, then Brobeck, Phleger & Harrison, and finally as Of Counsel at Morgan Lewis. Ms. Tompkins received a B.A. in History from Middlebury College and a J.D. from Georgetown University.

Significant Employees

Pedro J. Beltran, Ph.D., has served as our Senior Vice President, Biology, since December 2017. Prior to that, Dr. Beltran held roles of increasing responsibility at Amgen from September 2003 to November 2017, including as Executive Director of Discovery Research. At the University of Miami, Dr. Beltran served as Assistant Scientist from November 2001 to August 2003 and was a postdoctoral fellow from November 1998 to November 2001. He received a B.S. in Molecular Biology from the Florida Institute of Technology and a Ph.D. in Cancer Biology from the University of Texas, Health Science Center at Houston.

Douglas A. Rich has served as our Senior Vice President, Operations, since April 2017. Mr. Rich served as Senior Vice President, Operations of KYTHERA from February 2015 until its acquisition by Allergan in February 2016, and prior to that he served as Vice President, Manufacturing, of KYTHERA from May 2014 until January 2015. Previously, Mr. Rich held roles of increasing responsibility at Boehringer Ingelheim, a pharmaceutical company, from March 2011 to April 2014, including Vice President, Quality. He spent over 18 years at Amgen in various roles within Operations from October 2001 to August 2011. He received a B.S. in Biology from the University of Southern California and an M.B.A. from Pepperdine University.

Susan L. Smuck has served as our Senior Vice President, People, since January 2016. She served as Senior Vice President, Human Resources, of KYTHERA from October 2006 until its acquisition by Allergan in October 2015. Prior to that, Ms. Smuck held roles of increasing responsibility at Activus Healthcare Solutions, Inc., a healthcare company, from 2005 to 2007, including Vice President of Human Resources and Administration, and at Amgen from 1993 to 2005, including Senior Director of Human Resources. Ms. Smuck received a B.A. in Psychology and Business Administration from California Lutheran University and currently chairs the University's Board of Regents.

Non-Employee Directors

Paul L. Berns has served as a member of our board of directors since March 2018. Mr. Berns has been a consultant in the pharmaceutical industry since July 2016, as well as from August 2012 to March 2014 and from July 2005 to March 2006. From March 2014 to June 2016, Mr. Berns served as President and Chief Executive Officer at Anacor Pharmaceuticals, Inc. a biopharmaceutical company, which was acquired by Pfizer Inc. in 2016. Previously, Mr. Berns served as President and Chief Executive Officer of Allos Therapeutics, Inc., a biopharmaceutical company, from March 2006 to September 2012, when it was acquired by Spectrum Pharmaceuticals, Inc. Mr. Berns was President and Chief Executive Officer of Bone Care International, Inc., a specialty pharmaceutical company, from June 2002 to July 2005, when it was acquired by Genzyme Corporation. Prior to that, Mr. Berns was Vice President and General Manager of the Immunology, Oncology and Pain Therapeutics business unit of Abbott Laboratories from 2001 to 2002, and from 2000 to 2001, he served as Vice President, Marketing of BASF Pharmaceuticals/Knoll, when it was acquired by Abbott Laboratories in 2001. Earlier in his career, Mr. Berns held various positions, including senior management roles, at Bristol-Myers Squibb Company from 1990 to 2000. Mr. Berns is currently a board member of the privately held company, MC2 Therapeutics (since May 2017), and the publicly held companies, Jazz Pharmaceuticals, PLC (since April 2010) and Menlo Therapeutics, Inc. (since November 2017). Mr. Berns previously served on the boards of Anacor Pharmaceuticals, Inc. (from June 2012 to June 2016), XenoPort, Inc. (from November 2005 to May 2016), Allos Therapeutics, Inc. (from March 2006 to September 2012) and Bone Care International, Inc. (from June 2002 to July 2005). Mr. Berns received his B.S. in Economics from the University of Wisconsin. We believe that Mr. Berns is qualified to serve on our board of directors because of his extensive experience in the biopharmaceutical industry and his service as a director of a number of public pharmaceutical companies.

Kristina M. Burow has served as a member of our board of directors since its inception in November 2011. Ms. Burow has served as Managing Director of ARCH Venture Partners, or ARCH, since November 2011 and previously held roles of increasing responsibility at ARCH from August 2002 to November 2011. Ms. Burow currently serves on the boards of directors of several biopharmaceutical and biotechnology companies, including Vividion Therapeutics, Inc., Lycera Corp., BlackThorn Therapeutics, Inc., Metacrine, Inc., Scholar Rock, Inc., AgBiome Inc., Vir Biotechnology Inc., and AgTech Accelerator, an agricultural technology startup accelerator. Ms. Burow also serves on the board of directors of Sienna. She previously was a co-founder and member of the board of directors of Receptos, Inc., a public pharmaceutical company, until its acquisition by Celgene Corporation, a public biopharmaceutical company, and of Sapphire Energy, Inc., an energy company. Ms. Burow has participated in a number of other ARCH portfolio companies including KYTHERA, Siluria Technologies, Inc., an energy company, and Ikaria, Inc., a biotechnology company, acquired by Madison Dearborn Partners, a private equity firm. Prior to joining ARCH, Ms. Burow was an Associate with the Novartis BioVenture Fund in San Diego and an early employee at the Genomics Institute of the Novartis Research Foundation. Ms. Burow received a B.A. in Chemistry from the University of California, Berkeley, an M.A. in Chemistry from Columbia University, and an M.B.A. from the University of Chicago. We believe that Ms. Burow is qualified to serve on our board of directors due to her extensive experience investing in biopharmaceutical and biotechnology companies and her experience on boards of directors in the medical industry.

Graham K. Cooper has served as a member of our board of directors since April 2017. Since March 2018, Mr. Cooper has served as the Chief Financial Officer and Chief Operating Officer of Assembly Biosciences, Inc. Mr. Cooper previously served as the Chief Financial Officer of Receptos, from February 2013 until its acquisition by Celgene in August 2015 and the Executive Vice President, Finance, and Chief Financial Officer of Geron Corporation, a public biopharmaceutical company from January 2012 to December 2012. From May 2006 until March 2011, Mr. Cooper served as Senior Vice President, Chief Financial Officer, and Treasurer of Orexigen Therapeutics, Inc., a public biotechnology company. Prior to that, Mr. Cooper held roles of increasing responsibility at Deutsche Bank Securities, an investment bank, from August 1997 to February 2006, including Director, Health Care Investment Banking. He began his career as an accountant at Deloitte & Touche, and was previously a C.P.A. Mr. Cooper currently serves on the board of directors of Celladon Corporation, a biopharmaceutical company. Mr. Cooper received a B.A. in Economics from the University of California at Berkeley and an M.B.A. from the Stanford Graduate School of Business. We believe that Mr. Cooper is qualified to serve on our board of directors due to his significant financial and accounting experience in the life sciences industry.

David L. Lacey, M.D., has served as a member of our board of directors since February 2018. Dr. Lacey currently serves as Scientific Advisor at Verdant Therapeutics Inc., a biotechnology company. Prior to that, Dr. Lacey held roles of increasing responsibility at Amgen from 1994 to 2011, including as Senior Vice President of Research. Dr. Lacey currently serves on the board of directors of argenx SE, a public biotechnology company. He also serves on the boards of directors of Nurix, Inc., a biotechnology company, and Inbiomotion SL, a biotechnology company. He previously served on the boards of directors or as an advisory board member to Bay Area Bioscience Association and AnaptysBio, Inc. Dr. Lacey previously served as Assistant Professor of Pathology at Jewish Hospital, Washington University Medical Center and was also a postgraduate research associate in the University of Colorado's Department of Pathology. Dr. Lacey received a B.S. in Biology and an M.D. from the University of Colorado. We believe that Dr. Lacey is qualified to serve on our board of directors due to his extensive experience as an advisor to biotechnology companies and his medical background.

Robert T. Nelsen has served as a member of our board of directors since its inception in November 2011. Mr. Nelsen is a co-founder and has served as a Managing Director of ARCH Venture

Partners, a venture capital firm, since July 1994. Mr. Nelsen currently serves on the boards of directors of public biopharmaceutical and biotechnology companies, including Agios Pharmaceuticals, Inc., Juno Therapeutics, Inc., Sienna, Syros Pharmaceuticals Inc., and Denali Therapeutics Inc. Mr. Nelsen also currently serves on the boards of directors of private biotechnology companies, including Arivale Inc., Encoded Genomics, Inc., Ensemble Discovery Corp., and as Chairman of the board of directors of Hua Medicine. Previously, Mr. Nelsen served on a number of public biopharmaceutical and biotechnology companies, including Bellerophon Therapeutics, Inc., Fate Therapeutics, Inc., KYTHERA, NeurogesX, Inc., and Sage Therapeutics Inc. He previously served as a trustee of the Fred Hutchinson Cancer Research Institute and the Institute for Systems Biology, and as a member of the board of directors of the National Venture Capital Association. Mr. Nelsen received a B.S. from the University of Puget Sound with majors in Economics and Biology and an M.B.A. from the University of Chicago. We believe that Mr. Nelsen is qualified to serve on our board of directors due to his extensive experience serving on the board of directors of clinical-stage biotechnology companies and his investment experience in the life sciences industry.

Camille D. Samuels has served as a member of our board of directors since March 2015. Ms. Samuels has been a Partner of Venrock, a venture capital firm, since May 2014. Prior to that, she served as a Managing Director of Versant Ventures, a life sciences venture capital firm, from February 2000 to December 2012. She previously served as a board member or a board observer on other public healthcare companies, including Achaogen, Inc., Carmenta Biosciences, Fluidigm Corporation, Genomic Health, Inc., KYTHERA, Novacardia, Inc., ParAllele BioScience, Inc., RegenXBIO and Syrrx. Prior to her venture career, Ms. Samuels held business development and strategic marketing roles at Tularik Inc., a public biotechnology company, acquired by Amgen and Genzyme Corp. Ms. Samuels received a B.A. in Biology from Duke University and an M.B.A. from Harvard Business School, both with high distinction.

Board Composition

Director Independence

Our board of directors currently consists of eight members. Our board of directors has determined that all of our directors, other than Mr. Leonard and Dr. David, qualify as “independent” directors in accordance with The Nasdaq Global Select Market listing requirements. Mr. Leonard and Dr. David are not considered independent because each is an employee of Unity Biotechnology, Inc. The Nasdaq Global Select Market’s independence definition includes a series of objective tests, such as that the director is not, and has not been for at least three years, one of our employees and that neither the director nor any of his or her family members has engaged in various types of business dealings with us. In addition, as required by The Nasdaq Global Select Market rules, our board of directors has made a subjective determination as to each independent director that no relationships exists that, in the opinion of our board of directors, would interfere with the exercise of independent judgment in carrying out the responsibilities of a director. In making these determinations, our board of directors reviewed and discussed information provided by the directors and us with regard to each director’s business and personal activities and relationships as they may relate to us and our management. There are no family relationships among any of our directors or executive officers.

Classified Board of Directors

In accordance with our amended and restated certificate of incorporation to be in effect immediately prior to the consummation of this offering, our board of directors will be divided into three classes with staggered, three-year terms. At each annual meeting of stockholders, the successors to directors whose terms then expire will be elected to serve from the time of election and qualification

until the third annual meeting following election. Effective upon the consummation of this offering, our directors will be divided among the three classes as follows:

- the Class I directors will be Nathaniel E. David, David L. Lacey and Robert T. Nelsen, and their terms will expire at the annual meeting of stockholders to be held in 2019;
- the Class II directors will be Paul L. Berns, Graham K. Cooper and Camille D. Samuels, and their terms will expire at the annual meeting of stockholders to be held in 2020; and
- the Class III directors will be Keith R. Leonard and Kristina M. Burow, and their terms will expire at the annual meeting of stockholders to be held in 2021.

Our amended and restated certificate of incorporation will provide that the authorized number of directors may be changed only by resolution of the board of directors. Any additional directorships resulting from an increase in the number of directors will be distributed among the three classes so that, as nearly as possible, each class will consist of one-third of the directors. The division of our board of directors into three classes with staggered three-year terms may delay or prevent a change of our management or a change in control of our company.

Voting Arrangements

The election of the members of our board of directors is governed by the amended and restated voting agreement, as amended, that we entered into with certain holders of our common stock and certain holders of our convertible preferred stock and the related provisions of our amended and restated certificate of incorporation.

Pursuant to the voting agreement and these provisions the holders of our Series A-1 and Series A-2 convertible preferred stock, voting together as a single class, have the right to elect two directors to our board of directors, the holders of our Series B convertible preferred stock, voting as a separate class, have the right to elect one director to our board of directors and the holders of our common stock and our preferred stock, exclusively and voting together as a single class, have the right to elect the balance of the total number of our directors, which are designated as follows:

- two members designated by ARCH (together with its affiliated funds) and elected by the holders of a majority of our Series A-1 and Series A-2 convertible preferred stock, voting together as a single class, for which Ms. Burow and Mr. Nelsen have been designated;
- one member designated by the holders of a majority of our Series B convertible preferred stock, voting as a separate class, for which Dr. Lacey has been designated;
- four members designated by the other members of our board of directors and elected by the holders of a majority of the shares of our common stock and convertible preferred stock, voting together as a single class, for which Ms. Samuels, Mr. Berns, Mr. Cooper, and Dr. David have been designated; and
- one member elected by the holders of a majority of the shares of our common stock and convertible preferred stock, voting together as a single class, who shall be our then-serving Chief Executive Officer, for which Mr. Leonard has been designated.

The holders of our common stock and convertible preferred stock who are parties to our voting agreement are obligated to vote for such designees indicated above. The provisions of this voting agreement will terminate upon the consummation of this offering and our amended and restated certificate of incorporation will be amended and restated, after which there will be no further contractual obligations or charter provisions regarding the election of our directors. Our directors hold office until their successors have been elected and qualified or appointed, or the earlier of their death, resignation, or removal.

Leadership Structure of the Board

Our amended and restated bylaws and corporate governance guidelines will provide our board of directors with flexibility to combine or separate the positions of Chairman of the board of directors and Chief Executive Officer and to implement a lead director in accordance with its determination that utilizing one or the other structure would be in the best interests of our company. Mr. Leonard currently serves as the chairman of our board of directors. In that role, Mr. Leonard presides over the executive sessions of the board of directors and as a liaison between management and the board of directors.

Our board of directors has concluded that our current leadership structure is appropriate at this time. However, our board of directors will continue to periodically review our leadership structure and may make such changes in the future as it deems appropriate.

Role of Board in Risk Oversight Process

Risk assessment and oversight are an integral part of our governance and management processes. Our board of directors encourages management to promote a culture that incorporates risk management into our corporate strategy and day-to-day business operations. Management discusses strategic and operational risks at regular management meetings, and conducts specific strategic planning and review sessions during the year that include a focused discussion and analysis of the risks facing us. Throughout the year, senior management reviews these risks with the board of directors at regular board meetings as part of management presentations that focus on particular business functions, operations or strategies, and presents the steps taken by management to mitigate or eliminate such risks.

Our board of directors does not have a standing risk management committee, but rather administers this oversight function directly through our board of directors as a whole, as well as through various standing committees of our board of directors that address risks inherent in their respective areas of oversight. While our board of directors is responsible for monitoring and assessing strategic risk exposure, our audit committee is responsible for overseeing our major financial risk exposures and the steps our management has taken to monitor and control these exposures. The audit committee also monitors compliance with legal and regulatory requirements and considers and approves or disapproves any related person transactions. Our nominating and corporate governance committee monitors the effectiveness of our corporate governance guidelines. Our compensation committee assesses and monitors whether any of our compensation policies and programs has the potential to encourage excessive risk-taking.

Board Committees

Our board of directors has the following standing committees: an audit committee, a compensation committee and a nominating and corporate governance committee. Our board of directors may establish other committees to facilitate the management of our business. The composition and functions of each committee are described below.

Audit Committee

Our audit committee oversees our corporate accounting and financial reporting process. Among other matters, the audit committee:

- appoints our independent registered public accounting firm;
- evaluates the independent registered public accounting firm’s qualifications, independence and performance;

- determines the engagement of the independent registered public accounting firm;
- reviews and approves the scope of the annual audit and pre-approves the audit and non-audit fees and services;
- reviews and approves all related party transactions on an ongoing basis;
- establishes procedures for the receipt, retention and treatment of complaints received by the Company regarding accounting, internal accounting controls or auditing matters;
- discusses with management and the independent registered public accounting firm the results of the annual audit and the review of our quarterly financial statements;
- approves the retention of the independent registered public accounting firm to perform any proposed permissible non-audit services;
- monitors the rotation of partners of the independent registered public accounting firm on our engagement team in accordance with requirements established by the SEC;
- discusses on a periodic basis, or as appropriate, with management the Company's policies and procedures with respect to risk assessment and risk management;
- is responsible for reviewing our financial statements and our management's discussion and analysis of financial condition and results of operations to be included in our annual and quarterly reports to be filed with the SEC;
- annually reviews and assesses internal controls and treasury functions including cash management procedures;
- investigates any reports received through the ethics helpline and report to the Board periodically with respect to the information received through the ethics helpline and any related investigations;
- reviews our critical accounting policies and estimates; and
- reviews the audit committee charter and the committee's performance at least annually.

The members of our audit committee are Paul L. Berns, Graham K. Cooper and Camille D. Samuels. Mr. Cooper serves as the chairperson of the committee. All members of our audit committee meet the requirements for financial literacy under the applicable rules and regulations of the SEC and The Nasdaq Global Select Market. Our board of directors has determined that Mr. Cooper is an audit committee financial expert as defined under the applicable rules of the SEC and has the requisite financial sophistication as defined under the applicable rules and regulations of The Nasdaq Global Select Market. Under the rules of the SEC, members of the audit committee must also meet heightened independence standards. Our board of directors has determined that each of Messrs. Berns and Cooper and Ms. Samuels are independent under the applicable rules of the SEC and The Nasdaq Global Select Market. The audit committee operates under a written charter that satisfies the applicable standards of the SEC and The Nasdaq Global Select Market.

Compensation Committee

Our compensation committee oversees policies relating to compensation and benefits of our officers and employees. The compensation committee reviews and approves or recommends corporate goals and objectives relevant to compensation of our executive officers (other than our Chief Executive Officer), evaluates the performance of these officers in light of those goals and objectives and approves the compensation of these officers based on such evaluations. The compensation committee also reviews and approves or makes recommendations to our board of directors regarding the issuance of stock options and other awards under our stock plans to our executive officers (other

than our Chief Executive Officer). The compensation committee reviews the performance of our Chief Executive Officer and makes recommendations to our board of directors with respect to his compensation and our board of directors retains the authority to make compensation decisions relative to our Chief Executive Officer. The compensation committee will review and evaluate, at least annually, the performance of the compensation committee and its members, including compliance by the compensation committee with its charter. The members of our compensation committee are Paul L. Berns, Kristina M. Burow and Graham K. Cooper. Mr. Berns serves as the chairman of the committee. Each of the members of our compensation committee is independent under the applicable rules and regulations of The Nasdaq Global Select Market, is a "non-employee director" as defined in Rule 16b-3 promulgated under the Exchange Act and is an "outside director" as that term is defined in Section 162(m) of the U.S. Internal Revenue Code of 1986, as amended, or Section 162(m). The compensation committee operates under a written charter that satisfies the applicable standards of the SEC and The Nasdaq Global Select Market.

Nominating and Corporate Governance Committee

The nominating and corporate governance committee is responsible for making recommendations to our board of directors regarding candidates for directorships and the size and composition of our board of directors. In addition, the nominating and corporate governance committee is responsible for overseeing our corporate governance policies and reporting and making recommendations to our board of directors concerning governance matters. The members of our nominating and corporate governance committee are Kristina M. Burow, David L. Lacey, Robert T. Nelsen and Camille D. Samuels. Dr. Lacey serves as the chairman of the committee. Each member of our nominating and corporate governance committee is an independent director under the applicable rules and regulations of The Nasdaq Global Select Market relating to nominating and corporate governance committee independence. The nominating and corporate governance committee operates under a written charter that satisfies the applicable standards of the SEC and The Nasdaq Global Select Market.

Compensation Committee Interlocks and Insider Participation

During the year ended December 31, 2017, our compensation committee consisted of Mses. Burow and Samuels and Mr. Cooper. None of the members of our compensation committee during 2017 nor any of the current members of our compensation committee has at any time been one of our officers or employees. None of our executive officers currently serves, or in the past fiscal year has served, as a member of the board of directors or compensation committee of any entity that has one or more executive officers on our board of directors or compensation committee.

Board Diversity

Upon consummation of this offering, our nominating and corporate governance committee will be responsible for reviewing with the board of directors, on an annual basis, the appropriate characteristics, skills and experience required for the board of directors as a whole and its individual members. In evaluating the suitability of individual candidates (both new candidates and current members), the nominating and corporate governance committee, in recommending candidates for election, and the board of directors, in approving (and, in the case of vacancies, appointing) such candidates, may take into account many factors, including but not limited to the following:

- personal and professional integrity;
- ethics and values;

- experience in corporate management, such as serving as an officer or former officer of a publicly held company;
- experience in the industries in which we compete;
- experience as a board member or executive officer of another publicly held company;
- diversity of expertise and experience in substantive matters pertaining to our business relative to other board members;
- conflicts of interest; and
- practical and mature business judgment.

Currently, our board of directors evaluates, and following the consummation of this offering will evaluate, each individual in the context of the board of directors as a whole, with the objective of assembling a group that can best maximize the success of the business and represent stockholder interests through the exercise of sound judgment using its diversity of experience in these various areas.

Code of Business Conduct and Ethics

Prior to the consummation of this offering, we will adopt a code of business conduct and ethics that will apply to all of our employees, officers and directors, including those officers responsible for financial reporting. Following the consummation of this offering, the code of business conduct and ethics will be available on our website. We expect that any amendments to the code, or any waivers of its requirements, will be disclosed on our website.

Limitation on Liability and Indemnification Matters

Our amended and restated certificate of incorporation, which will become effective immediately prior to the consummation of this offering, will contain provisions that limit the liability of our directors for monetary damages to the fullest extent permitted by Delaware law. Consequently, our directors will not be personally liable to us or our stockholders for monetary damages for any breach of fiduciary duties as directors, except 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;
- unlawful payments of dividends or unlawful stock repurchases or redemptions as provided in Section 174 of the Delaware General Corporation Law; or
- any transaction from which the director derived an improper personal benefit.

Each of our amended and restated certificate of incorporation and amended and restated bylaws, which will become effective immediately prior to the consummation of this offering, will provide that we are required to indemnify our directors and officers, in each case to the fullest extent permitted by Delaware law. Our amended and restated bylaws will also obligate us to advance expenses incurred by a director or officer in advance of the final disposition of any action or proceeding, and permit us to secure insurance on behalf of any officer, director, employee or other agent for any liability arising out of his or her actions in that capacity regardless of whether we would otherwise be permitted to indemnify him or her under Delaware law. We have entered and expect to continue to enter into agreements to indemnify our directors, executive officers and other employees as determined by our

board of directors. With specified exceptions, these agreements provide for indemnification for related expenses including, among other things, attorneys' fees, judgments, fines and settlement amounts incurred by any of these individuals in any action or proceeding. We believe that these bylaw provisions and indemnification agreements are necessary to attract and retain qualified persons as directors and officers. We also maintain directors' and officers' liability insurance.

The limitation of liability and indemnification provisions in our amended and restated certificate of incorporation and amended and restated bylaws may discourage stockholders from bringing a lawsuit against our directors and officers for breach of their fiduciary duty. They may also reduce the likelihood of derivative litigation against our directors and officers, even though an action, if successful, might benefit us and our stockholders. Further, a stockholder's investment may be adversely affected to the extent that we pay the costs of settlement and damages.

Director Compensation

Historically, we have not had a formalized non-employee director compensation program. In April 2017, the Board granted an option to purchase 84,745 shares of our common stock to Graham K. Cooper, which vests annually over three years subject to Mr. Cooper's continued service. Other than the stock option grant to Mr. Cooper, none of our non-employee directors received any compensation for his or her service in 2017. In connection with their appointments to the Board, in February 2018 and March 2018, the Board granted to each of Dr. Lacey and Mr. Berns, respectively, an option to purchase 84,745 shares of our common stock, which vest annually over three years subject to their respective continued service. We reimburse our non-employee directors for travel and other necessary business expenses incurred in the performance of their services for us.

Name	Fees Earned or Paid in Cash ($)	Option Awards ($)(1)(2)	All Other Compensation ($)	Total ($)
Kristina M. Burow	—	—	—	—
Graham K. Cooper	—	194,549	—	194,549
Robert T. Nelsen	—	—	—	—
Camille D. Samuels	—	—	—	—

(1) Amounts reflect the full grant-date fair value of stock options granted during 2017 computed in accordance with ASC Topic 718, rather than the amounts paid to or realized by the named individual. See Note 12 of the audited financial statements included in this prospectus for the assumptions used in calculating these amounts.

(2) As of December 31, 2017, Mr. Cooper held an option to purchase 84,745 shares of our common stock. No other non-employee director held any other equity awards as of December 31, 2017.

We have approved and implemented a compensation policy for our non-employee directors to be effective in connection with the consummation of this offering, or the Director Compensation Program. Pursuant to the Director Compensation Program, our non-employee directors will receive cash compensation as follows:

- Each non-employee director will receive an annual cash retainer in the amount of $40,000 per year.
- The chairperson of the audit committee will receive additional annual cash compensation in the amount of $15,000 per year for such chairperson's service on the audit committee. Each non-chairperson member of the audit committee will receive additional annual cash compensation in the amount of $7,500 per year for such member's service on the audit committee.

- The chairperson of the compensation committee will receive additional annual cash compensation in the amount of $12,500 per year for such chairperson's service on the compensation committee. Each non-chairperson member of the compensation committee will receive additional annual cash compensation in the amount of $6,250 per year for such member's service on the compensation committee.
- The chairperson of the nominating and corporate governance committee will receive additional annual cash compensation in the amount of $8,000 per year for such chairperson's service on the nominating and corporate governance committee. Each non-chairperson member of the nominating and corporate governance committee will receive additional annual cash compensation in the amount of $4,000 per year for such member's service on the nominating and corporate governance committee.

Under the Director Compensation Program, each non-employee director who is elected or appointed to our board of directors after the completion of this offering will automatically receive an option award representing $450,000 in grant date fair value upon the director's initial appointment or election to our board of directors, referred to as the Initial Grant. In addition, each non-employee director who is serving on our board of directors immediately following an annual stockholder's meeting will automatically be granted an annual option representing $225,000 in grant date fair value on the date of such annual stockholder's meeting, referred to as the Annual Grant. The Initial Grant will vest as to 1/36th of the underlying shares on a monthly basis over three years, subject to continued service through each applicable vesting date. The Annual Grant will vest in full on the one year anniversary of the grant date, subject to continued service through each applicable vesting date. All equity awards granted to our non-employee directors under the Director Compensation Program will vest in full as to any unvested portion of the award immediately prior to the consummation of a change in control transaction.

EXECUTIVE COMPENSATION

This section discusses the material components of the executive compensation program for our executive officers who are named in the "2017 Summary Compensation Table" below. In 2017, our "named executive officers" and their positions were as follows:

- Keith R. Leonard Jr., Chief Executive Officer;
- Nathaniel E. David, Ph.D., President; and
- Robert C. Goeltz II, Chief Financial Officer.

This discussion may contain forward-looking statements that are based on our current plans, considerations, expectations and determinations regarding future compensation programs. Actual compensation programs that we adopt following the completion of this offering may differ materially from the currently planned programs summarized in this discussion. As an "emerging growth company" as defined in the JOBS Act, we are not required to include a Compensation Discussion and Analysis section and have elected to comply with the scaled disclosure requirements applicable to emerging growth companies.

2017 Summary Compensation Table

The following table sets forth information concerning the compensation of our named executive officers for the year ended December 31, 2017.

Name and Principal Position	Year	Salary ($)	Bonus ($)(1)	Stock Awards ($)(2)	Option Awards ($)(2)	All Other Compensation ($)	Total ($)
Keith R. Leonard Jr. Chief Executive Officer	2017	485,000	237,650	—	3,188,725	115,521(3)	4,026,896
Nathaniel E. David President	2017	425,000	169,575	—	1,973,679	—	2,568,254
Robert C. Goeltz II(4) Chief Financial Officer	2017	112,386	39,729	—	902,794	—	1,054,909

(1) Amounts represent the annual performance-based cash bonuses earned by our named executive officers based on the achievement of certain corporate performance objectives and individual performance, other than with respect to our Chief Executive Officer, during 2017. These amounts were paid to the named executive officers in early 2018. Please see the descriptions of the annual performance bonuses paid to our named executive officers under "2017 Bonuses" below.

(2) Amounts reflect the full grant-date fair value of stock awards and option awards during 2017 computed in accordance with ASC Topic 718. Amounts in the option awards column also reflect stock purchase rights granted to Dr. David in 2017. For performance-vesting options, the grant date fair value is based on the probable outcome of the applicable performance conditions (which was also the maximum level of achievement) as well as the value of the applicable market conditions based on a Monte Carlo simulation. The assumptions used in calculating the grant date fair value of the awards disclosed in these columns are set forth in the notes to our audited financial statements included elsewhere in this prospectus. These amounts do not correspond to the actual value that may be recognized by the named executive officers upon vesting of the applicable awards.

(3) Amounts represent $90,000 for Mr. Leonard's housing allowance and $25,521 in taxable reimbursement of expenses incurred by Mr. Leonard in traveling from his home in Southern California to our principal offices in Brisbane, California.

(4) Mr. Goeltz commenced employment as our Chief Financial Officer on September 5, 2017.

Narrative to Summary Compensation Table

2017 Salaries

The named executive officers receive a base salary to compensate them for services rendered to our company. The base salary payable to each named executive officer is intended to provide a fixed component of compensation reflecting the executive's skill set, experience, role and responsibilities.

For fiscal year 2017, Mr. Leonard's annual base salary was $485,000, Dr. David's base salary was $425,000, and Mr. Goeltz's base salary was $345,000. The annual base salaries of Mr. Leonard and Dr. David remained unchanged from their respective levels in 2016, and Mr. Goeltz's base salary was determined by the Compensation Committee as a result of negotiations in connection with his commencement of employment with us in September 2017. In early 2018, we entered into employment agreements with each of our named executive officers providing for the following annual base salaries: Mr. Leonard: $500,000, Dr. David: $437,750, and Mr. Goeltz: $350,000. The Board has also approved increasing Mr. Goeltz's base salary to $385,000 effective upon the completion of this offering.

2017 Bonuses

We maintain an annual performance-based cash bonus program in which each of our named executive officers participated in 2017. Each of our named executive officers' target bonus is expressed as a percentage of base salary which can be achieved by meeting corporate goals at target level. The 2017 annual bonuses for Mr. Leonard, Dr. David and Mr. Goeltz were targeted at 50%, 40% and 35% of their respective base salaries. The target bonuses of Mr. Leonard and Dr. David remained unchanged from their respective levels in 2016, and Mr. Goeltz's target bonus was determined by the Compensation Committee as a result of negotiations in connection with his commencement of employment with us in September 2017. The employment agreements entered into with each of our named executive officers in early 2018 provide for the same target bonuses to each of these officers as in 2017.

For 2017, our named executive officers were eligible to earn annual cash bonuses based on the achievement of certain corporate performance objectives approved by the Compensation Committee and the Board, as well as individual performance for Dr. David and Mr. Goeltz. For the 2017, the Board set corporate performance goals in the three broad strategic areas of advancing therapeutic programs, discovering new molecules, paths and diseases, and building capability (including human resources, finance and intellectual property goals). Each area included specific performance objectives and a corresponding weighting. For each strategic area, the Board also approved certain "stretch" goals with corresponding weightings, such that the corporate goals could be achieved at up to 142.5% of target.

In early 2018, the Board reviewed and approved the achievement of our 2017 corporate goals at 98%. Based on this level of achievement and adjustments for individual 2017 performance for Dr. David and Mr. Goeltz, which were determined by the Board following the recommendation of Mr. Leonard, our named executive officers were paid at the following percentages of their targeted amounts: Mr. Leonard: 98%; Dr. David: 99.75%; and Mr. Goeltz: 101%.

The actual annual cash bonuses awarded to each named executive officer for 2017 performance are set forth above in the Summary Compensation Table in the column titled "Bonus." Mr. Goeltz's annual bonus was based on his actual base salary earnings for 2017.

Equity Compensation

Certain of our named executive officers currently hold options or restricted stock. Specifically, in 2017, Messrs. Leonard and Goeltz and Dr. David were granted options to purchase our common stock, and Dr. David was granted certain additional stock purchase rights, in each case, pursuant to our 2013 Equity Incentive Plan.

In January 2017, pursuant to his employment agreement with us dated as of October 26, 2016, the Board granted to Mr. Leonard an option to purchase 1,384,100 shares of our common stock, which vests as to 1/48th of the shares subject to the option each month from October 26, 2016, subject to Mr. Leonard's continued service to the Company on each applicable vesting date. In addition, the

option is subject to the accelerated vesting provisions set forth in Mr. Leonard's employment agreement, as described below under "Executive Compensation Arrangements."

In September 2017, in connection with his commencement of employment with us, the Board granted to Mr. Goeltz an option to purchase 220,338 shares of our common stock subject to time-based vesting, and an option to purchase 115,254 shares of our common stock subject to performance-based vesting. The time-vesting option vests with respect to 25% of the shares subject to the option on the first anniversary of Mr. Goeltz's employment commencement date, and with respect to 1/48th of the shares subject to the option on each monthly anniversary thereafter, subject to Mr. Goeltz's continued service to the Company on each applicable vesting date. The performance-vesting option vests as to (i) 25% of the shares subject to the option upon the achievement of a clinical milestone, (ii) as to 25% of the shares subject to the option upon a financing or valuation milestone; and (iii) as to 50% of the shares subject to the option upon an additional financing or valuation milestone. Mr. Goeltz exercised options to purchase 94,718 shares of our common stock in January 2018 using a combination of cash and a promissory note in the principal amount of $188,500, which was repaid on April 4, 2018.

In September 2017, the Board granted to Dr. David an option to purchase an aggregate of 138,417 shares of our common stock. 27,118 shares subject to the option vest on December 31, 2018, subject to Dr. David's continued service to the Company, and the remaining shares are subject to the same performance-based vesting conditions as described above for Mr. Goeltz's performance-vesting option. Dr. David was also granted stock purchase rights to purchase an aggregate of 625,084 shares of the Company's common stock. 146,113 shares underlying the stock purchase right were fully vested upon purchase, and the remaining shares underlying the stock purchase right vest as to 25% on January 1, 2018 and as to 75% on January 1, 2019, subject to Dr. David's continued service to the Company on each such vesting date. Dr. David exercised his stock purchase rights in 2017 using promissory notes in aggregate principal amount of $2,139,037, $1,639,038 of which was forgiven and $499,999 of which was repaid on April 4, 2018.

In connection with this offering, we have adopted a 2018 Incentive Award Plan, referred to below as the 2018 Plan, in order to facilitate the grant of cash and equity incentives to directors, employees (including our named executive officers) and consultants of our company and certain of its affiliates and to enable us to obtain and retain services of these individuals, which is essential to our long-term success. For additional information about the 2018 Plan, please see the section titled "Equity Incentive Plans" below.

Other Elements of Compensation

Retirement Savings and Health and Welfare Benefits

We maintain a 401(k) retirement savings plan for our employees, including our named executive officers, who satisfy certain eligibility requirements. Our named executive officers are eligible to participate in the 401(k) plan on the same terms as other full-time employees. Currently, we do not match contributions made by participants in the 401(k) plan. We believe that providing a vehicle for tax-deferred retirement savings though our 401(k) plan adds to the overall desirability of our executive compensation package and further incentivizes our employees, including our named executive officers, in accordance with our compensation policies.

All of our full-time employees, including our named executive officers, are eligible to participate in our health and welfare plans, including medical, dental and vision benefits; medical and dependent care flexible spending accounts; short-term and long-term disability insurance; and life and AD&D insurance.

Perquisites and Other Personal Benefits

Pursuant to Mr. Leonard's employment agreement, we provide a monthly allowance of $7,500 for housing in the San Francisco Bay Area, where our principal offices are located. We also provide to Mr. Leonard reimbursement of commuting expenses to our principal offices. We believe these benefits are reasonable and are intended to facilitate Mr. Leonard being accessible to the business as required. Other than the housing and commuting benefits provided to Mr. Leonard, we do not provide perquisites or other personal benefits to our named executive officers.

No Tax Gross-Ups

In 2017, we did not make gross-up payments to cover our named executive officers' personal income taxes that pertained to any of the compensation or perquisites paid or provided by our company. However, in calendar year 2018, we will reimburse Mr. Leonard for taxes incurred by him in connection with our reimbursement of certain of his travel expenses.

Outstanding Equity Awards at Fiscal Year-End

The following table summarizes the number of shares of common stock and preferred stock underlying outstanding equity incentive plan awards for each named executive officer as of December 31, 2017.

		Option Awards					Stock Awards			
Name	Vesting Commencement Date	Number of Securities Underlying Unexercised Options (#) Exercisable	Number of Securities Underlying Unexercised Options (#) Unexercisable	Equity Incentive Plan Awards: Number of Securities Underlying Unexercised Unearned Options (#)	Option Exercise Price ($)	Option Expiration Date	Number of Shares or Units of Stock That Have Not Vested (#)	Market Value of Shares or Units of Stock That Have Not Vested ($)(1)	Equity Incentive Plan Awards: Number of Unearned Shares, Units or Other Rights That Have Not Vested (#)	Equity Incentive Plan Awards: Market or Payout Value of Unearned Shares, Units or Other Rights That Have Not Vested ($)
Keith R. Leonard Jr.	10/26/2016(2)	1,384,100	—	—	3.39	1/20/2027	—	—	—	—
Nathaniel E. David	12/31/2018(3)	27,118	—	—	3.42	9/25/2027	—	—	—	—
	N/A(4)	—	—	111,299	3,42	9/25/2027	—	—	—	—
	1/1/2018(5)	—	192,823	—	0.65	—	—	—	—	—
	1/1/2018(6)	—	570,678	—	0.66	—	—	—	—	—
	1/1/2018(7)	—	—	—	—	—	478,971	2,825,929	—	—
Robert C. Goeltz II	9/5/2017(8)	220,338	—	—	3.42	9/25/2027	—	—	—	—
	N/A(4)	—	—	115,254	3.42	9/25/2027	—	—	—	—

(1) Amounts are calculated by multiplying the number of shares shown in the table by $5.90, the estimated fair market value of our common stock as of December 31, 2017.

(2) The option is exercisable immediately, in whole or in part, conditioned upon the executive entering into a restricted stock purchase agreement with respect to any unvested shares. The shares subject to the option vest and/or are released from the Company's repurchase option as to 1/48th of the shares subject to the option on each monthly anniversary of the vesting commencement date, subject to continued service through the applicable vesting date.

(3) Vests in full on December 31, 2018, subject to continued service through such date.

(4) Vests as to (i) 25% of the shares subject to the option upon the achievement of a clinical milestone, (ii) as to 25% of the shares subject to the option upon a financing or valuation milestone; and (iii) as to 50% of the shares subject to the option upon an additional financing or valuation milestone, subject to continued service through the applicable vesting date.

(5) Represents a compensatory warrant to purchase shares of our Series A-1 convertible preferred stock. The warrant is exercisable during the period from January 1, 2018 to December 31, 2018.

(6) Represents compensatory warrants to purchase shares of our Series A-2 convertible preferred stock. The warrants are exercisable during the period from January 1, 2018 to December 31, 2018.
(7) Vests as to 25% of the restricted shares on January 1, 2018 and as to 75% of the restricted shares on January 1, 2019, subject to continued service through the applicable vesting date.
(8) The option is exercisable immediately, in whole or in part, conditioned upon the executive entering into a restricted stock purchase agreement with respect to any unvested shares. The shares subject to the option vest and/or are released from the Company's repurchase option as to 25% of the shares subject to the option on the first anniversary of the vesting commencement date, and as to 1/48th of the shares subject to the option on each monthly anniversary thereafter, subject to continued service on each applicable vesting date.

Executive Compensation Arrangements

As of December 31, 2017, we were party to an employment agreement with Mr. Leonard and offer letters with Dr. David and Mr. Goeltz. In early 2018, we entered into new employment agreements with each of our named executive officers, which superseded in their entirety their prior employment arrangements with us.

Mr. Leonard. We entered into an employment agreement with Mr. Leonard on October 26, 2016 in connection with his appointment as our Chief Executive Officer, which sets forth Mr. Leonard's base salary, annual bonus opportunity and benefit plan participation. Pursuant to the employment agreement, Mr. Leonard also receives a housing allowance of $7,500 per month for housing in the San Francisco Bay Area. The employment agreement also provides for the grant of an option to purchase a number of shares of the Company's common stock such that combined with Mr. Leonard's prior equity grants, Mr. Leonard would hold 5% of the Company's fully diluted shares, as well as a "top-up" option in the event of certain additional closings of the Company's Series B Preferred Stock financing. This option was granted in January 2017, as described above under "Equity Compensation," and vests as to 1/48th of the shares subject to the option each month from October 26, 2016, subject to Mr. Leonard's continued service to the Company on each applicable vesting date.

Pursuant to Mr. Leonard's employment agreement, in the event of a change in control of the Company, Mr. Leonard's equity awards will vest as to all of the shares subject thereto except for the lesser of (i) 6/48ths of the original number of shares underlying the award or (ii) the shares remaining unvested subject to the award as of the date of the change in control. The unvested portion of each such award will vest in substantially equal installments on each of the first six monthly anniversaries of the change in control, subject to Mr. Leonard's continued service to the Company on each applicable vesting date.

In addition, Mr. Leonard's employment agreement provides that in the event of his termination by the Company without "cause" or his resignation for "good reason" (each, as defined in the employment agreement), subject to his execution and delivery of a release of claims against the Company, Mr. Leonard will be entitled to receive: (i) continued base salary for 12 months following the date of termination; (ii) payment or reimbursement of continued healthcare coverage for up to 12 months following the date of termination; and (iii) 12 months' accelerated vesting of his equity awards, or, in the event such termination occurs within the period beginning three months prior to and ending 12 months following a change in control, full acceleration of all his equity awards.

Pursuant to the new employment agreement entered into with Mr. Leonard in early 2018, in the event of a change in control of the Company, Mr. Leonard's options outstanding as of the effective date of the employment agreement will vest as to the lesser of (i) 6/48ths of the original number of shares underlying the option or (ii) the remaining unvested shares underlying the options, and any then unvested shares will convert to a time-based option which will vest in substantially equal installments on each of the first six monthly anniversaries of the change in control, subject to Mr. Leonard's continued service through the applicable vesting date. In addition, each other of Mr. Leonard's future

equity awards (including any performance awards to the extent then-unvested based on the change in control price) will vest as to 50% of the then-unvested shares subject thereto, and the remaining unvested shares will convert to a time-based equity award which will vest in substantially equal installments on each of the first twelve monthly anniversaries of the change in control, subject to Mr. Leonard's continued service through the applicable vesting date. Mr. Leonard's new employment agreement provides for the same severance benefits as his current employment agreement in the event of a qualifying termination not in connection with a change in control. In addition, in the event of a termination without cause or resignation for good reason, in either case, that occurs within the period beginning three months prior to and ending 18 months following a change in control, Mr. Leonard will be eligible to receive: (i) a lump sum severance payment equal to his annual base salary and target annual bonus; (ii) payment or reimbursement of continued healthcare coverage for up to 12 months following the date of termination; and (iii) full acceleration of his equity awards.

Dr. David and Mr. Goeltz. We are party to offer letters with each of Dr. David and Mr. Goeltz, which set forth their initial base salaries, bonus opportunities, benefit plan participation and initial equity awards. Mr. Goeltz's offer letter provided for an initial stock option grant, which was granted in September 2017, covering an aggregate of 335,592 shares, including 220,338 time-vesting shares and 115,254 performance-vesting shares, as described above under "Equity Compensation."

Pursuant to the new employment agreements entered into with each of Dr. David and Mr. Goeltz in early 2018, in the event of a change in control of the Company, the executive's equity awards (including any performance awards to the extent then-unvested based on the change in control price) will vest as to 50% of the then-unvested shares subject thereto, and the remaining unvested shares will convert to a time-based equity award which will vest in substantially equal installments on each of the first twelve monthly anniversaries of the change in control, subject to Dr. David and Mr. Goeltz's continued service through the applicable vesting date. In addition, in the event of a termination without "cause" or resignation for "good reason" (each, as defined in the employment agreement), in either case, that occurs within the period beginning three months prior to and ending 18 months following a change in control, subject to his execution and delivery of a release of claims against the Company, the executive will be eligible to receive: (i) an amount equal to 0.75 times the sum of the executive's annual base salary and target bonus, payable in a lump sum; (ii) payment or reimbursement of continued healthcare coverage for up to nine months following the date of termination; and (iii) full acceleration of his equity awards.

Equity Compensation Plans

The following summarizes the material terms of the long-term incentive compensation plan in which our named executive officers will be eligible to participate following the consummation of this offering and our 2013 Equity Incentive Plan, referred to as the 2013 Plan, under which we have previously made periodic grants of equity and equity-based awards to our named executive officers and other key employees.

2018 Incentive Award Plan

The Board has adopted, and our stockholders have approved, the 2018 Incentive Award Plan, or 2018 Plan, which became effective upon the effectiveness of the registration statement to which this prospectus relates. The principal purpose of the 2018 Plan is to attract, retain and motivate selected employees, consultants and directors through the granting of stock-based compensation awards and cash-based performance bonus awards. The material terms of the 2018 Plan, as it is currently contemplated, are summarized below.

Share Reserve. Under the 2018 Plan, 4,289,936 shares of our common stock will be initially reserved for issuance pursuant to a variety of stock-based compensation awards, including stock

options, stock appreciation rights, or SARs, restricted stock awards, restricted stock unit awards and other stock-based awards, plus the number of shares remaining available for future awards under the 2013 Plan, as of the effective date of the 2018 Plan. The number of shares initially reserved for issuance or transfer pursuant to awards under the 2018 Plan will be increased by (i) the number of shares represented by awards outstanding under our 2013 Plan that are forfeited or lapse unexercised and which following the effective date are not issued under our 2013 Plan and (ii) an annual increase on the first day of each fiscal year beginning in 2019 and ending in 2028, equal to the lesser of (A) 5.0% of the shares of stock outstanding (on an as converted basis) on the last day of the immediately preceding fiscal year and (B) such smaller number of shares of stock as determined by our board of directors; provided, however, that no more than 60.0 million shares of stock may be issued upon the exercise of incentive stock options.

The following counting provisions will be in effect for the share reserve under the 2018 Plan:

- to the extent that an award terminates, expires or lapses for any reason or an award is settled in cash without the delivery of shares, any shares subject to the award at such time will be available for future grants under the 2018 Plan;
- to the extent shares are tendered or withheld to satisfy the grant, exercise price or tax withholding obligation with respect to any award under the 2018 Plan, such tendered or withheld shares will be available for future grants under the 2018 Plan;
- to the extent shares subject to stock appreciation rights are not issued in connection with the stock settlement of stock appreciation rights on exercise thereof, such shares will be available for future grants under the 2018 Plan; and
- to the extent permitted by applicable law or any exchange rule, shares issued in assumption of, or in substitution for, any outstanding awards of any entity acquired in any form of combination by us or any of our subsidiaries will not be counted against the shares available for issuance under the 2018 Plan.

Administration. The compensation committee of our board of directors is expected to administer the 2018 Plan unless our board of directors assumes authority for administration. To the extent required by applicable law, the committee administering the plan is intended to qualify as a “non-employee director” for purposes of Rule 16b-3 under the Exchange Act. The 2018 Plan provides that the board or compensation committee may delegate its authority to grant awards to employees other than executive officers and certain senior executives of the company to a committee consisting of one or more members of our board of directors or one or more of our officers, other than awards made to our non-employee directors, which must be approved by our full board of directors.

Subject to the terms and conditions of the 2018 Plan, the administrator has the authority to select the persons to whom awards are to be made, to determine the number of shares to be subject to awards and the terms and conditions of awards, and to make all other determinations necessary or advisable for the administration of the 2018 Plan. The full board of directors will administer the 2018 Plan with respect to awards to non-employee directors.

Eligibility. Awards under the 2018 Plan may generally be granted to individuals who are then our officers, employees or consultants or are the officers, employees or consultants of certain of our subsidiaries. Such awards also may be granted to our directors. Only employees of our company or certain of our subsidiaries may be granted incentive stock options, or ISOs.

Awards. The 2018 Plan provides that the administrator may grant or issue stock options, SARs, restricted stock, restricted stock units, performance bonus awards, performance stock units, other stock- or cash-based awards and dividend equivalents, or any combination thereof. Each award will be

set forth in a separate agreement with the person receiving the award and will indicate the type, terms and conditions of the award.

- *Nonstatutory Stock Options*, or NSOs, will provide for the right to purchase shares of our common stock at a specified price which may not be less than fair market value on the date of grant, and usually will become exercisable (at the discretion of the administrator) in one or more installments after the grant date, subject to the participant's continued employment or service with us and/or subject to the satisfaction of corporate performance targets and individual performance targets established by the administrator. NSOs may be granted for any term specified by the administrator that does not exceed ten years.
- *Incentive Stock Options*, or ISOs, will be designed in a manner intended to comply with the provisions of Section 422 of the Code and will be subject to specified restrictions contained in the Code. Among such restrictions, ISOs must have an exercise price of not less than the fair market value of a share of common stock on the date of grant, may only be granted to employees, and must not be exercisable after a period of ten years measured from the date of grant. In the case of an ISO granted to an individual who owns (or is deemed to own) at least 10% of the total combined voting power of all classes of our capital stock, the 2018 Plan provides that the exercise price must be at least 110% of the fair market value of a share of common stock on the date of grant and the ISO must not be exercisable after a period of five years measured from the date of grant.
- *Restricted Stock* may be granted to any eligible individual and made subject to such restrictions as may be determined by the administrator. Restricted stock, typically, may be forfeited for no consideration or repurchased by us at the original purchase price if the conditions or restrictions on vesting are not met. In general, restricted stock may not be sold or otherwise transferred until restrictions are removed or expire. Purchasers of restricted stock, unlike recipients of options, will have voting rights and will have the right to receive dividends, if any, prior to the time when the restrictions lapse, however, extraordinary dividends will generally be placed in escrow, and will not be released until restrictions are removed or expire.
- *Restricted Stock Units* may be awarded to any eligible individual, typically without payment of consideration, but subject to vesting conditions based on continued employment or service or on performance criteria established by the administrator. Like restricted stock, restricted stock units may not be sold, or otherwise transferred or hypothecated, until vesting conditions are removed or expire. Unlike restricted stock, stock underlying restricted stock units will not be issued until the restricted stock units have vested, and recipients of restricted stock units generally will have no voting or dividend rights prior to the time when vesting conditions are satisfied.
- *Stock Appreciation Rights*, or SARs, may be granted in connection with stock options or other awards, or separately. SARs granted in connection with stock options or other awards typically will provide for payments to the holder based upon increases in the price of our common stock over a set exercise price. The exercise price of any SAR granted under the 2018 Plan must be at least 100% of the fair market value of a share of our common stock on the date of grant. SARs under the 2018 Plan will be settled in cash or shares of our common stock, or in a combination of both, at the election of the administrator.
- *Performance Bonus Awards and Performance Share Units* are denominated in shares/unit equivalents or cash, respectively, and may be linked to one or more performance or other criteria as determined by the plan administrator.
- *Other Stock or Cash Based Awards* are awards of cash, fully vested shares of our common stock and other awards valued wholly or partially by referring to, or otherwise based on, shares of our common stock. Other stock or cash based awards may be granted to participants and

may also be available as a payment form in the settlement of other awards, as standalone payments and as payment in lieu of base salary, bonus, fees or other cash compensation otherwise payable to any individual who is eligible to receive awards. The plan administrator will determine the terms and conditions of other stock or cash based awards, which may include vesting conditions based on continued service, performance and/or other conditions.

- *Dividend Equivalents* represent the right to receive the equivalent value of dividends paid on shares of our common stock and may be granted alone or in tandem with awards. Dividend equivalents may be paid currently or credited to an account for the participant, settled in cash or shares and subject to restrictions as determined by the plan administrator. In addition, dividend equivalents with respect to an award subject to vesting will either not be paid or credited or be accumulated and subject to vesting to the same extent as the related award.

Corporate Transactions. The plan administrator has broad discretion to take action under the 2018 Plan, as well as make adjustments to the terms and conditions of existing and future awards, to prevent the dilution or enlargement of intended benefits and facilitate necessary or desirable changes in the event of certain transactions and events affecting our common stock, such as stock dividends, stock splits, mergers, acquisitions, consolidations and other corporate transactions. In addition, in the event of certain non-reciprocal transactions with our stockholders known as “equity restructurings,” the plan administrator will make equitable adjustments to the 2018 Plan and outstanding awards.

In the event of a change in control, unless the plan administrator elects to terminate an award in exchange for cash, rights or other property, or cause an award to accelerate in full prior to the change in control, such award will continue in effect or be assumed or substituted by the acquirer, provided that any performance-based portion of the award will be subject to the terms and conditions of the applicable award agreement. In the event the acquirer refuses to assume or replace awards granted, prior to the consummation of such transaction, awards issued under the 2018 Plan will be subject to accelerated vesting such that 100% of such awards will become vested and exercisable or payable, as applicable. The administrator is also authorized to provide for the acceleration, cash-out, termination, assumption, substitution or conversion of such awards in the event of a change in control.

Amendment and Termination. The administrator may terminate, amend or modify the 2018 Plan at any time and from time to time. However, we must generally obtain stockholder approval to the extent required by applicable law, rule or regulation (including any applicable stock exchange rule). Notwithstanding the foregoing, an option may be amended to reduce the per share exercise price below the per share exercise price of such option on the grant date and options may be granted in exchange for, or in connection with, the cancellation or surrender of options having a higher per share exercise price without receiving additional stockholder approval.

No incentive stock options may be granted pursuant to the 2018 Plan after the tenth anniversary of the earlier of the date the 2018 Plan is approved by our board or the date the 2018 Plan is approved by our stockholders, and no additional annual share increases to the 2018 Plan’s aggregate share limit will occur from and after the tenth anniversary of the effective date of the 2018 Plan. Any award that is outstanding on the termination date of the 2018 Plan will remain in force according to the terms of the 2018 Plan and the applicable award agreement.

2013 Equity Incentive Plan

Our board of directors adopted, and our stockholders approved, the 2013 Plan effective as of June 10, 2013, which was subsequently amended on multiple occasions to increase the number of shares issuable under the 2013 Plan. The 2013 Plan provided for the grant of ISOs, NSOs, SARs, restricted stock, and restricted stock units. As of December 31, 2017, options to purchase 4,365,694 shares of our common stock at a weighted-average exercise price per share of $3.07 and 918,595

shares of our common stock subject to restricted stock or restricted stock purchase awards remained outstanding under the 2013 Plan. Following this offering and in connection with the effectiveness of our 2018 Plan, the 2013 Plan will terminate and no further awards will be granted under the 2013 Plan. However, all outstanding awards will continue to be governed by their existing terms.

Administration. Our board of directors, the compensation committee or another committee thereof appointed by our board of directors, has the authority to administer the 2013 Plan and the awards granted under it. The administrator has the authority to select the employees to whom awards will be granted under the 2013 Plan, the number of shares to be subject to those awards under the 2013 Plan, and the terms and conditions of the awards granted. In addition, the administrator has the authority to construe and interpret the 2013 Plan and to adopt rules for the administration, interpretation and application of the 2013 Plan that are consistent with the terms of the 2013 Plan.

Awards. The 2013 Plan provides that the administrator may grant or issue options, including ISOs and NSOs, stock appreciation rights, restricted stock and restricted stock units to employees, consultants and directors; provided that only employees may be granted incentive stock options.

- *Stock Options*. The 2013 Plan provides for the grant of ISOs or NSOs. ISOs may be granted only to employees. NSOs may be granted to employees, directors or consultants. The exercise price of ISOs granted to employees who at the time of grant own stock representing more than 10% of the voting power of all classes of our common stock may not be less than 110% of the fair market value per share of our common stock on the date of grant, and the exercise price of ISOs granted to any other employees may not be less than 100% of the fair market value per share of our common stock on the date of grant. The exercise price of NSOs to employees, directors or consultants may not be less than 100% of the fair market value per share of our common stock on the date of grant.
- *Stock Appreciation Rights*. The 2013 Plan provides for the grant of SARs. Each SAR will be governed by a stock appreciation right agreement and may be granted in connection with stock options or other awards, or separately. SARs granted in connection with stock options or other awards typically will provide for payments to the holder based upon increases in the price of our common stock over a set exercise price. The exercise price of SARs may not be less than 100% of the fair market value per share of our common stock on the date of grant.
- *Restricted Stock Awards*. The 2013 Plan provides for the grant of restricted stock awards. Each restricted stock award will be governed by a restricted stock award agreement, which will details the restrictions on transferability, risk of forfeiture and other restrictions the administrator approves. In general, restricted stock may not be sold, transferred, pledged, hypothecated, margined or otherwise encumbered until restrictions are removed or expire. Holders of restricted stock, unlike recipients of other equity awards, will have voting rights and will have the right to receive dividends, if any, prior to the time when the restrictions lapse.
- *Restricted Stock Units*. The 2013 Plan provides that we may issue restricted stock unit awards which may be settled in either cash of common stock. Each restricted stock unit award will be governed by a restricted stock unit award agreement that will set forth any vesting conditions based on continued employment or service or on performance criteria established by the administrator. Unlike restricted stock, stock underlying restricted stock units will not be issued until the restricted stock units have vested, and recipients of restricted stock units generally will have no rights as a stockholder prior to the time when vesting conditions are satisfied.

Adjustments of Awards. In the event of any dividend or other distribution, recapitalization, stock split, reverse stock split, reorganization, merger, consolidation, split-up, spin-off, combination, repurchase, exchange of shares or other change in the corporate structure of the Company affecting

shares of common stock, the administrator will make adjustments to the number and class of shares available for issuance under the 2013 Plan and the number, class and price of shares subject to outstanding awards.

Change in Control. In the event of a merger or change in control, the administrator has discretion to determine the treatment of each outstanding award, and may provide that the awards will be assumed or substituted, that the awards will terminate or accelerate in full immediately prior to the change in control or that awards will terminate in exchange for cash or other property. In addition, in the event of a change in control where the acquirer does not assume or replace awards granted, prior to the consummation of such transaction, awards issued under the 2013 Plan will accelerate in full and any awards subject to performance-based vesting will be deemed achieved at 100% of target levels and all other terms and conditions met.

Amendment and Termination. Our board of directors may amend or terminate the 2013 Plan or any portion thereof at any time, but no amendment will impair the rights of a holder of an outstanding award without the holder's consent. An amendment of the 2013 Plan shall be subject to the approval of our stockholders, where such approval by our stockholders of an amendment is required by applicable law. Following this offering and in connection with the effectiveness of our 2018 Plan, the 2013 Plan will terminate and no further awards will be granted under the 2013 Plan.

2018 Employee Stock Purchase Plan

The Board has adopted, and our stockholders approved, the 2018 Employee Stock Purchase Plan, which we refer to as our ESPP, which became effective upon the effectiveness of the registration statement to which this prospectus relates. The ESPP is designed to allow our eligible employees to purchase shares of our common stock, at semi-annual intervals, with their accumulated payroll deductions. The ESPP is intended to qualify under Section 423 of the Code. The material terms of the ESPP, as it is currently contemplated, are summarized below.

Administration. Subject to the terms and conditions of the ESPP, our compensation committee will administer the ESPP. Our compensation committee can delegate administrative tasks under the ESPP to the services of an agent and/or employees to assist in the administration of the ESPP. The administrator will have the discretionary authority to administer and interpret the ESPP. Interpretations and constructions of the administrator of any provision of the ESPP or of any rights thereunder will be conclusive and binding on all persons. We will bear all expenses and liabilities incurred by the ESPP administrator.

Share Reserve. The maximum number of our shares of our common stock which will be authorized for sale under the ESPP is equal to the sum of (a) 536,242 shares of common stock and (b) an annual increase on the first day of each year beginning in 2019 and ending in 2028, equal to the lesser of (i) 1.0% of the shares of common stock outstanding (on an as converted basis) on the last day of the immediately preceding fiscal year and (ii) such number of shares of common stock as determined by our board of directors; provided, however, no more than 8.0 million shares of our common stock may be issued under the ESPP. The shares reserved for issuance under the ESPP may be authorized but unissued shares or reacquired shares.

Eligibility. Employees eligible to participate in the ESPP for a given offering period generally include employees who are employed by us or one of our subsidiaries on the first day of the offering period, or the enrollment date. Our employees (and, if applicable, any employees of our subsidiaries) who customarily work less than five months in a calendar year or are customarily scheduled to work less than 20 hours per week will not be eligible to participate in the ESPP. Finally, an employee who owns (or is deemed to own through attribution) 5% or more of the combined voting power or value of all our classes of stock or of one of our subsidiaries will not be allowed to participate in the ESPP.

Participation. Employees will enroll under the ESPP by completing a payroll deduction form permitting the deduction from their compensation of at least 1% of their compensation but not more than 15% of their compensation. Such payroll deductions may be expressed as either a whole number percentage or a fixed dollar amount, and the accumulated deductions will be applied to the purchase of shares on each purchase date. However, a participant may not purchase more than 3,000 shares in each offering period and may not subscribe for more than $25,000 in fair market value of shares of our common stock (determined at the time the option is granted) during any calendar year. The ESPP administrator has the authority to change these limitations for any subsequent offering period.

Offering. Under the ESPP, participants are offered the option to purchase shares of our common stock at a discount during a series of successive offering periods, the duration and timing of which will be determined by the ESPP administrator. However, in no event may an offering period be longer than 27 months in length.

The option purchase price will be the lower of 85% of the closing trading price per share of our common stock on the first trading date of an offering period in which a participant is enrolled or 85% of the closing trading price per share on the purchase date, which will occur on the last trading day of each offering period.

Unless a participant has previously canceled his or her participation in the ESPP before the purchase date, the participant will be deemed to have exercised his or her option in full as of each purchase date. Upon exercise, the participant will purchase the number of whole shares that his or her accumulated payroll deductions will buy at the option purchase price, subject to the participation limitations listed above.

A participant may cancel his or her payroll deduction authorization at any time prior to the end of the offering period. Upon cancellation, the participant will have the option to either (i) receive a refund of the participant's account balance in cash without interest or (ii) exercise the participant's option for the current offering period for the maximum number of shares of common stock on the applicable purchase date, with the remaining account balance refunded in cash without interest. Following at least one payroll deduction, a participant may also decrease (but not increase) his or her payroll deduction authorization once during any offering period. If a participant wants to increase or decrease the rate of payroll withholding, he or she may do so effective for the next offering period by submitting a new form before the offering period for which such change is to be effective.

A participant may not assign, transfer, pledge or otherwise dispose of (other than by will or the laws of descent and distribution) payroll deductions credited to a participant's account or any rights to exercise an option or to receive shares of our common stock under the ESPP, and during a participant's lifetime, options in the ESPP shall be exercisable only by such participant. Any such attempt at assignment, transfer, pledge or other disposition will not be given effect.

Adjustments upon Changes in Recapitalization, Dissolution, Liquidation, Merger or Asset Sale. In the event of any increase or decrease in the number of issued shares of our common stock resulting from a stock split, reverse stock split, stock dividend, combination or reclassification of the common stock, or any other increase or decrease in the number of shares of common stock effected without receipt of consideration by us, we will proportionately adjust the aggregate number of shares of our common stock offered under the ESPP, the number and price of shares which any participant has elected to purchase pursuant under the ESPP and the maximum number of shares which a participant may elect to purchase in any single offering period. If there is a proposal to dissolve or liquidate us, then the ESPP will terminate immediately prior to the consummation of such proposed dissolution or liquidation, and any offering period then in progress will be shortened by setting a new purchase date to take place before the date of our dissolution or liquidation. We will notify each participant of such

change in writing at least 10 business days prior to the new exercise date. If we undergo a merger with or into another corporation or sale of all or substantially all of our assets, each outstanding option will be assumed or an equivalent option substituted by the successor corporation or the parent or subsidiary of the successor corporation. If the successor corporation refuses to assume the outstanding options or substitute equivalent options, then any offering period then in progress will be shortened by setting a new purchase date to take place before the date of our proposed sale or merger. We will notify each participant of such change in writing at least 10 business days prior to the new exercise date.

Amendment and Termination. Our board of directors may amend, suspend or terminate the ESPP at any time. However, the board of directors may not amend the ESPP without obtaining stockholder approval within 12 months before or after such amendment to the extent required by applicable laws.

CERTAIN RELATIONSHIPS AND RELATED PARTY TRANSACTIONS

The following is a description of transactions since January 1, 2015 to which we have been a party, in which the amount involved exceeds $120,000, and in which any of our directors, executive officers or beneficial owners of more than 5% of our capital stock, or an affiliate or immediate family member thereof, had or will have a direct or indirect material interest.

Sales and Purchases of Securities

Series A-2 Convertible Preferred Stock Financing

In January 2015, we issued an aggregate of 2,568,049 shares of our Series A-2 convertible preferred stock at $0.876 per share for aggregate proceeds to us of approximately $2.3 million.

The table below sets forth the number of shares of Series A-2 convertible preferred stock sold to our directors, executive officers or owners of more than 5% of a class of our capital stock, or an affiliate or immediate family member thereof:

Name	Number of Shares of Series A-2 Convertible Preferred Stock	Aggregate Purchase Price ($)
ARCH Venture Fund VII, L.P.(1)	1,080,203	946,420
Venrock Associates VII, L.P.(2)	421,617	369,400
Venrock Partners VII, L.P.(2)	34,925	30,600
WuXi PharmaTech Healthcare Fund I LP(3)	414,332	363,017
Nathaniel E. David(4)	285,338	250,000
Mayo Clinic(5)	207,870	182,126

(1) ARCH Venture Fund VII, L.P. and its affiliated funds beneficially owned (in the aggregate) more than 5% of our outstanding capital stock at the time of the Series A-2 convertible preferred stock financing. Robert T. Nelsen and Kristina M. Burow are currently, and were at the time of the Series A-2 convertible preferred stock financing, members of our board of directors and Managing Directors of ARCH Venture Partners, which is an affiliate of ARCH Venture Fund VII, L.P. and its affiliated funds.

(2) Venrock Associates VII, L.P., Venrock Partners VII, L.P. and their affiliated funds were not beneficial owners of (in the aggregate) more than 5% of our outstanding capital stock at the time of the Series A-2 convertible preferred stock financing.

(3) WuXi PharmaTech Healthcare Fund I LP and its affiliated funds beneficially owned (in the aggregate) more than 5% of our outstanding capital stock at the time of the Series A-2 convertible preferred stock financing.

(4) Nathaniel E. David is currently, and was at the time of the Series A-2 convertible preferred stock financing, our President and a member of our board of directors and beneficially owned (in the aggregate) more than 5% of our outstanding capital stock.

(5) Mayo Clinic and its affiliates beneficially owned (in the aggregate) more than 5% of our outstanding capital stock at the time of the Series A-2 convertible preferred stock financing.

On January 20, 2015, we issued to Dr. David a warrant to purchase Series A-2 convertible preferred stock for 380,452 shares for an exercise price of $0.66.

Convertible Promissory Note Financing (June 2015)

In June 2015, we entered into a note purchase agreement pursuant to which we issued, in two tranches, subordinated convertible promissory notes, or the A-2 Notes, in an aggregate principal amount of $4.0 million. The A-2 Notes provided for an annual interest rate of 5.0% and a maturity date of June 1, 2017. Under the terms of the A-2 Notes, under certain circumstances, the unpaid principal of the A-2 Notes, including any accrued but unpaid interest thereon, would convert into preferred stock

upon the closing of a future preferred stock financing that met specified criteria. In February 2016, the outstanding principal under the A-2 Notes, plus $92,877 of accrued interest, converted pursuant to an election by the holders thereof into 4,671,430 shares of Series A-2 convertible preferred stock at a rate of $0.876 per share in full payment for the note and accrued interest of such notes. The table below sets forth the principal amount of the A-2 Notes and the number of shares of Series A-2 convertible preferred stock issued to our directors, executive officers or beneficial owners of more than 5% of a class of our capital stock, or an affiliate or immediate family member thereof upon conversion of outstanding principal and unpaid, accrued interest under the A-2 Notes:

Name	Note Principal ($)	Number of Shares of Series A-2 Convertible Preferred Stock
ARCH Venture Fund VII, L.P.(1)	1,537,805	1,795,938
Venrock Associates VII, L.P.(2)	902,829	1,054,375
Venrock Partners VII, L.P.(2)	74,787	87,341
WuXi PharmaTech Healthcare Fund I LP(3)	701,586	819,352
Nathaniel E. David(4)	431,007	503,355
Mayo Clinic(5)	351,986	411,069

(1) ARCH Venture Fund VII, L.P. and its affiliated funds beneficially owned (in the aggregate) more than 5% of our outstanding capital stock at the time of the A-2 Notes financing and at the time of the conversion of the A-2 Notes into Series A-2 convertible preferred stock. Robert T. Nelsen and Kristina M. Burow are currently, and were at the time of the A-2 Notes financing, members of our board of directors and Managing Directors of ARCH Venture Partners, which is an affiliate of ARCH Venture Fund VII, L.P. and its affiliated funds.

(2) Venrock Associates VII, L.P., Venrock Partners VII, L.P. and their affiliated funds were not beneficial owners of (in the aggregate) more than 5% of our outstanding capital stock at the time of the A-2 Notes financing or at the time of the conversion of the A-2 Notes into Series A-2 convertible preferred stock. Camille D. Samuels is currently, and was at the time of the A-2 Notes financing, a member of our board of directors and is affiliated with each of Venrock Associates VII, L.P. and Venrock Partners VII, L.P.

(3) WuXi PharmaTech Healthcare Fund I LP and its affiliated funds beneficially owned (in the aggregate) more than 5% of our outstanding capital stock at the time of the A-2 Notes financing and at the time of the conversion of the A-2 Notes into Series A-2 convertible preferred stock.

(4) Nathaniel E. David is currently, and was at the time of the A-2 Notes financing and at the time of the conversion of the A-2 Notes into Series A-2 convertible preferred stock, our President and a member of our board of directors and beneficially owned (in the aggregate) more than 5% of our outstanding capital stock.

(5) Mayo Clinic and its affiliates beneficially owned (in the aggregate) more than 5% of our outstanding capital stock at the time of the A-2 Notes financing and at the time of the conversion of the A-2 Notes into Series A-2 convertible preferred stock.

Convertible Promissory Note Financing (February 2016)

In February 2016, we entered into a note purchase agreement pursuant to which we issued, in three tranches, subordinated convertible promissory notes, or the First Series B Bridge Notes, in an aggregate principal amount of approximately $7.3 million. The First Series B Bridge Notes provided for an annual interest rate of 5.0% and a maturity date of December 31, 2017. Under the terms of the First Series B Bridge Notes, under certain circumstances, the unpaid principal of the First Series B Bridge Notes, including any accrued but unpaid interest thereon, would convert into preferred stock upon the closing of a future preferred stock financing that met specified criteria. Such conversion would be at a discount to the per share price of the preferred stock sold in the financing. In October 2016, as part of the issuance of Series B convertible preferred stock, the outstanding principal under the First Series B Bridge Notes, plus $189,030 of accrued interest, converted into 2,147,431 shares of Series B convertible preferred stock at a rate of $3.4642 per share in full payment for the note and accrued interest of such notes. The table below sets forth the principal amount of the First Series B Bridge Notes and the number of shares of Series B convertible preferred stock issued to our directors,

executive officers or beneficial owners of more than 5% of a class of our capital stock, or an affiliate or immediate family member thereof upon conversion of outstanding principal and unpaid, accrued interest under the Series B Bridge Notes:

Name	Note Principal ($)	Number of Shares of Series B Convertible Preferred Stock
ARCH Venture Fund VII, L.P.(1)	2,430,872	720,019
Venrock Associates VII, L.P.(2)	1,234,134	365,548
Venrock Partners VII, L.P.(2)	102,232	30,280
WuXi PharmaTech Healthcare Fund I LP(3)	982,762	291,092
Nathaniel E. David(4)	750,000	222,148
Mayo Clinic (5)	750,000	222,148
Pathfinder Investment Fund, LLC(6)	500,000	148,448
Andalucia Ventures, LLC(7)	250,000	73,700
Jamie Dananberg(8)	250,000	74,048

(1) ARCH Venture Fund VII, L.P. and its affiliated funds beneficially owned (in the aggregate) more than 5% of our outstanding capital stock at the time of the First Series B Bridge Notes financing. Robert T. Nelsen and Kristina M. Burow are currently, and were at the time of the First Series B Bridge Notes financing, members of our board of directors and Managing Directors of ARCH Venture Partners, which is an affiliate of ARCH Venture Fund VII, L.P. and its affiliated funds.

(2) Venrock Associates VII, L.P., Venrock Partners VII, L.P. and their affiliated funds became beneficial owners of (in the aggregate) more than 5% of our outstanding capital stock upon conversion of the First Series B Bridge Notes in the initial closing of the Series B convertible preferred stock financing. Camille D. Samuels is currently, and was at the time of the First Series B Bridge Notes financing, a member of our board of directors and is affiliated with each of Venrock Associates VII, L.P. and Venrock Partners VII, L.P.

(3) WuXi PharmaTech Healthcare Fund I LP and its affiliated funds beneficially owned (in the aggregate) more than 5% of our outstanding capital stock at the time of the First Series B Bridge Notes financing.

(4) Nathaniel E. David is currently, and was at the time of the First Series B Bridge Notes financing, our President and a member of our board of directors and beneficially owned (in the aggregate) more than 5% of our outstanding capital stock.

(5) Mayo Clinic and its affiliates beneficially owned (in the aggregate) more than 5% of our outstanding capital stock at the time of the First Series B Bridge Notes financing.

(6) Keith R. Leonard Jr. is currently, and was at the time of the First Series B Bridge Notes financing, Chairman of our board of directors and is an affiliate of Pathfinder Investment Fund, LLC.

(7) Keith R. Leonard Jr. is currently, and was at the time of the First Series B Bridge Notes financing, Chairman of our board of directors and is an affiliate of Andalucia Ventures LLC.

(8) Jamie Dananberg is currently, and was at the time of the First Series B Bridge Notes financing, one of our executive officers.

Convertible Promissory Note Financing (July 2016)

In July 2016, we entered into a note purchase agreement pursuant to which we issued, in three tranches, subordinated convertible promissory notes, or the Second Series B Bridge Notes, in an aggregate principal amount of approximately $9.6 million. The Second Series B Bridge Notes provided for an annual interest rate of 5.0% and a maturity date of July 11, 2017. Under the terms of the Second Series B Bridge Notes, under certain circumstances, the unpaid principal of the Second Series B Bridge Notes, including any accrued but unpaid interest thereon, would convert into preferred stock upon the closing of a future preferred stock financing that met specified criteria. Such conversion would be at a discount to the per share price of the preferred stock sold in the financing. In October 2016, as part of the issuance of Series B convertible preferred stock, the outstanding principal under the Second Series B Bridge Notes, plus $72,817 of accrued interest, converted into 1,568,237 shares of Series B convertible preferred stock at a rate of either $6.062 or $8.280 per share, depending on each

respective investor's level of participation in the Series B convertible preferred stock financing, in full payment for the note and accrued interest of such notes. The table below sets forth the principal amount of the Second Series B Bridge Notes and the number of shares of Series B convertible preferred stock issued to our directors, executive officers or beneficial owners of more than 5% of a class of our capital stock, or an affiliate or immediate family member thereof upon conversion of outstanding principal and unpaid, accrued interest under the Second Series B Bridge Notes:

Name	Note Principal ($)	Number of Shares of Series B Convertible Preferred Stock
ARCH Venture Fund VII, L.P.(1)	4,136,872	687,320
ARCH Venture Fund VIII Overage, L.P.(1)	1,500,000	249,581
Venrock Associates VII, L.P.(2)	1,380,109	229,633
Venrock Partners VII, L.P. (2)	119,891	19,948
WuXi PharmaTech Healthcare Fund I LP(3)	1,000,000	166,184
Andalucia Ventures, LLC(4)	750,000	124,200
Mayo Clinic(5)	750,000	91,371

(1) ARCH Venture Fund VII, L.P. and its affiliated funds beneficially owned (in the aggregate) more than 5% of our outstanding capital stock at the time of the Second Series B Bridge Notes financing. Robert T. Nelsen and Kristina M. Burow are currently, and were at the time of the Second Series B Bridge Notes financing, members of our board of directors and Managing Directors of ARCH Venture Partners, which is an affiliate of ARCH Venture Fund VII, L.P. and its affiliated funds.

(2) Venrock Associates VII, L.P., Venrock Partners VII, L.P. and their affiliated funds became beneficial owners of (in the aggregate) more than 5% of our outstanding capital stock upon conversion of the Second Series B Bridge Notes in the initial closing of the Series B convertible preferred stock financing. Camille D. Samuels is currently, and was at the time of the Second Series B Bridge Notes financing, a member of our board of directors and is affiliated with each of Venrock Associates VII, L.P. and Venrock Partners VII, L.P.

(3) WuXi PharmaTech Healthcare Fund I LP and its affiliated funds beneficially owned (in the aggregate) more than 5% of our outstanding capital stock at the time of the Second Series B Bridge Notes financing.

(4) Keith R. Leonard is currently, and was at the time of the Second Series B Bridge Notes financing, Chairman of our board of directors and is an affiliate of Andalucia Ventures LLC.

(5) Mayo Clinic and its affiliates beneficially owned (in the aggregate) more than 5% of our outstanding capital stock at the time of the Second Series B Bridge Notes financing.

Series B Convertible Preferred Stock Financing

In a series of closings held between October 2016 and June 2017, we issued an aggregate of 11,058,701 shares of our Series B convertible preferred stock at $12.12 per share for aggregate cash proceeds to us of approximately $134.1 million.

The table below sets forth the aggregate number of shares of Series B convertible preferred stock sold to our directors, executive officers or owners of more than 5% of a class of our capital stock, or an affiliate or immediate family member thereof:

Name	Number of Shares of Series B Convertible Preferred Stock	Aggregate Purchase Price ($)
Entities Associated with Baillie Gifford & Co.(1)	2,226,895	27,000,000
ARCH Venture Fund VII, L.P.(2)	659,821	8,000,000
ARCH Venture Fund VIII Overage, L.P.(2)	1,237,164	15,000,000
Venrock Associates VII, L.P.(3)	342,756	4,155,748
Venrock Partners VII, L.P.(3)	28,392	344,249
WuXi PharmaTech Healthcare Fund I LP(4)	247,432	3,000,000
Mayo Clinic(5)	61,857	749,997
Andalucia Ventures, LLC(6)	185,574	2,249,999

(1) Entities associated with Baillie Gifford & Co. and its affiliates became beneficial owners of (in the aggregate) more than 5% of our outstanding capital stock upon the initial closing of the Series B convertible preferred stock financing.

(2) ARCH Venture Fund VII, L.P. and its affiliated funds beneficially owned (in the aggregate) more than 5% of our outstanding capital stock at the time of the Series B convertible preferred stock financing. Robert T. Nelsen and Kristina M. Burow are currently, and were at the time of the Series B convertible preferred stock financing, members of our board of directors and are Managing Directors of ARCH Venture Partners, which is an affiliate of ARCH Venture Fund VII, L.P. and its affiliated funds.

(3) Venrock Associates VII, L.P., Venrock Partners VII, L.P. and their affiliated funds became beneficial owners of (in the aggregate) more than 5% of our outstanding capital stock upon the initial closing of the Series B convertible preferred stock financing. Camille D. Samuels is currently, and was at the time of the Series B convertible preferred stock financing, a member of our board of directors and is affiliated with each of Venrock Associates VII, L.P. and Venrock Partners VII, L.P.

(4) WuXi PharmaTech Healthcare Fund I LP and its affiliated funds beneficially owned (in the aggregate) more than 5% of our outstanding capital stock at the time of the Series B convertible preferred stock financing.

(5) Mayo Clinic and its affiliates beneficially owned (in the aggregate) more than 5% of our outstanding capital stock at the time of the Second Series B convertible preferred stock financing.

(6) Keith R. Leonard Jr. is currently, and was at the time of the Series B convertible preferred stock financing, our Chief Executive Officer and Chairman of our board of directors and is an affiliate of Andalucia Ventures LLC.

Series C Convertible Preferred Stock Financing

In March and April 2018, we sold and issued an aggregate of 3,913,425 shares of our Series C convertible preferred stock at $15.3317 per share for net cash proceeds to us of approximately $59.9 million.

The table below sets forth the aggregate number of shares of Series C convertible preferred stock sold to our directors, executive officers or owners of more than 5% of a class of our capital stock, or an affiliate or immediate family member thereof:

Name	Number of Shares of Series C Convertible Preferred Stock	Aggregate Purchase Price ($)
Entities Associated with Baillie Gifford & Co. (1)	326,119	$ 4,999,992
ARCH Venture Fund VIII Overage, L.P.(2)	195,672	$ 2,999,995
Venrock Associates VII, L.P.(3)	60,234	$ 923,501
Venrock Partners VII, L.P.(3)	4,989	$ 76,498
Entities Associated with Fidelity Growth Company Commingled Pool(4)	978,360	$14,999,992
Nathaniel E. David(5)	1,630	$ 24,999
Robert C. Goeltz(6)	1,630	$ 24,999
Jamie Dananberg(7)	1,630	$ 24,999
Keith R. Leonard Jr.(8)	1,630	$ 24,999
Paul L. Berns(9)	3,261	$ 49,997

(1) Entities associated with Baillie Gifford & Co. and its affiliates owned (in the aggregate) more than 5% of our outstanding capital stock at the time of the Series C convertible preferred stock financing.

(2) ARCH Venture Fund VII, L.P. and its affiliated funds beneficially owned (in the aggregate) more than 5% of our outstanding capital stock at the time of the Series C convertible preferred stock financing. Robert T. Nelsen and Kristina M. Burow are currently, and were at the time of the Series C convertible preferred stock financing, members of our board of directors and are Managing Directors of ARCH Venture Partners, which is an affiliate of ARCH Venture Fund VII, L.P. and its affiliated funds.

(3) Venrock Associates VII, L.P., Venrock Partners VII, L.P. and their affiliated funds owned (in the aggregate) more than 5% of our outstanding capital stock at the time of the Series C convertible preferred stock financing. Camille D. Samuels is currently, and was at the time of the Series C convertible preferred stock financing, a member of our board of directors and is affiliated with each of Venrock Associates VI, L.P. and Venrock Partners VII, L.P.

(4) Entities associated with Fidelity Growth Company Commingled Pool and its affiliates became beneficial owners of (in the aggregate) more than 5% of our outstanding capital stock upon the closing of the Series C convertible preferred stock financing.

(5) Nathaniel E. David is currently, and was at the time of the Series C convertible preferred stock financing, our President and a member of our board of directors and beneficially owned (in the aggregate) more than 5% of our outstanding capital stock.

(6) Robert C. Goeltz is currently, and was at the time of the Series C convertible preferred stock financing, one of our executive officers.

(7) Jamie Dananberg is currently, and was at the time of the Series C convertible preferred stock financing, one of our executive officers.

(8) Keith R. Leonard Jr. is currently, and was at the time of the Series C convertible preferred stock financing, our Chief Executive Officer and Chairman of our board of directors.

(9) Paul L. Berns is currently, and was at the time of the Series C convertible preferred stock financing, a member of our board of directors.

Director and Executive Officer Compensation

Please see “Director Compensation” and “Executive Compensation” for information regarding the compensation of our directors and executive officers.

Employment Agreements

We have entered into employment agreements with our executive officers. For more information regarding these agreements, see "Executive Compensation—Narrative to Summary Compensation Table and Outstanding Equity Awards at 2017 Fiscal Year End."

Indemnification Agreements and Directors' and Officers' Liability Insurance

We have entered into or intend to enter into indemnification agreements with each of our directors and executive officers. These agreements will require us to, among other things, indemnify each director and executive officer to the fullest extent permitted by Delaware law, including indemnification of expenses such as attorneys' fees, judgments, penalties fines and settlement amounts incurred by the director or executive officer in any action or proceeding, including any action or proceeding by or in right of us, arising out of the person's services as a director or executive officer. We have obtained an insurance policy that insures our directors and officers against certain liabilities, including liabilities arising under applicable securities laws. For additional information see "Management—Limitation of Liability and Indemnification Matters."

Investors' Rights Agreement

We entered into an amended and restated investors' rights agreement with the purchasers of our outstanding convertible preferred stock, including entities with which certain of our directors are affiliated. Following the consummation of this offering, the holders of approximately 32.1 million shares of our common stock, including the shares of common stock issuable upon the automatic conversion of our Series A-1, Series A-2, Series B and Series C convertible preferred stock, are entitled to rights with respect to the registration of their shares under the Securities Act. For a more detailed description of these registration rights, see "Description of Capital Stock—Registration Rights." The investors' rights agreement also provides for a right of first refusal in favor of certain holders of preferred stock with regard to certain issuances of our capital stock. The rights of first refusal will not apply to, and will terminate upon the consummation of, this offering.

Voting Agreement

We entered into an amended and restated voting agreement with certain holders of our common stock and convertible preferred stock. Upon the consummation of this offering, the amended and restated voting agreement will terminate. For a description of the amended and restated voting agreement, see "Management—Board Composition—Voting Arrangements."

Right of First Refusal and Co-Sale Agreement

We entered into an amended and restated right of first refusal and co-sale agreement with certain holders of our common stock and convertible preferred stock. This agreement provides for rights of first refusal and co-sale relating to the shares of our common stock held by the parties to the agreement. Upon the consummation of this offering, the amended and restated right of first refusal and co-sale agreement will terminate.

Promissory Notes

In October 2017, we accepted promissory notes in the principal amounts of $1,639,038 and $499,999 from Dr. David, our Co-Founder and President, as consideration for the purchase price of 478,971 and 146,113, respectively, shares of our common stock. The note accrues interest at a rate of 1.85% per annum. Of the aggregate principal amount of $2,139,037, $1,639,038 of the promissory notes was forgiven and the remaining promissory note of $499,999 was repaid on April 4, 2018.

In January 2018, we accepted a promissory note in the principal amount of $188,500 from Mr. Goeltz, our Chief Financial Officer, as consideration for the purchase price of 55,084 shares of our common stock. The note accrues interest at a rate of 2.5% per annum. The promissory note was repaid on April 4, 2018.

Other Transactions

In 2015, we entered into a consulting agreement with Bradley Backes, the husband of Kristina M. Burow, one of our directors. In connection with this agreement, Dr. Backes is paid an hourly consulting fee and was granted an option to purchase up to 80,296 shares of our common stock, which was subject to vesting in three tranches. An initial tranche vested immediately upon grant, a second tranche vested in 2016, and the final tranche is subject to vesting upon the achievement of certain milestones. In 2017, Dr. Backes received approximately $62,200 in cash compensation

In 2016, we entered into a services agreement with Wuxi AppTec (Hong Kong) Limited, an affiliate of Wuxi PharmaTech Healthcare Fund I L.P., a beneficial owner of more than 5% of our outstanding capital stock. The company incurred a total of $36,000 and $0.6 million of research and development expenses during the years ended December 31, 2016 and 2017, respectively, related to this services agreement.

We are party to an exclusive license agreement with an entity affiliated with the Mayo Clinic, or Mayo, giving us rights to a patent portfolio co-owned by the Buck Institute for Research on Aging, The John Hopkins University, Mayo and us to develop and commercialize licensed products for the treatment of senescence-related diseases in therapeutic areas including osteoarthritis, ophthalmology, and pulmonary disease. See “Business—Licenses and Collaborations—Additional License Agreements.”

Policies and Procedures for Related Party Transactions

Prior to the consummation of this offering, our board of directors will adopt a written related person transaction policy, to be effective upon the consummation of this offering, setting forth the policies and procedures for the review and approval or ratification of related person transactions. This policy will cover, with certain exceptions set forth in Item 404 of Regulation S-K under the Securities Act, any transaction, arrangement or relationship, or any series of similar transactions, arrangements or relationships in which we were or are to be a participant, where the amount involved exceeds $120,000 and a related person had or will have a direct or indirect material interest, including without limitation purchases of goods or services by or from the related person or entities in which the related person has a material interest, indebtedness, guarantees of indebtedness and employment by us of a related person. In reviewing and approving any such transactions, our audit committee is tasked to consider all relevant facts and circumstances, including but not limited to whether the transaction is on terms comparable to those that could be obtained in an arm’s length transaction with an unrelated third party and the extent of the related person’s interest in the transaction. All of the transactions described in this section occurred prior to the adoption of this policy.

PRINCIPAL STOCKHOLDERS

The following table sets forth information relating to the beneficial ownership of our common stock as of April 11, 2018, by:

- each person, or group of affiliated persons, known by us to beneficially own more than 5% of our outstanding shares of common stock;
- each of our directors;
- each of our named executive officers; and
- all directors and executive officers as a group.

The number of shares beneficially owned by each entity, person, director or executive officer is determined in accordance with the rules of the SEC, and the information is not necessarily indicative of beneficial ownership for any other purpose. Under such rules, beneficial ownership includes any shares over which the individual has sole or shared voting power or investment power as well as any shares that the individual has the right to acquire within 60 days after April 11, 2018 through the exercise of any stock option, warrants or other rights. Except as otherwise indicated, and subject to applicable community property laws, the persons named in the table have sole voting and investment power with respect to all shares of common stock held by that person.

Certain of our existing principal stockholders have agreed to purchase an aggregate of 2,417,647 shares of common stock in this offering at the initial public offering price per share and on the same terms as the other purchasers in this offering. The following table does not reflect any purchases by these purchasers.

The percentage of shares beneficially owned is computed on the basis of 37,313,552 shares of our common stock outstanding as of April 11, 2018, which reflects the assumed conversion of all of our outstanding shares of Series A-1, Series A-2, Series B and Series C convertible preferred stock into an aggregate of 32,073,149 shares of common stock. Shares of our common stock that a person has the right to acquire within 60 days after April 11, 2018 are deemed outstanding for purposes of computing the percentage ownership of the person holding such rights, but are not deemed outstanding for purposes of computing the percentage ownership of any other person, except with respect to the percentage ownership of all directors and executive officers as a group. Unless otherwise indicated

below, the address for each beneficial owner listed is c/o Unity Biotechnology, Inc., 3280 Bayshore Blvd, Brisbane, California 94005.

	Beneficial Ownership Prior to this Offering				Beneficial Ownership After this Offering	
Name of Beneficial Owner	Number of Outstanding Shares Beneficially Owned	Number of Shares Exercisable Within 60 Days	Number of Shares Beneficially Owned	Percentage of Beneficial Ownership	Number of Shares Beneficially Owned	Percentage of Beneficial Ownership
5% and Greater Stockholders:						
Entities Associated with ARCH Venture Partners (1)	10,048,181	—	10,048,181	26.9%	10,048,181	23.7%
WuXi PharmaTech Healthcare Fund I LP (2)	3,251,142	—	3,251,142	8.7%	3,251,142	7.7%
Entities Associated with Venrock (3)	2,680,039	—	2,680,039	7.2%	2,680,039	6.3%
Entities Associated with the Mayo Clinic (4)	2,512,821	—	2,512,821	6.7%	2,512,821	5.9%
Entities Associated with Baillie Gifford & Co. (5)	2,553,014	—	2,553,014	6.8%	2,553,014	6.0%
Entities Associated with Fidelity Growth Company Commingled Pool (6)	2,215,523	—	2,215,523	5.9%	2,215,523	5.2%
Named Executive Officers and Directors:						
Keith R. Leonard Jr. (7)	835,247	1,471,766	2,307,013	5.9%	2,307,013	5.3%
Nathaniel E. David, Ph.D. (8)	1,515,155	1,665,418	3,180,573	8.2%	3,180,573	7.2%
Robert C. Goeltz II (9)	96,348	335,591	431,939	1.1%	431,939	1.0%
Paul L. Berns (10)	3,261	—	3,261	*	3,261	*
Kristina M. Burow (11)	112,994	10,805	123,799	*	123,799	*
Graham K. Cooper (12)	84,745	—	84,745	*	84,745	*
David L. Lacey (13)	—	84,745	84,745	*	84,745	*
Robert T. Nelsen (14)	10,048,181	—	10,048,181	26.9%	10,048,181	23.7%
Camille D. Samuels (15)	10,169	—	10,169	*	10,169	*
All directors and executive officers as a group (12 persons) (16)	13,449,166	3,797,137	17,246,303	42.0%	17,246,303	37.4%

* Indicates beneficial ownership of less than 1% of the total outstanding common stock.

(1) Consists of (i) 39,547 shares of common stock (ii) 2,030,625 shares of common stock issuable upon the conversion of Series A-1 convertible preferred stock, 4,228,432 shares of common stock issuable upon the conversion of Series A-2 convertible preferred stock and 2,067,160 shares of common stock issuable upon the conversion of Series B convertible preferred stock held by ARCH Venture Fund VII, L.P. (“ARCH VII”), and (iii) 1,486,745 shares of common stock issuable upon the conversion of Series B convertible preferred stock and 195,672 shares of common stock issuable upon the conversion of Series C convertible preferred stock held by ARCH Venture Fund VIII Overage, L.P. (“ARCH Overage”). ARCH Venture Partners VII, L.P. (the “GPLP”), as the sole general partner of ARCH VII, may be deemed to beneficially own certain of the shares held by ARCH VII. The GPLP disclaims beneficial ownership of all shares held by ARCH VII in which the GPLP does not have an actual pecuniary interest. ARCH Venture Partners VII, LLC (“GPLLC”), as the sole general partner of ARCH Overage and GPLP, may be deemed to beneficially own the shares held by ARCH VII and ARCH Overage. As managing directors of GPLLC, each of Keith Crandell, Clinton Bybee and Robert T. Nelsen (the “ARCH Managing Directors”) may be deemed to share the power to direct the disposition and vote of, and therefore to beneficially own, the shares held by ARCH VII and ARCH Overage.

The ARCH Managing Directors disclaim beneficial ownership of all shares held by ARCH VII and ARCH Overage except to the extent of any actual pecuniary interest. The address of ARCH VII, ARCH Overage, GPLP, GPLLC and the ARCH Managing Directors is 8725 West Higgins Road, Suite 290, Chicago, Illinois 60631.

(2) Consists of (i) 289,234 shares of common stock issuable upon conversion of Series A-1 convertible preferred stock, 2,257,200 shares of common stock issuable upon conversion of Series A-2 convertible preferred stock and 704,708 shares of common stock issuable upon conversion of Series B convertible preferred stock held by WuXi PharmaTech Healthcare Fund I LP ("WuXi"). Wuxi AppTec (Hong Kong) Limited ("WuXi AppTec"), as the sole general partner of WuXi, may be deemed to beneficially own the shares held by WuXi. As the chairman and chief executive officer of WuXi AppTec, Dr. Ge Li may be deemed to hold the power to direct the disposition and vote of, and therefore to own the shares held by WuXi. Dr. Li disclaims beneficial ownership of all shares held by WuXi except to the extent of any actual pecuniary interest. The address for WuXi is 288 Fute Zhong Road, Waigaoqiao Free Trade Zone, Shanghai 200131 PRC.

(3) Consists of (i) 1,475,992 shares of common stock issuable upon conversion of Series A-2 convertible preferred stock, 937,937 shares of common stock issuable upon conversion of Series B convertible preferred stock and 60,234 shares of common stock issuable upon the conversion of Series C convertible preferred stock held by Venrock Associates VII, L.P. ("Venrock Associates") and (ii) 122,266 shares of common stock issuable upon conversion of Series A-2 convertible preferred stock, 78,621 shares of common stock issuable upon conversion of Series B convertible preferred stock and 4,989 shares of common stock issuable upon the conversion of Series C convertible preferred stock held by Venrock Partners VII, L.P. ("Venrock Partners"). Venrock Management VII, LLC ("Venrock Management") is the sole general partner of Venrock Associates and Venrock Partners. As sole general partner for each of Venrock Associates and Venrock Partners, Venrock Management may be deemed to share the power to direct the disposition and vote of, and therefore to own the shares held by Venrock Associates and Venrock Partners. Investment and voting decisions by Venrock Management are made jointly by three or more individuals who are managing directors, and therefore no individual managing director of Venrock Management is the beneficial owner of the shares held by Venrock Associates and Venrock Partners. Venrock Management expressly disclaims beneficial ownership over all shares held by Venrock Associates and Venrock Partners, except to the extent of their indirect pecuniary interest therein. The address for Venrock Associates and Venrock Partners is 3340 Hillview Avenue, Palo Alto, California 94304.

(4) Consists of (i) 745,762 shares of common stock and 114,135 shares of common stock issuable upon conversion of Series A-2 convertible preferred stock held by Mayo Foundation for Medical Education and Research ("Mayo Foundation") and (ii) 289,234 shares of common stock issuable upon conversion of Series A-1 convertible preferred stock, 988,313 shares of common stock issuable upon conversion of Series A-2 convertible preferred stock and 375,377 shares of common stock issuable upon conversion of Series B convertible preferred stock held by Mayo Clinic. As Treasurer and Co-Chief Investment Officer of Mayo Clinic, Harry N. Hoffman may be deemed to have the sole power to direct the disposition and vote of, and therefore to own the shares held by Mayo Foundation and Mayo Clinic. Mr. Hoffman disclaims beneficial ownership of all shares held by Mayo Foundation and Mayo Clinic, except to the extent of any actual pecuniary interest. The address for Mayo Foundation and Mayo Clinic is 200 First Street SW, Rochester, Minnesota 55905.

(5) Consists of (i) 2,061,940 shares of common stock issuable upon conversion of Series B convertible preferred stock and 301,963 shares of common stock issuable upon the conversion of Series C convertible preferred stock held by Scottish Mortgage Investment Trust PLC ("SMIT") and (ii) 164,955 shares of common stock issuable upon conversion of Series B convertible preferred stock and 24,156 shares of common stock issuable upon the conversion of Series C convertible preferred stock held by Edinburgh Worldwide Investment Trust PLC ("EWIT"). As agent for each of SMIT and EWIT, Baillie Gifford & Co. may be deemed to share the power to direct the disposition and vote of, and therefore to own the shares held by SMIT and EWIT. Investment and voting decisions by Baillie Gifford & Co. are made jointly by three or more individuals who are managing directors, and therefore no individual managing director of Baillie Gifford & Co. is the beneficial owner of the shares held by SMIT and EWIT. Baillie Gifford & Co. disclaims beneficial ownership of all shares held by SMIT and EWIT. Each of SMIT and EWIT are publicly traded companies. The address for SMIT and EWIT is c/o Baillie Gifford & Co., Calton Square, 1 Greenside Row, Edinburgh EH1 3AN, United Kingdom.

(6) Consists of (i) 218,808 shares of common stock issuable upon conversion of Series B convertible preferred stock and 89,552 shares of common stock issuable upon conversion of Series C convertible preferred stock held by Fidelity Mt. Vernon Street Trust: Fidelity Series Growth Company Fund ("FSGCF"), (ii) 267,638 shares of common stock issuable upon conversion of Series B convertible preferred stock and 445,921 shares of common stock issuable upon conversion of Series C convertible preferred stock held by Fidelity Growth Company Commingled Pool ("FGCCP") and (iii) 750,717 shares of common stock issuable upon conversion of Series B convertible preferred stock and 442,887 shares of common stock issuable upon conversion of Series C convertible preferred stock held by Fidelity Mr. Vernon Street Trust: Fidelity Growth Company Fund ("FGCF" and, together with FGCCP and FSGCF, the "Funds"). The Funds are managed by direct or indirect subsidiaries of FMR LLC. Abigail P. Johnson is a Director, the Vice Chairman, the Chief Executive Officer and the President of FMR LLC. Members of the Johnson family, including Abigail P. Johnson, are the predominant owners, directly or through trusts, of Series B voting common shares of FMR LLC, representing 49% of the voting power of FMR LLC. The Johnson family group and all other Series B shareholders have entered into a shareholders' voting agreement under which all Series B voting common shares will be voted in accordance with the majority vote of Series B voting common shares. Accordingly, through their ownership of voting common shares and the execution of the shareholders' voting agreement, members of the Johnson family may be deemed, under the Investment Company Act of 1940, to form a controlling group with respect to FMR LLC. Neither FMR LLC nor Abigail P. Johnson has the sole power to vote or direct the voting of the shares owned directly by the various investment companies registered under the Investment Company Act ("Fidelity Funds") advised by Fidelity Management & Research Company ("FMR Co."), a wholly owned subsidiary of FMR LLC, which power resides with the Fidelity Funds' Boards of Trustees. Fidelity Management & Research Company carries out the voting of the shares under written guidelines established by the Fidelity Funds' Boards of Trustees. The address of FMR LLC is 245 Summer Street, V13H, Boston, Massachusetts 02110.

(7) Consists of (i) 149,152 shares of common stock, (ii) 152,542 shares of common stock held by Keith Richard Leonard, Jr. 2017 Retained Annuity Trust, (iv) 383,475 shares of common stock issuable upon conversion of Series B convertible preferred stock held by Andalucia Ventures, LLC, (v) 148,448 shares of common stock issuable upon conversion of Series B convertible preferred stock held by Pathfinder Investment Fund, LLC, (vi) 1,630 shares of common stock issuable upon conversion of Series C convertible preferred stock, and (vii) 1,471,766 shares of common stock that may be acquired pursuant to the exercise of stock options within 60 days of April 11, 2018.

(8) Consists of (i) 980,846 shares of common stock, (ii) 1,074,032 shares of common stock issuable upon conversion of Series A-2 convertible preferred stock, (iii) 192,823 shares of common stock issuable upon the conversion of Series A-1 convertible preferred stock that may be acquired pursuant to the exercise of an outstanding Series A-1 convertible preferred stock warrant exercisable within 60 days of April 11, 2018, (iv) 570,678 shares of common stock issuable upon the conversion of Series A-2 convertible preferred stock that may be acquired pursuant to the exercise of outstanding Series A-2 convertible preferred stock warrants exercisable within 60 days of April 11, 2018, (v) 901,917 shares of common stock that may be acquired pursuant to the exercise of stock options within 60 days of April 11, 2018, (vi) 222,148 shares of common stock issuable upon conversion of Series B convertible preferred stock and (vii) 1,630 shares of common stock issuable upon conversion of Series C convertible preferred stock.

(9) Consists of (i) 94,718 shares of common stock, (ii) 1,630 shares of common stock issuable upon conversion of Series C convertible preferred stock, and (iii) 335,591 shares of common stock that may be acquired pursuant to the exercise of stock options within 60 days of April 11, 2018.

(10) Consists of 3,261 shares of common stock issuable upon conversion of Series C convertible preferred stock.

(11) Consists of (i) 79,096 shares of common stock held by Backes & Burow 2012 Revocable Trust, (ii) 33,898 shares of common stock held by Ms. Burow's spouse and 10,805 shares of common stock that may be acquired pursuant to the exercise of stock options held by Ms. Burow's spouse within 60 days of April 11, 2018.

(12) Consists of 84,745 shares of common stock.

(13) Consists of 84,745 shares of common stock that may be acquired pursuant to the exercise of stock options within 60 days of April 11, 2018.

(14) Consists of the shares described in note 1 above. Mr. Nelsen is a managing director of GPLLC, which is the sole general partner of GPLP, which is the sole general partner of ARCH VIII and ARCH Overage, and as such may be deemed to beneficially own such shares. Mr. Nelsen disclaims beneficial ownership of such shares except to the extent of any pecuniary interest therein.

(15) Consists of 10,169 shares of common stock. Ms. Samuels is affiliated with Venrock. Ms. Samuels does not have voting or dispositive control over the shares held by the entities affiliated with Venrock referenced in footnote 3 above.

(16) Consists of (i) the shares described in notes 7 through 15 above, (ii) 667,388 shares of common stock, (iii) 74,048 shares of common stock issuable upon conversion of Series B convertible preferred stock, (iv) 1,630 shares of common stock issuable upon conversion of Series C convertible preferred stock and (v) 228,812 shares of common stock that may be acquired pursuant to the exercise of stock options within 60 days of April 11, 2018.

DESCRIPTION OF CAPITAL STOCK

The following summary describes our capital stock and the material provisions of our amended and restated certificate of incorporation and our amended and restated bylaws, which will become effective immediately prior to the consummation of this offering, the amended and restated investors' rights agreement to which we and certain of our stockholders are parties and of the Delaware General Corporation Law. Because the following is only a summary, it does not contain all of the information that may be important to you. For a complete description, you should refer to our amended and restated certificate of incorporation, amended and restated bylaws and amended and restated investors' rights agreement, copies of which have been filed as exhibits to the registration statement of which this prospectus is part.

General

Immediately prior to the consummation of this offering, we will file our amended and restated certificate of incorporation that authorizes 300,000,000 shares of common stock, $0.0001 par value per share, and 10,000,000 shares of preferred stock, $0.0001 par value per share. As of December 31, 2017, after giving effect to the issuance of 3,913,425 shares of Series C convertible preferred stock in March and April 2018, there were outstanding:

- 36,903,538 shares of our common stock, on an as-converted basis, held by approximately 90 stockholders of record; and
- 4,365,694 shares of our common stock issuable upon exercise of outstanding stock options.

In connection with this offering, we consummated a 1-for-2.95 reverse stock split of our outstanding capital stock.

Common Stock

Voting Rights

Each holder of our common stock is entitled to one vote for each share on all matters submitted to a vote of the stockholders, including the election of directors. Our stockholders do not have cumulative voting rights in the election of directors. Accordingly, holders of a majority of the voting shares are able to elect all of the directors. In addition, the affirmative vote of holders of 66 2/3% of the voting power of all of the then outstanding voting stock will be required to take certain actions, including amending certain provisions of our amended and restated certificate of incorporation, such as the provisions relating to amending our amended and restated bylaws, the classified board and director liability.

Dividends

Subject to preferences that may be applicable to any then outstanding preferred stock, holders of our common stock are entitled to receive dividends, if any, as may be declared from time to time by our board of directors out of legally available funds.

Liquidation

In the event of our liquidation, dissolution or winding up, holders of our common stock will be entitled to share ratably in the net assets legally available for distribution to stockholders after the payment of all of our debts and other liabilities and the satisfaction of any liquidation preference granted to the holders of any then outstanding shares of preferred stock.

Rights and Preferences

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

Fully Paid and Nonassessable

All of our outstanding shares of common stock are, and the shares of common stock to be issued in this offering will be, fully paid and nonassessable.

Convertible Preferred Stock

Immediately prior to the consummation of this offering, all outstanding shares of our convertible preferred stock will be converted into shares of our common stock. See Note 11 and Note 17 to our audited financial statements included elsewhere in this prospectus for a description of our currently outstanding convertible preferred stock. Immediately prior to the consummation of this offering, our amended and restated certificate of incorporation will be amended and restated to delete all references to such shares of convertible preferred stock. From and after the consummation 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 our common stock. The issuance of our preferred stock could adversely affect the voting power of holders of common stock and the likelihood that such holders 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 consummation 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

Under our amended and restated investors' rights agreement, following the consummation of this offering, the holders of approximately 32.1 million shares of common stock, or their transferees, have the right to require us to register their shares under the Securities Act so that those shares may be publicly resold, and the holders of approximately 32.1 million shares of common stock, or their transferees, have the right to include their shares in any registration statement we file, in each case as described below.

Demand Registration Rights

After the consummation of this offering, the holders of approximately 32.1 million shares of our common stock (on an as-converted basis), or their transferees, will be entitled to certain demand registration rights. Beginning 180 days following the effectiveness of the registration statement of which this prospectus is a part, the holders of at least 50% of these shares can, on not more than two occasions, request that we register all or a portion of their shares if the aggregate price to the public of the shares offered is at least $10.0 million (before deductions of underwriters' commissions and expenses). Additionally, we will not be required to effect a demand registration during the period beginning 60 days prior to the filing and ending 180 days following the effectiveness of a company-initiated registration statement relating to an initial public offering of our securities.

Piggyback Registration Rights

After the consummation of this offering, in the event that we determine to register any of our securities under the Securities Act (subject to certain exceptions), either for our own account or for the account of other security holders, the holders of approximately 32.1 million shares of our common stock (on an as-converted basis), or their transferees, will be entitled to certain "piggyback" registration rights allowing the holders to include their shares in such registration, subject to certain marketing and other limitations. As a result, whenever we propose to file a registration statement under the Securities Act, other than with respect to a registration related to employee benefit plans, the offer and sale of debt securities, or corporate reorganizations or certain other transactions, the holders of these shares are entitled to notice of the registration and have the right, subject to limitations that the underwriters may impose on the number of shares included in the registration, to include their shares in the registration. In an underwritten offering, the managing underwriter, if any, has the right, subject to specified conditions, to exclude or limit the number of shares such holders may include.

Form S-3 Registration Rights

After the consummation of this offering, the holders of approximately 32.1 million shares of our common stock (on an as-converted basis), or their transferees, will be entitled to certain Form S-3 registration rights. The holders of at least approximately 1.0 million of these shares can make a written request that we register their shares on Form S-3 if we are eligible to file a registration statement on Form S-3 and if the aggregate price to the public of the shares offered is at least $10.0 million (before deductions of underwriters' commissions and expenses). These stockholders may make an unlimited number of requests for registration on Form S-3, but in no event shall we be required to file more than two registrations on Form S-3 in any given twelve-month period.

Expenses of Registration

We will pay the registration expenses of the holders of the shares registered pursuant to the demand, piggyback and Form S-3 registration rights described above, including the expenses in an amount not to exceed $75,000 of one special counsel for the selling holders.

Expiration of Registration Rights

The demand, piggyback and Form S-3 registration rights described above will expire, with respect to any particular stockholder, upon the earlier of five years after the consummation of this offering or when that stockholder can sell all of its shares under Rule 144 of the Securities Act during any 90-day period (and without the requirement for the Company to be in compliance with the current public information required under Section c(1) of Rule 144 of the Securities Act).

Anti-Takeover Effects of Provisions of our Amended and Restated Certificate of Incorporation, our Amended and Restated Bylaws and Delaware Law

Certain provisions of Delaware law and our amended and restated certificate of incorporation and our amended and restated bylaws that will become effective immediately prior to the consummation of this offering contain provisions that could make the following transactions more difficult: acquisition of us by means of a tender offer; acquisition of us by means of a proxy contest or otherwise; or removal of our incumbent officers and directors. It is possible that these provisions could make it more difficult to accomplish or could deter transactions that stockholders may otherwise consider to be in their best interest or in our best interests, including transactions that might result in a premium over the market price for our shares.

These provisions, summarized below, are expected to discourage coercive takeover practices and inadequate takeover bids. These provisions are also designed to encourage persons seeking to acquire control of us to first negotiate with our board of directors. We believe that the benefits of increased protection of our potential ability to negotiate with the proponent of an unfriendly or unsolicited proposal to acquire or restructure us outweigh the disadvantages of discouraging these proposals because negotiation of these proposals could result in an improvement of their terms.

Delaware Anti-Takeover Statute

We are subject to Section 203 of the Delaware General Corporation Law, which prohibits persons deemed "interested stockholders" from engaging in a "business combination" with a publicly-held Delaware corporation for three years following the date these persons become interested stockholders unless the business combination is, or the transaction in which the person became an interested stockholder was, approved in a prescribed manner or another prescribed exception applies. Generally, an "interested stockholder" is a person who, together with affiliates and associates, owns, or within three years prior to the determination of interested stockholder status did own, 15% or more of a corporation's voting stock. Generally, a "business combination" includes a merger, asset or stock sale, or other transaction resulting in a financial benefit to the interested stockholder. The existence of this provision may have an anti-takeover effect with respect to transactions not approved in advance by the board of directors, such as discouraging takeover attempts that might result in a premium over the market price of our common stock.

Undesignated Preferred Stock

The ability to authorize undesignated preferred stock will make it possible for our board of directors to issue preferred stock with voting or other rights or preferences that could impede the success of any attempt to change control of us. These and other provisions may have the effect of deterring hostile takeovers or delaying changes in control or management of our company.

Special Stockholder Meetings

Our amended and restated bylaws provide that a special meeting of stockholders may be called at any time by our board of directors, or our President or Chief Executive Officer, but such special meetings may not be called by the stockholders or any other person or persons.

Requirements for Advance Notification of Stockholder Nominations and Proposals

Our amended and restated bylaws establish advance notice procedures with respect to stockholder proposals and the nomination of candidates for election as directors, other than nominations made by or at the direction of the board of directors or a committee of the board of directors.

Elimination of Stockholder Action by Written Consent

Our amended and restated certificate of incorporation and our amended and restated bylaws eliminate the right of stockholders to act by written consent without a meeting.

Classified Board; Election and Removal of Directors; Filling Vacancies

Effective upon the consummation of this offering, our board of directors will be divided into three classes. The directors in each class will serve for a three-year term, one class being elected each year by our stockholders, with staggered three-year terms. Only one class of directors will be elected at each annual meeting of our stockholders, with the other classes continuing for the remainder of their

respective three-year terms. Because our stockholders do not have cumulative voting rights, our stockholders holding a majority of the shares of common stock outstanding will be able to elect all of our directors. Our amended and restated certificate of incorporation provides for the removal of any of our directors only for cause and requires a stockholder vote by the holders of at least a 66 2/3% of the voting power of the then outstanding voting stock. For more information on the classified board, see “Management—Board Composition.” Furthermore, any vacancy on our board of directors, however occurring, including a vacancy resulting from an increase in the size of the board, may only be filled by a resolution of the board of directors unless the board of directors determines that such vacancies shall be filled by the stockholders. This system of electing and removing directors and filling vacancies may tend to discourage a third party from making a tender offer or otherwise attempting to obtain control of us, because it generally makes it more difficult for stockholders to replace a majority of the directors.

Choice of Forum

Our amended and restated certificate of incorporation and our amended and restated bylaws provide that, unless we consent in writing to the selection of an alternative forum, the Court of Chancery of the State of Delaware will be the exclusive forum for: any derivative action or proceeding brought on our behalf; any action asserting a claim of 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; or any action asserting a claim against us that is governed by the internal affairs doctrine. Although our amended and restated certificate of incorporation and amended and restated bylaws contain the choice of forum provision described above, it is possible that a court could find that such a provision is inapplicable for a particular claim or action or that such provision is unenforceable.

Amendment of Charter Provisions

The amendment of any of the above provisions in our amended and restated certificate of incorporation, except for the provision making it possible for our board of directors to issue undesignated preferred stock, would require approval by a stockholder vote by the holders of at least a 66 2/3% of the voting power of the then outstanding voting stock.

The provisions of the Delaware General Corporation Law, our amended and restated certificate of incorporation and our amended and restated bylaws could have the effect of discouraging others from attempting hostile takeovers and, as a consequence, they may also inhibit temporary fluctuations in the market price of our common stock that often result from actual or rumored hostile takeover attempts. These provisions may also have the effect of preventing changes in our management. It is possible that these provisions could make it more difficult to accomplish transactions that stockholders may otherwise deem to be in their best interests.

Limitations of Liability and Indemnification Matters

For a discussion of liability and indemnification, see “Management—Limitation on Liability and Indemnification Matters.”

Listing

We have applied to have our common stock listed on The Nasdaq Global Select Market under the symbol “UBX.”

Transfer Agent and Registrar

The transfer agent and registrar for our common stock is Computershare Trust Company, N.A. The transfer agent and registrar’s address is 480 Washington Boulevard, 29th Floor, Jersey City, New Jersey 07130.

SHARES ELIGIBLE FOR FUTURE SALE

Prior to this offering, there has been no public market for our common stock. Future sales of our common stock, including shares issued upon the exercise of outstanding options or warrants, in the public market after this offering, or the perception that those sales may occur, could cause the prevailing market price for our common stock to fall or impair our ability to raise equity capital in the future. As described below, only a limited number of shares of our common stock will be available for sale in the public market for a period of several months after consummation of this offering due to contractual and legal restrictions on resale described below. Future sales of our common stock in the public market either before (to the extent permitted) or after restrictions lapse, or the perception that those sales may occur, could adversely affect the prevailing market price of our common stock at such time and our ability to raise equity capital at a time and price we deem appropriate.

Sale of Restricted Shares

Based on the number of shares of our common stock outstanding as of December 31, 2017 and the initial public offering price of $17.00 per share, upon the consummation of this offering and assuming (1) the conversion of all shares of our outstanding Series A-1, Series A-2, and Series B convertible preferred stock outstanding at December 31, 2017 and Series C convertible preferred stock issued in March and April 2018, (2) no exercise of the underwriters' option to purchase additional shares of common stock and (3) no exercise of any of our outstanding options or warrants, we will have outstanding an aggregate of approximately 41,903,538 shares of common stock. Of these shares, all of the shares of common stock to be sold in this offering (excluding any shares sold to our employees in the directed share program), and any shares sold upon exercise of the underwriters' option to purchase additional shares, will be freely tradable in the public market without restriction or further registration under the Securities Act, unless the shares are held by any of our "affiliates" as such term is defined in Rule 144 of the Securities Act. All remaining shares of common stock held by existing stockholders immediately prior to the consummation of this offering will be "restricted securities" as such term is defined in Rule 144. These restricted securities were issued and sold by us, or will be issued and sold by us, in private transactions and are eligible for public sale only if registered under the Securities Act or if they qualify for an exemption from registration under the Securities Act, including the exemptions provided by Rule 144 or Rule 701, which rules are summarized below.

As a result of the lock-up agreements referred to below and the provisions of Rule 144 and Rule 701 under the Securities Act, based on the number of shares of our common stock outstanding as of December 31, 2017 and assumptions (1)-(3) described above, the shares of our common stock (excluding the shares sold in this offering) that will be available for sale in the public market, subject (1) to any waivers by the underwriters and/or our board of directors under the respective lock-up agreements and (2) with respect to shares held by directors, executive officers and other affiliates, the volume limitations under Rule 144 under the Securities Act, are as follows:

Approximate Number of Shares	First Date Available for Sale into Public Market
36,903,538 shares	180 days after the date of this prospectus upon expiration of the lock-up agreements referred to below, subject in some cases to applicable volume limitations under Rule 144

Lock-Up Agreements

In connection with this offering, we, our directors, our executive officers and substantially all of our other stockholders and option holders have agreed, subject to certain exceptions, with the

underwriters not to dispose of or hedge any shares of our common stock or securities convertible into or exchangeable for shares of common stock during the period from the date of the lock-up agreement continuing through the date 180 days after the date of this prospectus, except with the prior written consent of Goldman Sachs & Co. LLC, Morgan Stanley & Co. LLC, and Citigroup Global Markets Inc.

Prior to the consummation of 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.

Following the lock-up periods set forth in the agreements described above, and assuming that the representatives of the underwriters do not release any parties from these agreements, all of the shares of our common stock that are restricted securities or are held by our affiliates as of the date of this prospectus will be eligible for sale in the public market in compliance with Rule 144 under the Securities Act.

Rule 144

In general, under Rule 144, as currently in effect, once we have been subject to the public company reporting requirements of the Exchange Act for at least 90 days, a person (or persons whose shares are required to be aggregated) who is not deemed to have been one of our “affiliates” for purposes of Rule 144 at any time during the three months preceding a sale, and who has beneficially owned restricted securities within the meaning of Rule 144 for at least six months, including the holding period of any prior owner other than one of our “affiliates,” is entitled to sell those shares in the public market (subject to the lock-up agreement referred to above, if applicable) without complying with the manner of sale, volume limitations or notice provisions of Rule 144, but subject to compliance with the public information requirements of Rule 144. If such a person has beneficially owned the shares proposed to be sold for at least one year, including the holding period of any prior owner other than “affiliates,” then such person is entitled to sell such shares in the public market without complying with any of the requirements of Rule 144 (subject to the lock-up agreement referred to above, if applicable). In general, under Rule 144, as currently in effect, once we have been subject to the public company reporting requirements of the Exchange Act for at least 90 days, our “affiliates,” as defined in Rule 144, who have beneficially owned the shares proposed to be sold for at least six months are entitled to sell in the public market, upon expiration of any applicable lock-up agreements and within any three-month period, a number of those shares of our common stock that does not exceed the greater of:

- 1% of the number of common shares then outstanding, which will equal approximately 419,035 shares of common stock immediately after this offering (calculated as of December 31, 2017 on the basis of the assumptions (1)-(3) described above); or
- the average weekly trading volume of our common stock on The Nasdaq Global Select Market during the four calendar weeks preceding the filing of a notice on Form 144 with respect to such sale.

Such sales under Rule 144 by our “affiliates” or persons selling shares on behalf of our “affiliates” are also subject to certain manner of sale provisions, notice requirements and to the availability of current public information about us. Notwithstanding the availability of Rule 144, the holders of substantially all of our restricted securities have entered into lock-up agreements as referenced above and their restricted securities will become eligible for sale (subject to the above limitations under Rule 144) upon the expiration of the restrictions set forth in those agreements.

Rule 701

In general, under Rule 701 as currently in effect, any of our employees, directors, officers, consultants or advisors who acquired common stock from us in connection with a written compensatory stock or option plan or other written agreement in compliance with Rule 701 under the Securities Act before the effective date of the registration statement of which this prospectus is a part (to the extent such common stock is not subject to a lock-up agreement) is entitled to rely on Rule 701 to resell such shares beginning 90 days after we become subject to the public company reporting requirements of the Exchange Act in reliance on Rule 144, but without compliance with the holding period requirements contained in Rule 144. Accordingly, subject to any applicable lock-up agreements, beginning 90 days after we become subject to the public company reporting requirements of the Exchange Act, under Rule 701 persons who are not our "affiliates," as defined in Rule 144, may resell those shares without complying with the minimum holding period or public information requirements of Rule 144, and persons who are our "affiliates" may resell those shares without compliance with Rule 144's minimum holding period requirements (subject to the terms of the lock-up agreement referred to above).

Registration Rights

After the consummation of this offering, the holders of approximately 32.1 million shares of our common stock, or their transferees, will, subject to the lock-up agreements referred to above, be entitled to certain rights with respect to the registration of the offer and sale of those shares under the Securities Act. For a description of these registration rights, see "Description of Capital Stock—Registration Rights." If the offer and sale of these shares are registered, they will be freely tradable without restriction under the Securities Act.

Stock Plans

We intend to file with the SEC a registration statement under the Securities Act covering the shares of common stock that we may issue upon exercise of outstanding options reserved for issuance under our 2013 Equity Incentive Plan and our 2018 Equity Incentive Annual Plan. Such registration statement is expected to be filed and become effective as soon as practicable after the consummation of this offering. Accordingly, shares registered under such registration statement will be available for sale in the open market following its effective date, subject to Rule 144 volume limitations and the lock-up agreements described above, if applicable.

MATERIAL U.S. FEDERAL INCOME TAX CONSEQUENCES TO NON-U.S. HOLDERS

The following discussion is a summary of the material U.S. federal income tax consequences to Non-U.S. Holders (as defined below) of the purchase, ownership and disposition of our common stock issued pursuant to this offering, but does not purport to be a complete analysis of all potential tax effects. The effects of other U.S. federal tax laws, such as estate and gift tax laws, and any applicable state, local or non-U.S. tax laws are not discussed. This discussion is based on the U.S. Internal Revenue Code of 1986, as amended, or the Code, Treasury Regulations promulgated thereunder, judicial decisions, and published rulings and administrative pronouncements of the U.S. Internal Revenue Service, or the IRS, in each case in effect as of the date hereof. These authorities may change or be subject to differing interpretations. Any such change or differing interpretation may be applied retroactively in a manner that could adversely affect a Non-U.S. Holder. We have not sought and will not seek any rulings from the IRS regarding the matters discussed below. There can be no assurance the IRS or a court will not take a contrary position to that discussed below regarding the tax consequences of the purchase, ownership and disposition of our common stock.

This discussion is limited to Non-U.S. Holders that hold our common stock as a "capital asset" within the meaning of Section 1221 of the Code (generally, property held for investment). This discussion does not address all U.S. federal income tax consequences relevant to a Non-U.S. Holder's particular circumstances, including the impact of the Medicare contribution tax on net investment income. In addition, it does not address consequences relevant to Non-U.S. Holders subject to special rules, including, without limitation:

- U.S. expatriates and former citizens or long-term residents of the United States;
- persons subject to the alternative minimum tax;
- persons holding our common stock as part of a hedge, straddle or other risk reduction strategy or as part of a conversion transaction or other integrated investment;
- banks, insurance companies and other financial institutions;
- brokers, dealers or traders in securities;
- "controlled foreign corporations," "passive foreign investment companies" and corporations that accumulate earnings to avoid U.S. federal income tax;
- partnerships or other entities or arrangements treated as partnerships for U.S. federal income tax purposes (and investors therein);
- tax-exempt organizations or governmental organizations;
- persons deemed to sell our common stock under the constructive sale provisions of the Code;
- tax-qualified retirement plans;
- "qualified foreign pension funds" as defined in Section 897(l)(2) of the Code and entities all of the interests of which are held by qualified foreign pension funds; and
- persons subject to special tax accounting rules as a result of any item of gross income with respect to our common stock being taken into account in an applicable financial statement.

If an entity treated as a partnership for U.S. federal income tax purposes holds our common stock, the tax treatment of a partner in the partnership will depend on the status of the partner, the activities of the partnership and certain determinations made at the partner level. Accordingly, partnerships holding our common stock and the partners in such partnerships should consult their tax advisors regarding the U.S. federal income tax consequences to them.

THIS DISCUSSION IS NOT TAX ADVICE. INVESTORS SHOULD CONSULT THEIR TAX ADVISORS WITH RESPECT TO THE APPLICATION OF THE U.S. FEDERAL INCOME TAX LAWS TO THEIR PARTICULAR SITUATIONS AS WELL AS ANY TAX CONSEQUENCES OF THE PURCHASE, OWNERSHIP AND DISPOSITION OF OUR COMMON STOCK ARISING UNDER THE U.S. FEDERAL ESTATE OR GIFT TAX LAWS OR UNDER THE LAWS OF ANY STATE, LOCAL OR NON-U.S. TAXING JURISDICTION OR UNDER ANY APPLICABLE INCOME TAX TREATY.

Definition of Non-U.S. Holder

For purposes of this discussion, a "Non-U.S. Holder" is any beneficial owner of our common stock that is neither a "U.S. person" nor an entity treated as a partnership for U.S. federal income tax purposes. A U.S. person is any person that, for U.S. federal income tax purposes, is or is treated as any of the following:

- an individual who is a citizen or resident of the United States;
- a corporation created or organized under the laws of the United States, any state thereof or the District of Columbia;
- an estate, the income of which is subject to U.S. federal income tax regardless of its source; or
- a trust that (1) is subject to the primary supervision of a U.S. court and all substantial decisions of which are subject to the control of one or more "United States persons" (within the meaning of Section 7701(a)(30) of the Code), or (2) has a valid election in effect to be treated as a United States person for U.S. federal income tax purposes.

Distributions

As described in the section entitled "Dividend Policy," we do not anticipate paying any cash dividends in the foreseeable future. However, if we do make distributions of cash or property on our common stock, such distributions 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. Amounts not treated as dividends for U.S. federal income tax purposes will constitute a return of capital and first be applied against and reduce a Non-U.S. Holder's adjusted tax basis in its common stock, but not below zero. Any excess will be treated as capital gain and will be treated as described below under "—Sale or Other Taxable Disposition."

Subject to the discussions below regarding effectively connected income and FATCA, dividends paid to a Non-U.S. Holder will be subject to U.S. federal withholding tax at a rate of 30% of the gross amount of the dividends (or such lower rate specified by an applicable income tax treaty, provided the Non-U.S. Holder furnishes a valid IRS Form W-8BEN or W-8BEN-E (or other applicable documentation) certifying qualification for the lower treaty rate). A Non-U.S. Holder that does not timely furnish the required documentation, but that qualifies for a reduced treaty rate, may obtain a refund of any excess amounts withheld by timely filing an appropriate claim for refund with the IRS. Non-U.S. Holders should consult their tax advisors regarding their entitlement to benefits under any applicable tax treaties.

If dividends paid to a Non-U.S. Holder are effectively connected with the Non-U.S. Holder's conduct of a trade or business within the United States (and, if required by an applicable income tax treaty, the Non-U.S. Holder maintains a permanent establishment in the United States to which such dividends are attributable), the Non-U.S. Holder will be exempt from the U.S. federal withholding tax described above. To claim the exemption, the Non-U.S. Holder must furnish to the applicable withholding agent a valid IRS Form W-8ECI, certifying that the dividends are effectively connected with the Non-U.S. Holder's conduct of a trade or business within the United States.

Any such effectively connected dividends will be subject to U.S. federal income tax on a net income basis at the regular graduated rates. A Non-U.S. Holder that is a corporation also may be subject to a branch profits tax at a rate of 30% (or such lower rate specified by an applicable income tax treaty) on such effectively connected dividends, as adjusted for certain items. Non-U.S. Holders should consult their tax advisors regarding any applicable tax treaties that may provide for different rules.

Sale or Other Taxable Disposition

Subject to the discussions below regarding backup withholding and FATCA, a Non-U.S. Holder will not be subject to U.S. federal income tax on any gain realized upon the sale or other taxable disposition of our common stock unless:

- the gain is effectively connected with the Non-U.S. Holder's conduct of a trade or business within the United States (and, if required by an applicable income tax treaty, the Non-U.S. Holder maintains a permanent establishment in the United States to which such gain is attributable);
- the Non-U.S. Holder is a nonresident alien individual present in the United States for 183 days or more during the taxable year of the disposition and certain other requirements are met; or
- our common stock constitutes a U.S. real property interest, or USRPI, by reason of our status as a U.S. real property holding corporation, or USRPHC, for U.S. federal income tax purposes.

Gain described in the first bullet point above generally will be subject to U.S. federal income tax on a net income basis at the regular graduated rates. A Non-U.S. Holder that is a corporation also may be subject to a branch profits tax at a rate of 30% (or such lower rate specified by an applicable income tax treaty) on such effectively connected gain, as adjusted for certain items.

Gain described in the second bullet point above will be subject to U.S. federal income tax at a rate of 30% (or such lower rate specified by an applicable income tax treaty), which may be offset by certain U.S.-source capital losses of the Non-U.S. Holder (even though the individual is not considered a resident of the United States), provided the Non-U.S. Holder has timely filed U.S. federal income tax returns with respect to such losses.

With respect to the third bullet point above, we believe we currently are not, and do not anticipate becoming, a USRPHC. Because the determination of whether we are a USRPHC depends, however, on the fair market value of our USRPIs relative to the fair market value of our non-U.S. real property interests and our other business assets, there can be no assurance we currently are not a USRPHC or will not become one in the future. Even if we are or were to become a USRPHC, gain arising from the sale or other taxable disposition by a Non-U.S. Holder will not be subject to U.S. federal income tax if our common stock is "regularly traded," as defined by applicable Treasury Regulations, on an established securities market, and such Non-U.S. Holder owned, actually and constructively, 5% or less of our common stock throughout the shorter of the five-year period ending on the date of the sale or other taxable disposition or the Non-U.S. Holder's holding period.

Non-U.S. Holders should consult their tax advisors regarding any applicable tax treaties that may provide for different rules.

Information Reporting and Backup Withholding

Payments of dividends on our common stock will not be subject to backup withholding, provided the Non-U.S. Holder certifies its non-U.S. status, such as by furnishing a valid IRS Form W-8BEN,

W-8BEN-E or W-8ECI, or otherwise establishes an exemption. However, information returns are required to be filed with the IRS in connection with any dividends on our common stock paid to the Non-U.S. Holder, regardless of whether any tax was actually withheld. In addition, proceeds of the sale or other taxable disposition of our common stock within the United States or conducted through certain U.S.-related brokers generally will not be subject to backup withholding or information reporting if the applicable withholding agent receives the certification described above or the Non-U.S. Holder otherwise establishes an exemption. Proceeds of a disposition of our common stock conducted through a non-U.S. office of a non-U.S. broker that does not have certain enumerated relationships with the United States generally will not be subject to backup withholding or information reporting.

Copies of information returns that are filed with the IRS may also be made available under the provisions of an applicable treaty or agreement to the tax authorities of the country in which the Non-U.S. Holder resides or is established.

Backup withholding is not an additional tax. Any amounts withheld under the backup withholding rules may be allowed as a refund or a credit against a Non-U.S. Holder's U.S. federal income tax liability, provided the required information is timely furnished to the IRS.

Additional Withholding Tax on Payments Made to Foreign Accounts

Withholding taxes may be imposed under Sections 1471 to 1474 of the Code (such Sections commonly referred to as the Foreign Account Tax Compliance Act, or FATCA) on certain types of payments made to non-U.S. financial institutions and certain other non-U.S. entities. Specifically, a 30% withholding tax may be imposed on dividends on, or gross proceeds from the sale or other disposition of, our common stock paid to a "foreign financial institution" or a "non-financial foreign entity" (each as defined in the Code), unless (1) the foreign financial institution undertakes certain diligence and reporting obligations, (2) the non-financial foreign entity either certifies it does not have any "substantial United States owners" (as defined in the Code) or furnishes identifying information regarding each substantial United States owner, or (3) the foreign financial institution or non-financial foreign entity otherwise qualifies for an exemption from these rules. If the payee is a foreign financial institution and is subject to the diligence and reporting requirements in (1) above, it must enter into an agreement with the U.S. Department of the Treasury requiring, among other things, that it undertake to identify accounts held by certain "specified United States persons" or "United States-owned foreign entities" (each as defined in the Code), annually report certain information about such accounts, and withhold 30% on certain payments to non-compliant foreign financial institutions and certain other account holders. Foreign financial institutions located in jurisdictions that have an intergovernmental agreement with the United States governing FATCA may be subject to different rules.

Under the applicable Treasury Regulations and administrative guidance, withholding under FATCA generally applies to payments of dividends on our common stock, and, beginning on January 1, 2019, will apply to payments of gross proceeds from the sale or other disposition of such stock.

Prospective investors should consult their tax advisors regarding the potential application of withholding under FATCA to their investment in our common stock.

UNDERWRITING

We and the underwriters named below have entered into an underwriting agreement with respect to the shares being offered. Subject to certain conditions, each underwriter has severally agreed to purchase the number of shares indicated in the following table. Goldman Sachs & Co. LLC, Morgan Stanley & Co. LLC and Citigroup Global Markets Inc. are the representatives of the underwriters.

Underwriters	Number of Shares
Goldman Sachs & Co. LLC	1,750,000
Morgan Stanley & Co. LLC	1,625,000
Citigroup Global Markets Inc.	1,200,000
Mizuho Securities USA LLC	425,000
Total.	5,000,000

The underwriters will be committed to take and pay for all of the shares being offered, if any are taken, other than the shares covered by the option described below unless and until this option is exercised.

The underwriters will have an option to buy up to an additional 750,000 shares from us to cover sales by the underwriters of a greater number of shares than the total number set forth in the table above. They may exercise that option for 30 days. If any shares are purchased pursuant to this option, the underwriters will severally purchase shares in approximately the same proportion as set forth in the table above.

The following table shows the per share and total underwriting discounts and commissions to be paid to the underwriters by us. Such amounts are shown assuming both no exercise and full exercise of the underwriters' option to purchase 750,000 additional shares.

Paid by the Company	No Exercise	Full Exercise
Per Share	$ 1.19	$ 1.19
Total	$ 5,950,000	$ 6,842,500

Shares sold by the underwriters to the public will initially be offered at the initial public offering price set forth on the cover of this prospectus. Any shares sold by the underwriters to securities dealers may be sold at a discount of up to $0.714 per share from the initial public offering price. After the initial offering of the shares, the representatives may change the offering price and the other selling terms. The offering of the shares by the underwriters is subject to receipt and acceptance and subject to the underwriters' right to reject any order in whole or in part.

We, our officers, directors, and holders of substantially all of our common stock and securities convertible into or exchangeable for our common stock have agreed or will agree with the underwriters, subject to certain exceptions, not to dispose of or hedge any of their common stock or securities convertible into or exchangeable for shares of common stock during the period from the date of this prospectus continuing through the date 180 days after the date of this prospectus, except with the prior written consent of the representatives. This agreement does not apply to any existing employee benefit plans. See the section titled "Shares Eligible for Future Sale" for a discussion of certain transfer restrictions.

In addition, notwithstanding the lock-up agreements applicable to our officers, directors, and holders of substantially all of our common stock and securities convertible into or exchangeable for our common stock, the above restrictions do not apply to transfers of securities: (a) as a bona fide gift or

gifts; (b) to any trust (or similar estate planning vehicle) for the direct or indirect benefit of the applicable executive officer, director or shareholder or the immediate family of such person; (c) to any corporation, partnership, limited liability company or other entity all of the beneficial ownership interests of which are held by the applicable executive officer, director or shareholder or the immediate family of such person; (d) by will, other testamentary document or intestate succession to the legal representative, heir, beneficiary or a member of the immediate family of the applicable executive officer, director or shareholder; (e) to partners, members or stockholders of the applicable executive officer, director or shareholder; or (f) transfer shares of our common stock to the applicable executive officer, director or shareholder's affiliates or to any investment fund or other entity controlled or managed by the applicable executive officer, director or shareholder; provided that in the case of any transfer or distribution pursuant to clauses (a)-(f) above, each transferee, donee or distributee shall agree to be bound by the lock-up restrictions described above; and provided, further, that in the case of any transfer, disposition or distribution pursuant to clauses (a)-(f), no filing by any party under the Exchange Act, or other public announcement shall be required or shall be made voluntarily in connection with such transfer or distribution (other than a filing on a Form 5 after the expiration of the 180-day restricted period (the "Restricted Period") or the filing of a required Schedule 13F or 13G) and any such transfer or distribution shall not involve a disposition for value.

Furthermore, the applicable executive officer, director or shareholder may, without the prior written consent of the Representatives: (i) exercise an option to purchase shares of our common stock granted under any stock incentive plan or stock purchase plan described in this registration statement, provided that the underlying shares of common stock shall continue to be subject to the restrictions on transfer set forth in the lock-up agreements; (ii) establish a trading plan pursuant to Rule 10b5-1 under the Exchange Act for the transfer of common stock, provided that such plan does not provide for any transfers of common stock during the Restricted Period, and provided, further, that no filing under the Exchange Act or other public announcement shall be required or shall be made voluntarily in connection therewith during the Restricted Period; (iii) transfer or dispose of shares of our common stock acquired in this offering or on the open market following this offering, provided that no filing under the Exchange Act or other public announcement shall be required or shall be made voluntarily in connection with such transfer or disposition during the Restricted Period (other than a required filing on a Schedule 13F or 13G); (iv) transfer, or surrender, to us shares of our common stock (A) pursuant to any contractual arrangement that provides us with an option to repurchase such shares of common stock in connection with the termination of the applicable executive officer, director or shareholder's employment or other service relationship with us, (B) to cover tax withholdings upon a vesting event of any equity award granted under any stock incentive plan or stock purchase plan described in this registration statement or (C) in connection with the "cashless" exercise by the applicable executive officer, director or shareholder of an option to purchase shares of our common stock that will expire during the Restricted Period and that was granted under any of our stock incentive plan or stock purchase plan described in this registration statement (the term "cashless" exercise meaning the surrender of a portion of the option shares to us to cover payment of the exercise price), provided that any filing under Section 16 of the Exchange Act with regard to (A), (B) or (C) shall clearly indicate in the footnotes thereto that the filing relates to the circumstances described in (A), (B) or (C) above, as the case may be, and no other public announcement shall be required or shall be made voluntarily in connection with such transfer or surrender; and (v) transfer or dispose shares of our common stock by operation of law pursuant to a qualified domestic order or in connection with a divorce settlement, provided that the recipient of such shares shall execute and deliver to the Representatives a lock-up letter in the same form as the lock-up agreement, provided, further that any filing under Section 16 of the Exchange Act shall clearly indicate in the footnotes thereto that the filing relates to the circumstances described in (v) above and no other public announcement shall be required or shall be made voluntarily in connection with such transfer or disposition.

Further, the lock-up agreements do not restrict any sale, disposal or transfer of shares of our common stock to a bona fide third party pursuant to a tender offer for our securities or any merger, consolidation or other business combination involving a change of control of us occurring after the settlement of this offering, that, in each case, has been approved by our board of directors; provided that all of shares of our common stock subject to the lock-up agreements that are not so transferred, sold, tendered or otherwise disposed of remain subject to the restrictions therein; and provided, further, that it shall be a condition of transfer, sale, tender or other disposition that if such tender offer or other transaction is not completed, any of shares of our common stock subject to the lock-up agreement shall remain subject to the restrictions described above.

In addition, the lockup restrictions described above do not apply to us with respect to certain customary transactions, including in connection with our issuance of up to 5% of our outstanding shares of common stock immediately following the closing of this offering in acquisitions or other similar strategic transactions.

Prior to the offering, there has been no public market for the shares. The initial public offering price was negotiated among the representatives and us. Among the factors considered in determining the initial public offering price of the shares, in addition to prevailing market conditions, was our historical performance, estimates of our business potential and earnings prospects, an assessment of our management and the consideration of the above factors in relation to market valuation of companies in related businesses.

We have applied to list our common stock on The Nasdaq Global Select Market under the symbol “UBX.”

In connection with the offering, the underwriters may purchase and sell shares of common stock in the open market. These transactions may include short sales, stabilizing transactions and purchases to cover positions created by short sales. Short sales involve the sale by the underwriters of a greater number of shares than they are required to purchase in the offering, and a short position represents the amount of such sales that have not been covered by subsequent purchases. A “covered short position” is a short position that is not greater than the amount of additional shares for which the underwriters’ option described above may be exercised. The underwriters may cover any covered short position by either exercising their option to purchase additional shares or purchasing shares in the open market. In determining the source of shares to cover the covered short position, the underwriters will consider, among other things, the price of shares available for purchase in the open market as compared to the price at which they may purchase additional shares pursuant to the option described above. “Naked” short sales are any short sales that create a short position greater than the amount of additional shares for which the option described above may be exercised. The underwriters must cover any such 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 the offering. Stabilizing transactions consist of various bids for or purchases of common stock made by the underwriters in the open market prior to the completion of the offering.

The underwriters may also impose a penalty bid. This occurs when a particular underwriter repays to the underwriters a portion of the underwriting discount received by it, because the representatives have repurchased shares sold by or for the account of such underwriter in stabilizing or short covering transactions.

Purchases to cover a short position and stabilizing transactions, as well as other purchases by the underwriters for their own accounts, may have the effect of preventing or retarding a decline in the market price of our stock, and together with the imposition of the penalty bid, may stabilize, maintain or

otherwise affect the market price of the common stock. As a result, the price of the common stock may be higher than the price that otherwise might exist in the open market. The underwriters are not required to engage in these activities and may end any of these activities at any time. These transactions may be effected on The Nasdaq Global Select Market, in the over-the-counter market or otherwise.

Directed Share Program

Certain friends and family of our directors and officers and certain of our other employees and their friends and family have agreed to purchase 109,200 shares of our common stock in this offering at the initial public offering price in a directed share program. The underwriters will receive the same underwriting discount on the shares purchased by these persons and entities as they will on the other shares sold to the public in 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 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 our common stock may be made at any time under the following exemptions under the Prospectus Directive:

a) to any legal entity which is a qualified investor as defined in the Prospectus Directive;

b) to fewer than 150 natural or legal persons (other than qualified investors as defined in 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 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 our common stock to be offered so as to enable an investor to decide to purchase 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 (as amended), including by Directive 2010/73/EU and includes any relevant implementing measure in the Relevant Member State.

This European Economic Area selling restriction is in addition to any other selling restrictions set out below.

United Kingdom

In the United Kingdom, this prospectus is only addressed to and directed as qualified investors who are (i) investment professionals falling within Article 19(5) of the Financial Services and Markets Act 2000 (Financial Promotion) Order 2005 (the Order); or (ii) high net worth entities and other persons to whom it may lawfully be communicated, falling within Article 49(2)(a) to (d) of the Order (all such persons together being referred to as “relevant persons”). Any investment or investment activity to which this prospectus relates is available only to relevant persons and will only be engaged with

relevant persons. Any person who is not a relevant person should not act or relay on this prospectus or any of its contents.

Canada

The common stock may be sold in Canada 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 the common stock must be made in accordance with an exemption form, 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 of these rights or consult with a legal advisor.

Pursuant to section 3A.3 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.

Hong Kong

The common stock may not be offered or sold in Hong Kong by means of any document other than (i) in circumstances which do not constitute an offer to the public within the meaning of the Companies (Winding Up and Miscellaneous Provisions) Ordinance (Cap. 32 of the Laws of Hong Kong), or Companies (Winding Up and Miscellaneous Provisions) Ordinance, or which do not constitute an invitation to the public within the meaning of the Securities and Futures Ordinance (Cap. 571 of the Laws of Hong Kong), or Securities and Futures Ordinance, or (ii) to "professional investors" as defined in the Securities and Futures Ordinance and any rules made thereunder, or (iii) in other circumstances which do not result in the document being a "prospectus" as defined in the Companies (Winding Up and Miscellaneous Provisions) Ordinance, and no advertisement, invitation or document relating to the shares may be issued or may be in the possession of any person for the purpose of issue (in each case 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 in Hong Kong (except if permitted to do so under the securities laws of Hong Kong) other than with respect to shares of common stock which are or are intended to be disposed of only to persons outside Hong Kong or only to "professional investors" in Hong Kong as defined in the Securities and Futures Ordinance and any rules made thereunder.

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 the common stock may not be circulated or distributed, nor may the common stock 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 (i) to an institutional investor (as defined under Section 4A of the Securities and Futures Act, Chapter 289 of Singapore, or the SFA, under Section 274 of the SFA, (ii) to a relevant person (as defined in Section 275(2) of the SFA) pursuant to Section 275(1) of the SFA, or any person pursuant to

Section 275(1A) of the SFA, and in accordance with the conditions specified in Section 275 of the SFA or (iii) otherwise pursuant to, and in accordance with the conditions of, any other applicable provision of the SFA, in each case subject to conditions set forth in the SFA.

Where the shares of common stock are subscribed or purchased under Section 275 of the SFA by a relevant person which is 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, the securities (as defined in Section 239(1) of the SFA) of that corporation shall not be transferable for 6 months after that corporation has acquired the common stock under Section 275 of the SFA except: (1) to an institutional investor under Section 274 of the SFA or to a relevant person (as defined in Section 275(2) of the SFA), (2) where such transfer arises from an offer in that corporation's securities pursuant to Section 275(1A) of the SFA, (3) where no consideration is or will be given for the transfer, (4) where the transfer is by operation of law, (5) as specified in Section 276(7) of the SFA, or (6) as specified in Regulation 32 of the Securities and Futures (Offers of Investments) (Shares and Debentures) Regulations 2005 of Singapore, or Regulation 32.

Where the shares of common stock are subscribed or purchased under Section 275 of the SFA by a relevant person which is a trust (where the trustee is not an accredited investor (as defined in Section 4A of the SFA)) whose sole purpose is to hold investments and each beneficiary of the trust is an accredited investor, the beneficiaries' rights and interest (howsoever described) in that trust shall not be transferable for 6 months after that trust has acquired the common stock under Section 275 of the SFA except: (1) to an institutional investor under Section 274 of the SFA or to a relevant person (as defined in Section 275(2) of the SFA), (2) where such transfer arises from an offer that is made on terms that such rights or interest are acquired at a consideration of not less than S$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), (3) where no consideration is or will be given for the transfer, (4) where the transfer is by operation of law, (5) as specified in Section 276(7) of the SFA, or (6) as specified in Regulation 32.

Japan

The common stock has not been and will not be registered under the Financial Instruments and Exchange Act of Japan (Act No. 25 of 1948, as amended), or the FIEA. The common stock may not be offered or sold, directly or indirectly, in Japan or to or for the benefit of any resident of Japan (including any person resident in Japan or any corporation or other entity organized under the laws of Japan) or to others for reoffering or resale, 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 of the FIEA and otherwise in compliance with any relevant laws and regulations of Japan.

We estimate that our share of the total expenses of the offering, excluding underwriting discounts and commissions, will be approximately $3,000,000. We will agree to reimburse the underwriters for expenses related to any applicable state securities filings and to the Financial Industry Regulatory Authority incurred by them in connection with this offering in an amount up to $45,000.

We will agree to indemnify the several underwriters against certain liabilities, including liabilities under the Securities Act.

The underwriters and their respective affiliates are full service financial institutions engaged in various activities, which may include sales and trading, commercial and investment banking, advisory, investment management, investment research, principal investment, hedging, market making,

brokerage and other financial and non-financial activities and services. Certain of the underwriters and their respective affiliates have provided, and may in the future provide, a variety of these services to the issuer and to persons and entities with relationships with the issuer, for which they received or will receive customary fees and expenses.

In the ordinary course of their various business activities, the underwriters and their respective affiliates, officers, directors and employees may purchase, sell or hold a broad array of investments and actively traded securities, derivatives, loans, commodities, currencies, credit default swaps and other financial instruments for their own account and for the accounts of their customers, and such investment and trading activities may involve or relate to assets, securities and/or instruments of the issuer (directly, as collateral securing other obligations or otherwise) and/or persons and entities with relationships with the issuer. The underwriters and their respective affiliates may also communicate independent investment recommendations, market color or trading ideas and/or publish or express independent research views in respect of such assets, securities or instruments and may at any time hold, or recommend to clients that they should acquire, long and/or short positions in such assets, securities and instruments.

LEGAL MATTERS

The validity of the issuance of our common stock offered in this prospectus will be passed upon for us by Latham & Watkins LLP, 140 Scott Drive, Menlo Park, California. Davis Polk & Wardwell LLP, Menlo Park, California, is acting as counsel for the underwriters in connection with this offering.

EXPERTS

Ernst & Young LLP, independent registered public accounting firm, has audited our financial statements and related notes at December 31, 2016 and 2017, and for each of the two years in the period ended December 31, 2017, as set forth in their report. We have included our financial statements and related notes in this prospectus and elsewhere in the registration statement in reliance on Ernst & Young LLP's report, given on their authority as experts in accounting and auditing.

WHERE YOU CAN FIND MORE INFORMATION

We have filed with the SEC a registration statement on Form S-1 under the Securities Act with respect to the shares of common stock offered hereby. This prospectus, which constitutes a part of the registration statement, does not contain all of the information set forth in the registration statement or the exhibits and schedules filed therewith. For further information with respect to Unity Biotechnology, Inc. and the common stock offered hereby, reference is made to the registration statement and the exhibits and schedules filed therewith. Statements contained in this prospectus regarding the contents of any contract or any other document that is filed as an exhibit to the registration statement are not necessarily complete, and each such statement is qualified in all respects by reference to the full text of such contract or other document filed as an exhibit to the registration statement. A copy of the registration statement and the exhibits and schedules filed therewith may be inspected without charge at the public reference room maintained by the SEC, located at 100 F Street N.E., Room 1580, Washington, D.C. 20549, and copies of all or any part of the registration statement may be obtained from such offices upon the payment of the fees prescribed by the SEC. Please call the SEC at 1-800-SEC-0330 for further information about the public reference room. The SEC also maintains a website that contains reports, proxy and information statements and other information regarding registrants that file electronically with the SEC. The address is www.sec.gov.

Upon consummation of this offering, we will become subject to the information and periodic reporting requirements of the Exchange Act and, in accordance therewith, will file periodic reports, proxy statements and other information with the SEC. Such periodic reports, proxy statements and other information will be available for inspection and copying at the public reference room and website of the SEC referred to above. We maintain a website at www.unitybiotechnology.com. Upon consummation of this offering, you may access 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 with the SEC free of charge at our website as soon as reasonably practicable after such material is electronically filed with, or furnished to, the SEC. The reference to our website address does not constitute incorporation by reference of the information contained on our website, and you should not consider the contents of our website in making an investment decision with respect to our common stock.

UNITY BIOTECHNOLOGY, INC.

Index to Financial Statements
Years Ended December 31, 2016 and 2017

Report of Independent Registered Public Accounting Firm

To the Stockholders and the Board of Directors of
Unity Biotechnology, Inc.

Opinion on the Financial Statements

We have audited the accompanying balance sheets of Unity Biotechnology, Inc. (the Company) as of December 31, 2016 and 2017, and related statements of operations and comprehensive loss, statements of convertible preferred stock and stockholders' deficit and cash flows for the years then ended, and the related notes (collectively referred to as the "financial statements"). In our opinion, the financial statements present fairly, in all material respects, the financial position of the Company at December 31, 2016 and 2017, and the results of its operations and its cash flows for the years then ended in conformity with U.S. generally accepted accounting principles.

Basis for Opinion

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

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

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

/s/ Ernst & Young LLP

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

Redwood City, California
March 1, 2018,
except for Note 17, and the retroactive effect of the 1-for-2.95 reverse stock split as described in Note 2, as to which the date is April 20, 2018

UNITY BIOTECHNOLOGY, INC.

Balance Sheets
(in thousands, except share and per share amounts)

	December 31,		Pro forma Stockholders' Equity as of December 31, 2017
	2016	2017	(Unaudited)
Assets			
Current assets:			
Cash and cash equivalents	$ 89,286	$ 7,298	
Contribution receivable	—	1,382	
Short-term marketable securities	—	79,212	
Prepaid expenses and other current assets	4,123	988	
Total current assets	93,409	88,880	
Property and equipment, net	2,248	6,958	
Long-term marketable securities	—	5,118	
Restricted cash	450	550	
Other long-term assets	541	518	
Total assets	$ 96,648	$102,024	
Liabilities, Convertible Preferred Stock, and Stockholders' (Deficit) Equity			
Current liabilities:			
Accounts payable	$ 964	$ 2,378	
Accrued compensation	574	2,181	
Accrued and other current liabilities	2,153	3,338	
Total current liabilities	3,691	7,897	
Deferred rent, net of current portion	3,404	3,166	
Other non-current liabilities	—	118	
Total liabilities	7,095	11,181	
Commitments and contingencies (Note 8)			
Convertible preferred stock, $0.0001 par value; 79,739,149 and 91,739,149 shares authorized as of December 31, 2016 and 2017, respectively; 24,620,615 and 28,159,724 shares issued and outstanding as of December 31, 2016 and 2017, respectively; aggregate liquidation preference of $147,915 and $190,825 as of December 31, 2016 and 2017, respectively; no shares issued and outstanding, pro forma (unaudited)	131,089	173,956	$ —
Stockholders' (deficit) equity:			
Common stock, $0.0001 par value; 110,000,000 and 122,000,000 shares authorized as of December 31, 2016 and 2017, respectively; 4,303,538 and 4,830,389 shares issued and outstanding as of December 31, 2016 and 2017, respectively; 32,990,113 shares issued and outstanding as of December 31, 2017, pro forma (unaudited)	1	1	3
Additional paid-in capital	889	4,072	178,026
Related party promissory notes for purchase of common stock	(202)	(202)	(202)
Accumulated other comprehensive loss	—	(104)	(104)
Accumulated deficit	(42,224)	(86,880)	(86,880)
Total stockholders' (deficit) equity	(41,536)	(83,113)	$ 90,843
Total liabilities, convertible preferred stock, and stockholders' (deficit) equity	$ 96,648	$102,024	

See accompanying notes to the financial statements.

UNITY BIOTECHNOLOGY, INC.

Statements of Operations and Comprehensive Loss
(in thousands, except share and per share amounts)

	Year ended December 31,	
	2016	2017
Contribution revenue	$ —	$ 1,382
Operating expenses:		
Research and development	13,707	37,373
General and administrative	5,137	9,617
Total operating expenses	18,844	46,990
Loss from operations	$ (18,844)	$ (45,608)
Loss on extinguishment of promissory notes	(9,377)	—
Interest income (expense), net	(2,183)	1,055
Other expense, net	—	(103)
Net loss	$ (30,404)	$ (44,656)
Other comprehensive loss		
Unrealized loss on marketable securities, net of tax	—	(104)
Comprehensive loss	$ (30,404)	$ (44,760)
Net loss per share, basic and diluted	$ (11.42)	$ (13.97)
Weighted average number of shares used in computing net loss per share, basic and diluted	2,662,841	3,197,516
Pro forma net loss per share, basic and diluted (unaudited)		$ (1.49)
Weighted average number of shares used in computing pro forma net loss per share, basic and diluted (unaudited)		30,039,385

See accompanying notes to the financial statements.

UNITY BIOTECHNOLOGY, INC.

Statements of Convertible Preferred Stock and Stockholders' Deficit
(in thousands, except share amounts)

	Convertible Preferred Stock		Common Stock		Additional Paid-In Capital	Related Party Promissory Notes for Purchase of Common Stock	Accumulated Other Comprehensive Loss	Accumulated Deficit	Total Stockholders' Deficit
	Shares	Amount	Shares	Amount					
Balances at December 31, 2015	**8,713,925**	**$ 7,579**	**2,054,204**	**$ 1**	**$ 123**	**$ (49)**	**$ —**	**$ (11,820)**	**$ (11,745)**
Issuance of Series A-2 convertible preferred stock at $0.876 per share for cash, net of issuance costs of $1	4,671,430	4,092	—	—	—	—	—	—	—
Issuance of Series B convertible preferred stock at $12.125 per share for cash, net of issuance costs of $214	11,235,260	119,418	—	—	—	—	—	—	—
Issuance of common stock upon exercise of stock options, net of amount related to early exercised options of $408	—	—	1,436,902	—	38	—	—	—	38
Vesting of early exercised options	—	—	—	—	58	—	—	—	58
Issuance of restricted stock	—	—	76,271	—	—	—	—	—	—
Common stock granted to third parties	—	—	736,161	—	446	—	—	—	446
Stock-based compensation	—	—	—	—	224	—	—	—	224
Receipt of promissory note from related party for purchase of common stock	—	—	—	—	—	(153)	—	—	(153)
Net loss	—	—	—	—	—	—	—	(30,404)	(30,404)
Balances at December 31, 2016	**24,620,615**	**$131,089**	**4,303,538**	**$ 1**	**$ 889**	**$ (202)**	**$ —**	**$ (42,224)**	**$ (41,536)**
Issuance of Series B convertible preferred stock at $12.125 per share for cash, net of issuance costs of $43	3,539,109	42,867	—	—	—	—	—	—	—
Issuance of common stock upon exercise of stock options, net of amount related to early exercised options of $5	—	—	43,727	—	8	—	—	—	8
Vesting of early exercised options	—	—	—	—	97	—	—	—	97
Issuance of restricted stock	—	—	625,931	—	—	—	—	—	—
Common stock granted to third party	—	—	12,711	—	44	—	—	—	44
Stock-based compensation	—	—	—	—	3,034	—	—	—	3,034
Unrealized loss on marketable securities, net of tax	—	—	—	—	—	—	(104)	—	(104)
Repurchase of early exercised shares of common stock	—	—	(155,518)	—	—	—	—	—	—
Net loss	—	—	—	—	—	—	—	(44,656)	(44,656)
Balances at December 31, 2017	**28,159,724**	**$173,956**	**4,830,389**	**$ 1**	**$ 4,072**	**$ (202)**	**$ (104)**	**$ (86,880)**	**$ (83,113)**

See accompanying notes to the financial statements.

UNITY BIOTECHNOLOGY, INC.

Statements of Cash Flows
(in thousands)

	Year Ended December 31, 2016	2017
Operating activities		
Net loss	$ (30,404)	$ (44,656)
Adjustments to reconcile net loss to net cash used in operating activities:		
Depreciation and amortization	153	1,304
Loss on sale of equipment	—	15
Amortization of premium and discounts on marketable securities	—	182
Stock-based compensation	224	3,034
Loss on extinguishment of promissory notes	9,377	—
Non-cash interest expense	2,223	—
Common stock granted to third party	447	44
Accretion of tenant improvement allowance	(403)	(605)
Changes in operating assets and liabilities:		
Contribution receivable	—	(1,382)
Prepaid expenses and other current assets	(229)	(746)
Other long-term assets	(41)	23
Accounts payable	198	1,198
Accrued compensation	504	1,607
Accrued liabilities and other current liabilities	1,046	1,258
Deferred rent, net of current portion	27	366
Other non-current liabilities	480	—
Net cash used in operating activities	(16,398)	(38,358)
Investing activities		
Purchase of marketable securities	—	(134,465)
Maturities of marketable securities	—	49,849
Purchase of cost method investment	(500)	—
Purchase of property and equipment	(2,244)	(1,689)
Net cash used in investing activities	(2,744)	(86,305)
Financing activities		
Proceeds from issuance of convertible promissory notes payable	16,887	—
Proceeds from issuance of convertible preferred stock, net of issuance costs	90,956	42,867
Proceeds from issuance of common stock upon exercise of stock options, net of repurchases	95	(37)
Payments made on capital lease obligations	—	(55)
Net cash provided by financing activities	107,938	42,775
Net increase (decrease) in cash, cash equivalents and restricted cash	88,796	(81,888)
Cash, cash equivalents and restricted cash at beginning of year	940	89,736
Cash, cash equivalents and restricted cash at end of year	$ 89,736	$ 7,848
Supplemental Disclosures of Non-Cash Investing and Financing Information		
Conversion and settlement of convertible notes and accrued interest into convertible preferred stock	$ 15,667	$ —
Property and equipment included in accounts payable	$ 98	$ 314
Property and equipment acquired under capital leases	$ —	$ 243
Lessor funded lease incentives included in property and equipment	$ —	$ 3,881
Receipt of promissory note from related party for purchase of common stock	$ 153	$ —

See accompanying notes to the financial statements.

UNITY BIOTECHNOLOGY, INC.
NOTES TO THE FINANCIAL STATEMENTS

1. Organization and Liquidity Risks

Description of Business

Unity Biotechnology, Inc. (the "Company") is a biotechnology company engaged in the research and development of therapeutics to extend the human healthspan. The Company devotes substantially all of its time and efforts to performing research and development, raising capital and recruiting personnel. The Company is located in Brisbane, California and was incorporated in the state of Delaware in March 2009 under the name Forge, Inc. The Company changed its name to Unity Biotechnology, Inc. in January 2015.

Need for Additional Capital

The accompanying financial statements have been prepared assuming that the Company will continue as a going concern. Since inception, the Company has incurred net losses and negative cash flows from operations. During the year ended December 31, 2017, the Company incurred a net loss of $44.7 million and used $38.4 million of cash in operations. At December 31, 2017, the Company had an accumulated deficit of $86.9 million and does not expect positive cash flows from operations in the foreseeable future. The Company has historically financed its operations primarily through the issuance and sale of convertible preferred stock and convertible promissory notes. To date, none of the Company's drug candidates have been approved for sale and therefore the Company has not generated any revenue from contracts with customers. The Company has evaluated and concluded there are no conditions or events, considered in the aggregate, that raise substantial doubt about the Company's ability to continue as a going concern for a period of one year following the date that these financial statements are issued. Management expects operating losses to continue for the foreseeable future. As a result, the Company will need to raise additional capital. If sufficient funds on acceptable terms are not available when needed, the Company could be required to significantly reduce its operating expenses and delay, reduce the scope of, or eliminate one or more of its development programs. Failure to manage discretionary spending or raise additional financing, as needed, may adversely impact the Company's ability to achieve its intended business objectives.

2. Summary of Significant Accounting Policies

Basis of Presentation

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

Reverse Stock Split

On April 19, 2018, the Company's board of directors approved an amendment to the Company's amended and restated certificate of incorporation to effect a 1-for-2.95 reverse split ("Reverse Split") of shares of the Company's common and convertible preferred stock, which was effected on April 20, 2018. The par value and authorized shares of common stock and convertible preferred stock were not adjusted as a result of the Reverse Split. All of the share and per share information included in the accompanying financial statements has been adjusted to reflect the Reverse Split.

UNITY BIOTECHNOLOGY, INC.
NOTES TO THE FINANCIAL STATEMENTS

Unaudited Pro Forma Information

Immediately prior to the completion of this offering, all outstanding shares of convertible preferred stock will convert into common stock. Unaudited pro forma balance sheet information as of December 31, 2017 assumes the conversion of all outstanding convertible preferred stock into shares of common stock. The shares of common stock issuable and the proceeds expected to be received in the initial public offering ("IPO") are excluded from such pro forma financial information. Pro forma basic and diluted net loss per share has been computed to give effect to the conversion of all outstanding convertible preferred stock into shares of common stock. The unaudited pro forma net loss per share for the year ended December 31, 2017 was computed using the weighted-average number of shares of common stock outstanding, including the pro forma effect of the conversion of all outstanding shares of convertible preferred stock into shares of common stock, as if such conversion had occurred at the beginning of the period, or their issuance dates if later. Pro forma net loss per share does not include the shares expected to be sold and related proceeds to be received from the IPO.

Use of Estimates

The preparation of financial statements in conformity with GAAP requires management to make estimates and assumptions that affect the amounts reported in the financial statements and accompanying notes. The Company bases its estimates on historical experience and market-specific or other relevant assumptions that it believes are reasonable under the circumstances. The amounts of assets and liabilities reported in the Company's balance sheets and the amount of expenses and income reported for each of the periods presented are affected by estimates and assumptions, which are used for, but are not limited to, determining the fair value of assets and liabilities, common stock valuation, and stock-based compensation. Actual results could differ from such estimates or assumptions.

Segments

The Company has one operating segment. The Company's chief operating decision maker, its Chief Executive Officer, manages the Company's operations on a consolidated basis for the purposes of allocating resources.

Cash, Cash Equivalents and Restricted Cash

The Company considers all highly liquid investments with original maturities of 90 days or less from the date of purchase to be cash equivalents. Cash equivalents primarily include money market funds that invest in U.S. Treasury obligations which are stated at fair value.

The Company has issued a letter of credit under a lease agreement which has been collateralized. This cash is classified as noncurrent restricted cash on the balance sheet based on the term of the underlying lease.

UNITY BIOTECHNOLOGY, INC.
NOTES TO THE FINANCIAL STATEMENTS

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

	December 31,	
	2016	2017
	(in thousands)	
Cash and cash equivalents	$89,286	$7,298
Restricted cash	450	550
Total cash, cash equivalents, and restricted cash	$89,736	$7,848

Marketable Securities

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

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

Fair Value of Financial Instruments

The Company's financial instruments during the periods presented consist of cash and cash equivalents, restricted cash, contribution receivable, marketable securities, prepaid expenses and other current assets, accounts payable, accrued compensation, accrued and other current liabilities. Fair value estimates of these instruments are made at a specific point in time, based on relevant market information. These estimates may be subjective in nature and involve uncertainties and matters of significant judgment.

The Company elected the fair value option to account for certain convertible promissory notes that were issued and settled during the year ended December 31, 2016.

UNITY BIOTECHNOLOGY, INC.
NOTES TO THE FINANCIAL STATEMENTS

Concentrations of Risk

Financial instruments that potentially subject the Company to significant concentrations of credit risk consist primarily of cash, cash equivalents, restricted cash, marketable securities and contribution receivable. Substantially all of the Company's cash and cash equivalents and restricted cash is deposited in accounts with financial institutions that management believes are of high credit quality. Such deposits have and will continue to exceed federally insured limits. The Company maintains its cash with accredited financial institutions and accordingly, such funds are subject to minimal credit risk. The Company has not experienced any losses on its cash deposits. The contribution receivable is unsecured and is concentrated with one third-party organization, and accordingly the Company may be exposed to credit risk. To date, the Company has not experienced any loss related to its contributions receivable.

The Company's investment policy limits investments to certain types of securities issued by the U.S. government, its agencies and institutions with investment-grade credit ratings and places restrictions on maturities and concentration by type and issuer. The Company is exposed to credit risk in the event of a default by the financial institutions holding its cash, cash equivalents, restricted cash and marketable securities and issuers of marketable securities to the extent recorded on the balance sheets. As of December 31, 2017, the Company had no off-balance sheet concentrations of credit risk.

The Company depends on third-party suppliers for key raw materials used in its manufacturing processes and is subject to certain risks related to the loss of these third-party suppliers or their inability to supply the Company with adequate raw materials.

Contribution Revenue and Receivables

The Company recognizes contribution revenue related to the receipt of cash from third-party resource providers not considered to be customers and where the transfer of assets is not an exchange transaction or financing of research and development. Contribution revenue and related receivables are recognized for conditional contributions as the conditions related to the contribution are relieved.

Research and Development Expenses

Costs related to research, design and development of drug candidates are charged to research and development expense as incurred. Research and development costs include, but are not limited to, payroll and personnel expenses for personnel contributing to research and development activities, laboratory supplies, outside services, licenses acquired to be used in research and development and allocated overhead, including rent, equipment, depreciation and utilities. Payments made prior to the receipt of goods or services to be used in research and development are deferred and recognized as expense in the period in which the related goods are received or services are rendered.

The Company has entered and may continue to enter into license agreements to access and utilize certain technology. In each case, the Company evaluates if the license agreement results in the acquisition of an asset or a business. To date none of the Company's license agreements have been considered to be the acquisition of a business. For asset acquisitions, the upfront payments to acquire such licenses, as well as any future milestone payments made before product approval, are immediately recognized as research and development expense when due, provided there is no alternative future use of the rights in other research and development projects. These license

agreements may also include contingent consideration in the form of cash and additional issuances of the Company's common stock. The Company assesses whether such contingent consideration meets the definition of a derivative. To date, the Company has determined that such contingent consideration are not derivatives. The Company continuously reassesses this determination until such time that the contingency is met or expires.

Property and Equipment, Net

Property and equipment are stated at cost, less accumulated depreciation. Depreciation is calculated using the straight-line method over the estimated useful lives of the respective assets, generally three years. Leasehold improvements are amortized on a straight-line basis over the shorter of their estimated useful lives or the term of the lease. Depreciation and amortization begins at the time the asset is placed in service. Maintenance and repairs are charged to expense as incurred and costs of improvement are capitalized.

Impairment of Long-Lived Assets

The Company evaluates long-lived assets for impairment whenever events or changes in circumstances indicate that the carrying value of an asset may not be fully recoverable. If indicators of impairment exist and the undiscounted future cash flows that the assets are expected to generate are less than the carrying value of the assets, the Company reduces the carrying amount of the assets through an impairment charge, to their estimated fair values based on a discounted cash flow approach or, when available and appropriate, to comparable market values. No impairment losses have been recorded for the periods presented.

Cost Method Investment

The Company holds an equity interest in a privately held clinical-stage biopharmaceutical company. For this cost method investment, if an impairment has occurred, the carrying value of the cost method investment is written down to the current fair value, with a corresponding charge to the statement of operations. The Company bases its review on a number of factors including, but not limited to, the severity and duration of the decline in fair value of the cost method investment as well as the cause of the decline, the Company's ability and intent to hold the security for a sufficient period of time to allow for a recovery in value, and the financial condition and near-term prospects of the privately held company, taking into consideration the economic prospects of its industry and geographical location. No impairment was identified during the years ended December 31, 2016 and 2017.

Leases

The Company leases office space and laboratory facilities under non-cancelable operating lease agreements and recognizes related rent expense on a straight-line basis over the term of the lease. Incentives granted under the Company's facilities lease, including allowances to fund leasehold improvements and rent holidays, and are recognized as reductions to rental expense on a straight-line basis over the term of the lease. Lessor funded leasehold improvement incentives not yet received are recorded in prepaid expense and other current assets on the balance sheet. The Company does not assume renewals in its determination of the lease term unless they are deemed to be reasonably assured at the inception of the lease and begins recognizing rent expense on the date that it obtains the legal right to use and control the leased space. Deferred rent consists of the difference between cash payments and the rent expense recognized.

UNITY BIOTECHNOLOGY, INC.
NOTES TO THE FINANCIAL STATEMENTS

The Company entered into capital lease agreements for certain equipment with a lease term of three years. The current portion of capital lease obligations is included in accrued and other liabilities and the noncurrent capital lease obligations is included in other noncurrent liabilities in the balance sheet.

Convertible Preferred Stock

The Company records all shares of convertible preferred stock at their respective issuance price less issuance costs on the dates of issuance. Upon the occurrence of certain change in control events that are outside the Company's control, including liquidation, sale or transfer of the Company, holders of the convertible preferred stock can cause redemption for cash. Therefore, convertible preferred stock is classified outside of stockholders' deficit on the balance sheet as events triggering the liquidation preferences are not solely within the Company's control. The carrying values of the convertible preferred stock are adjusted to their liquidation preferences when and if it becomes probable that such an event will occur.

Variable Interest Entities

The Company reviews agreements it enters into with third-party entities, pursuant to which the Company may have a variable interest in the entity, in order to determine if the entity is a variable interest entity ("VIE"). If the entity is a VIE, the Company assesses whether or not it is the primary beneficiary of that entity. In determining whether the Company is the primary beneficiary of an entity, the Company applies a qualitative approach that determines whether it has both (i) the power to direct the economically significant activities of the entity and (ii) the obligation to absorb losses of, or the right to receive benefits from, the entity that could potentially be significant to that entity. If the Company determines it is the primary beneficiary of a VIE, it consolidates the VIE into the Company's financial statements. The Company's determination about whether it should consolidate such VIEs is made continuously as changes to existing relationships or future transactions may result in a consolidation or deconsolidation event.

Stock-Based Compensation

The Company measures employee and director stock-based compensation expense for all stock-based awards based on their grant date fair value. For stock-based awards with service conditions only, stock-based compensation expense is recognized over the requisite service period using the straight-line method. For awards with performance conditions, the Company evaluates the probability of achieving performance condition at each reporting date. The Company begins to recognize stock-based compensation expense using an accelerated attribution method when it is deemed probable that the performance condition will be met. Forfeitures are recognized as they occur.

The Company uses the Black-Scholes option-pricing model to estimate the fair value of stock option awards that do not contain market conditions. The Black-Scholes option-pricing model requires assumptions to be made related to the expected term of an award, expected dividends, expected volatility and risk-free rate. The Company uses the Monte Carlo simulation models to estimate the fair value of stock option awards that contain market conditions. The Monte Carlo simulation models require the use of subjective and complex assumptions which determine the fair value of such awards including price volatility of the underlying stock and derived service periods.

The Company recognizes stock-based compensation expense for stock options granted to non-employees based on the estimated fair value of the award as it is more readily measurable than the fair

value of the services received. The fair value of stock options granted to non-employees is estimated at grant date and re-measured at each reporting period using the Black-Scholes option-pricing model until the awards vest and the resulting change in value, if any, is recognized in the statements of operations.

Income Taxes

The Company uses the asset and liability method of accounting for income taxes, in which deferred tax assets and liabilities are recognized for future tax consequences attributable to the differences between the financial statement carrying amounts of existing assets and liabilities and their respective tax bases. Deferred tax assets and liabilities are measured using the enacted tax rates expected to apply to taxable income in the years in which those temporary differences are expected to be reversed. The effect on deferred tax assets and liabilities of a change in tax rates is recognized as income in the period that includes the enactment date. A valuation allowance is established if it is more likely than not that all or a portion of the deferred tax asset will not be realized.

The Company's tax positions are subject to income tax audits. The Company recognizes the tax benefit of an uncertain tax position only if it is more likely than not that the position is sustainable upon examination by the taxing authority, based on the technical merits. The tax benefit recognized is measured as the largest amount of benefit which is more likely than not to be realized upon settlement with the taxing authority. The Company recognizes interest accrued and penalties related to unrecognized tax benefits in its tax provision. The Company evaluates uncertain tax positions on a regular basis. The evaluations are based on a number of factors, including changes in facts and circumstances, changes in tax law, correspondence with tax authorities during the course of the audit, and effective settlement of audit issues. The provision for income taxes includes the effects of any accruals that the Company believes are appropriate, as well as the related net interest and penalties.

On December 22, 2017, the Securities and Exchange Commission ("SEC") staff issued Staff Accounting Bulletin No. 118 ("SAB 118") to address the accounting implications of the U.S. federal tax reform enacted on December 22, 2017. SAB 118 allows a company to record provisional amounts during a measurement period not to extend beyond one year of the enactment date. See Note 16.

Net Loss per Common Share

Basic net loss per common share is computed by dividing the net loss by the weighted average number of common shares outstanding during the period, without consideration of common stock equivalents. Diluted net loss per common share is computed by dividing the net loss by the sum of the weighted average number of common shares outstanding during the period plus the potential dilutive effects of common stock equivalents outstanding during the period calculated in accordance with the treasury stock method. Diluted net loss per share attributable to common stockholders is the same as basic net loss per share attributable to common stockholders since the effect of potentially dilutive common stock equivalents is anti-dilutive.

Comprehensive Loss

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

UNITY BIOTECHNOLOGY, INC.
NOTES TO THE FINANCIAL STATEMENTS

Recently Issued Accounting Pronouncements

In May 2014, the Financial Accounting Standards Board ("FASB") issued Accounting Standards Update ("ASU") No. 2014-09 ("ASU 2014-09"), *Revenue from Contracts with Customers* (Topic 606), and further updated through ASU 2016-12 ("ASU 2016-12"), which amends the existing accounting standards for revenue recognition. For public business entities, this standard is effective for annual reporting periods beginning after December 15, 2017, including interim periods within that reporting period. For all other entities, this standard is effective for annual reporting periods beginning after December 15, 2018, and interim periods within annual periods beginning after December 15, 2019. Early adoption is permitted. Under Topic 606, an entity recognizes revenue when its customer obtains control of promised goods or services, in an amount that reflects the consideration which the entity expects to receive in exchange for those goods or services. To determine revenue recognition for arrangements that an entity determines are within the scope of Topic 606, the entity performs the following five steps: (i) identify the contract(s) with a customer; (ii) identify the performance obligations in the contract; (iii) determine the transaction price; (iv) allocate the transaction price to the performance obligations in the contract; and (v) recognize revenue when (or as) the entity satisfies a performance obligation. Topic 606 also impacts certain other areas, such as the accounting for costs to obtain or fulfill a contract. The standard also requires disclosure of the nature, amount, timing, and uncertainty of revenue and cash flows arising from contracts with customers. Effective January 1, 2017, the Company adopted Accounting Standards Codification, or ASC, Topic 606, *Revenue from Contracts with Customers* (Topic 606), using the full retrospective transition method. The adoption did not have any impact on the Company's financial statements as the Company has never had any revenue from contracts with customers.

In January 2017, the FASB issued ASU No. 2017-01, *Business Combinations (Topic 805): Clarifying the Definition of a Business*. This ASU clarifies the definition of a business when evaluating whether transactions should be accounted for as acquisitions (or disposals) of assets or businesses. The guidance is effective for public business entities for fiscal years beginning after December 15, 2017, and interim periods within those years. For all other entities, it is effective for fiscal years beginning after December 15, 2018, and interim periods within fiscal years beginning after December 15, 2019. Early adoption is permitted. The Company is currently evaluating the effect that this guidance will have on its financial statements.

In February 2016, the FASB issued ASU No. 2016-02 ("ASU 2016-02"), *Leases (Topic 842)*, which supersedes the guidance in former ASC 840, Leases. 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. 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. For public entities, this standard is effective for annual reporting periods beginning after December 15, 2018, including interim periods within that reporting period. For all other entities, this standard is effective for annual reporting periods beginning after December 15, 2019, and interim periods within annual periods beginning after December 15, 2020. Early adoption is permitted. The ASU is expected to impact the Company's financial statements as the Company has certain operating lease arrangements for which the Company is the lessee. Management is currently evaluating the impact the adoption of ASU 2016-02 will have on the Company's financial position and results of operations. Management expects that the adoption of this standard will result in the recognition of an

asset for the right to use the leased facility on the Company's balance sheet, as well as the recognition of a liability for the lease payments remaining on the lease. While the Company is currently evaluating the impact of the adoption of this standard on its financial statements, the Company anticipates the recognition of additional assets and corresponding liabilities on its balance sheet related to leases.

In May 2017, the FASB issued ASU 2017-09, *Compensation—Stock Compensation (Topic 718): Scope of Modification Accounting*, 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. For public entities, this standard is effective for fiscal years beginning after December 15, 2016, and interim periods within those fiscal years. For all other entities, it is effective for fiscal years beginning after December 15, 2017, and interim periods within fiscal years beginning after December 15, 2018, including interim periods within that reporting period. Early adoption is permitted. The Company is currently evaluating the impact of adopting this standard on the financial statements and disclosures, but does not expect it to have a significant impact.

In January 2016, the FASB issued ASU No. 2016-1, *Financial Instruments Overall (Subtopic 825-10): Recognition and Measurement of Financial Assets and Financial Liabilities*. This guidance makes amendments to the classification and measurement of financial instruments and revises the accounting related to: (1) the classification and measurement of investments in equity securities (except for investments accounted for under the equity method of accounting); and (2) the presentation of certain fair value changes for financial liabilities measured at fair value. In addition, the update also amends certain disclosure requirements associated with the fair value of financial instruments. The guidance is effective for public business entities in 2018. For all other calendar-year entities, it is effective for annual periods beginning in 2019 and interim periods beginning in 2020. Early adoptions of certain amendments within the update are permitted. The Company is currently evaluating the impact that the adoption of this guidance will have on its financial statements and related disclosures, including on the Company's cost method investment.

In August 2016, the FASB issued ASU No. 2016-15, *Statement of Cash Flows (Topic 230: Classification of Certain Cash Receipts and Cash Payments)*. This guidance addresses specific cash flow issues with the objective of reducing the diversity in practice for the treatment of these issues. The areas identified include: debt prepayment or debt extinguishment costs; settlement of zero-coupon debt instruments; contingent consideration payments made after a business combination; proceeds from the settlement of insurance claims; proceeds from the settlement of corporate-owned life insurance policies; distributions received from equity method investees; beneficial interests in securitization transactions; and application of the predominance principle with respect to separately identifiable cash flows. The guidance will generally be applied retrospectively and is effective for public business entities for fiscal years beginning after 15 December 2017, and interim periods within those years. For all other entities, it is effective for fiscal years beginning after 15 December 2018, and interim periods within fiscal years beginning after 15 December 2019. Early adoption is permitted. The Company is currently evaluating the effect that this guidance will have on its financial statements and related disclosures.

3. Fair Value Measurements

The Company determines the fair value of financial and non-financial assets and liabilities based on the assumptions that market participants would use in pricing the asset or liability in an orderly

transaction between market participants at the measurement date. The identification of market participant assumptions provides a basis for determining what inputs are to be used for pricing each asset or liability. A fair value hierarchy has been established which gives precedence to fair value measurements calculated using observable inputs over those using unobservable inputs. This hierarchy prioritized the inputs into three broad levels as follows:

- Level 1: Quoted prices in active markets for identical instruments
- Level 2: Other significant observable inputs (including quoted prices in active markets for similar instruments)
- Level 3: Significant unobservable inputs (including assumptions in determining the fair value of certain investments)

The carrying amounts of financial instruments such as cash and cash equivalents, restricted cash, contribution receivable, prepaid expenses and other current assets, accounts payable, accrued compensation, accrued and other current liabilities approximate the related fair values due to the short maturities of these instruments.

The fair value of the Company cost method investment is measured when it is deemed to be other-than-temporarily impaired.

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

	December 31, 2016			
	Total	Level 1	Level 2	Level 3
	(in thousands)			
Money market funds	$89,597	$89,597	$ —	$ —
Total	$89,597	$89,597	$ —	$ —

	December 31, 2017			
	Total	Level 1	Level 2	Level 3
	(in thousands)			
Money market funds	$ 5,709	$5,709	$ —	$ —
Short-term marketable securities:				
Commercial paper	6,359	—	6,359	—
Corporate debt securities	16,149	—	16,149	—
Asset-backed securities	14,588	—	14,588	—
U.S. government debt securities	42,116	—	42,116	—
Long-term marketable securities:				
Asset-backed securities	2,742	—	2,742	—
U.S. government debt securities	2,376	—	2,376	—
Total marketable securities	84,330	—	84,330	—
Total	$90,039	$5,709	$84,330	$ —

The Company estimates the fair value of its money market funds, commercial paper, corporate debt securities, asset-backed securities, and U.S. government debt securities taking into consideration valuations obtained from third-party pricing services. The pricing services utilize industry standard

valuation models, including both income and market-based approaches, for which all significant inputs are observable, either directly or indirectly, to estimate fair value. These inputs include reported trades of and broker/dealer quotes on the same or similar securities, issuer credit spreads; benchmark securities; prepayment/default projections based on historical data; and other observable inputs.

There were no transfers within the hierarchy during the years ended December 31, 2016 and 2017.

The grant date fair value of the Company's common stock has been determined by the Company's Board of Directors with the assistance of management and an independent third-party valuation specialist. The grant date fair value of the Company's common stock was determined using valuation methodologies which utilizes certain assumptions including probability weighting of events, volatility, time to liquidation, a risk-free interest rate and an assumption for a discount for lack of marketability (Level 3 inputs). In determining the fair value of the Company's common stock, the methodologies used to estimate the enterprise value of the Company were performed using methodologies, approaches, and assumptions consistent with the American Institute of Certified Public Accountants Accounting and Valuation Guide, *Valuation of Privately-Held-Company Equity Securities Issued as Compensation* ("AICPA Accounting and Valuation Guide").

4. Marketable Securities

The Company had no marketable securities as of December 31, 2016. Marketable securities consisted of the following as of December 31, 2017:

	December 31, 2017			
	Amortized Cost Basis	Unrealized Gains	Unrealized Losses	Fair Value
	(in thousands)			
Short-term marketable securities:				
Commercial paper	$ 6,369	$ —	$ (10)	$ 6,359
Corporate debt securities	16,162	—	(13)	16,149
Asset-backed securities	14,604	—	(16)	14,588
U.S. government debt securities	42,172	—	(56)	42,116
Total short-term marketable securities	79,307	—	(95)	79,212
Long-term marketable securities:				
Asset-backed securities	2,752	—	(10)	2,742
U.S. government debt securities	2,375	1	—	2,376
Total long-term marketable securities	5,127	1	(10)	5,118
Total marketable securities	$ 84,434	$ 1	$ (105)	$84,330

For the year ended December 31, 2017, the Company recognized no material realized gains or losses on marketable securities. There were gross unrealized losses on investments of $0.1 million with an aggregate fair value of $80.2 million for the year ended December 31, 2017. None of the Company's investments have been in an unrealized loss position for more than a year. Based on the scheduled maturities of its investments, the Company concluded that the unrealized losses in its investment securities are not other-than-temporary, as it is more likely than not that the Company will hold these investments for a period of time sufficient for a recovery of its cost basis. The maturities of the Company's long-term marketable securities generally range from one to two years.

UNITY BIOTECHNOLOGY, INC.
NOTES TO THE FINANCIAL STATEMENTS

5. License Agreements

License Agreements with Research Institutions

The Company has entered into license agreements with various research institutions which have provided the Company with rights to patents, and in certain cases, research "know-how" and proprietary research tools to research, develop and commercialize drug candidates. In addition to upfront consideration paid to these various research institutions in either cash or shares of the Company's common stock, the Company may be obligated to pay milestone payments specific to each agreement on achievement of certain specified clinical development and/or sales events. The milestone payments are in the form of cash payments or the issuance of additional shares of common stock. The aggregate number of additional shares of common stock issuable for these license agreements with research institutions is 72,881 shares. The Company is also obligated to pay low-single digit percentage tiered royalties based on sales of products commercialized from these agreements. The achievement of milestones is dependent on successful completion of clinical studies, FDA approval, and meeting certain sales thresholds. None of these events had occurred and no milestone or royalty payments have been recognized as of December 31, 2016 and 2017.

Prior to 2016, the Company issued an aggregate of 816,948 shares of its common stock as consideration for entering into these license agreements. In 2016, the Company issued an aggregate of 67,796 shares of its common stock as consideration for entering into these license agreements. The fair value of these shares, which was immaterial, was recorded as research and development expense when issued. The Company did not issue any equity instruments related to license agreements in 2017.

License and Compound Library and Option Agreement

In February 2016, the Company entered into a license agreement with a privately held clinical-stage biopharmaceutical company to research, develop, and seek and obtain marketing approval for a licensed compound. In February 2016, in conjunction with this license agreement, the Company also entered into a compound library and option agreement with the same biopharmaceutical company to identify compounds with potential utility in the treatment of age-related conditions other than indications in oncology. As part of these agreements, the Company issued 533,335 shares of common stock to the biopharmaceutical company and 133,333 shares of common stock to an academic institution who previously licensed technology to the biopharmaceutical company. The fair value of these shares recorded as research and development expense during the year ended December 31, 2016 was insignificant.

This license agreement included contingent consideration of up to 666,670 shares of additional common stock to be issued, up to $70.3 million of milestone payments based on achievement of certain specified clinical development and sales milestone events and tiered royalties in the low-single digits based on sales of licensed products. The milestones are achieved upon occurrence of events which include the filing of an investigational drug application, the commencement of clinical studies, and Food and Drug Administration and/or European Medicines Agency approval. As of December 31, 2016 and 2017, none of the milestones had been achieved and no royalties were due from the sales of licensed products.

In connection with the compound library and option agreement, the Company received an equity interest for 275,766 ordinary shares of an affiliate of the biopharmaceutical company at an aggregate

purchase price of $0.5 million, which represents an insignificant level of ownership in the entity and approximates the fair value of the shares received. The Company has a commitment to invest an additional $0.5 million in this entity in the future. The investment in ordinary shares has been recorded as a cost method investment in the Company's financial statements.

The Company also agreed to provide funding to the biopharmaceutical company for research and development work performed at a cost of up to $2.0 million through February 2020. During the years ended December 31, 2016 and 2017, the Company recorded $0.4 million and $0.5 million, respectively, in research and development expense under the research services agreement.

Under the consolidation guidance, the Company determined that the biopharmaceutical company is a VIE. The Company does not have the power to direct the activities that most significantly affect the economic performance of this entity and as such the Company is not the primary beneficiary and consolidation is not required.

As of December 31, 2016 and 2017, the Company has not provided financial, or other, support to the biopharmaceutical company that was not contractually required.

6. Contribution Arrangement

In July 2017, the Company entered an arrangement with a third-party organization under which the Company would be provided with up to $1.5 million of funding for the performance of certain research and development activities during the 90-day period following the arrangement in pursuit of the third-party organization's philanthropic mission. All conditions related to this contribution were met during 2017 and the Company recognized $1.4 million under this arrangement, which was recorded as contribution revenue in the statement of operations and a contribution receivable on the balance sheet.

7. Balance Sheet Components

Property and Equipment, Net

Property and equipment, net, consists of the following:

	December 31,	
	2016	2017
	(in thousands)	
Laboratory equipment	$1,073	$ 2,614
Computer equipment	35	137
Furniture and fixtures	6	105
Leasehold improvements	—	5,346
Total property and equipment	1,114	8,202
Less: accumulated depreciation and amortization	(166)	(1,470)
Construction in progress	1,300	226
Total property and equipment, net	$2,248	$ 6,958

Depreciation expense related to property and equipment was $0.2 million and $1.3 million for the years ended December 31, 2016 and 2017, respectively.

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Accrued and Other Current Liabilities

Accrued and other current liabilities consist of the following:

	December 31,	
	2016	2017
	(in thousands)	
Accrued research and development	$ 541	$2,105
Deferred rent, current portion	632	702
Professional fees	421	70
Accrued other	559	461
	$2,153	$3,338

8. Commitments and Contingencies

Indemnifications

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

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

Operating Lease

In May 2016, the Company executed a non-cancellable lease agreement for office and laboratory space in Brisbane, California which commenced in May 2016 and continues through October 2022. The lease agreement includes an escalation clause for increased rent and a renewal provision allowing the Company to extend this lease for an additional four years by giving the landlord written notice of the election to exercise the option at least fifteen months prior to the original expiration of the lease term. The lease provides for monthly base rent amounts escalating over the term of the lease and the lessor provided the Company a $3.9 million tenant improvement allowance to complete the laboratory and office renovation. The Company recorded the tenant improvement allowance as deferred rent liability and prepaid expenses and other current assets on the balance sheet at December 31, 2016 which was reclassified to leasehold improvement within property and equipment, net when realized in 2017. In May 2017, the Company entered into an amendment to expand the leased space and received a three-month rent holiday for the expanded space.

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As of December 31, 2017, the Company's future minimum payments under the noncancelable operating lease is as follows:

Year ending December 31,	Amount (in thousands)
2018	$ 1,846
2019	2,012
2020	2,072
2021	2,135
2022	1,621
Total future minimum lease payments	$ 9,686

Rent expense was $0.8 million and $2.0 million and for the years ended December 31, 2016 and 2017, respectively.

9. Related-Party Transactions

Recourse Notes

In December 2015, April 2016, and July 2016, the Company issued three full-recourse promissory notes to two executive officers for an aggregate principal amount of $0.2 million with an interest rate of 2.5% per annum. All of the principal was used to early exercise options for 667,253 shares of the Company's common stock, in aggregate.

In October 2017, the Company issued two promissory notes to an executive officer for $1.6 million and $0.5 million, each with an interest rate of 1.85% per annum. The aggregate principal amount of $2.1 million was used to purchase 625,084 shares of restricted stock. The promissory notes were considered to be non-recourse in substance and accordingly, the shares sold subject to such promissory notes are considered an option for accounting purposes. See further discussion in Note 12.

Financing Activities

During the year ended December 31, 2016, the Company issued convertible preferred stock and convertible notes for total proceeds of $32.8 million to shareholders and certain executive officers who are considered to be related parties. All of the convertible notes converted into shares of series B preferred stock during 2016. During the year ended December 31, 2017, the Company issued additional shares of Series B convertible preferred stock for total proceeds of $8.0 million to one of these related party shareholders.

Other

In 2017, the Company entered into a master services agreement with a significant shareholder who is considered a related party. The Company incurred a total of $0.6 million of research and development expenses during the year ended December 31, 2017 related to this agreement.

10. Convertible Notes

In June and November 2015, the Company issued convertible promissory notes (the "2015 Notes") for cash proceeds of $4.0 million. The 2015 Notes were unsecured, bore an interest rate of

UNITY BIOTECHNOLOGY, INC.
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5% per year, and had a maturity date of June 1, 2017. In February 2016, all the outstanding 2015 Notes and related accrued interest of $0.1 million was converted into an aggregate of 4,671,430 shares of the Company's Series A-2 convertible preferred stock at a conversion price of $0.876 per share pursuant to a voluntary conversion option.

In February, April, May, July, September and October 2016, the Company issued separate convertible promissory notes (the "2016 Notes") for cash proceeds of $16.9 million. The 2016 Notes were unsecured, bore an interest rate of 5% per year, and had a maturity date of December 31, 2017. The 2016 Notes issued in February, April, and May 2016, contained a contingent beneficial conversion feature that was subsequently bifurcated and resulted in a discount of $2.0 million that was allocated to these 2016 Notes and recognized as interest expense in the statement of operations upon conversion of the 2016 Notes. In October 2016, all of the outstanding 2016 Notes issued in February, April, and May 2016 and related accrued interest of $0.3 million was converted into an aggregate of 2,147,431 shares of the Company's Series B convertible preferred stock. Due to certain embedded features within the 2016 Notes issued in July, September and October 2016, the Company elected to account for these notes and all their embedded features under the fair value option. The Company recognized these July, September and October 2016 Notes at fair value, rather than at historical cost, with changes in fair value recorded in the statement of operations until October 2016 when the notes were extinguished in connection with the Series B convertible preferred stock financing. The Company recognized a $9.4 million loss on extinguishment based on the difference in the fair value of the 2016 Notes issued in July, September and October and the fair value of an aggregate of 1,568,237 shares of Series B convertible preferred stock for which these notes were settled.

11. Convertible Preferred Stock and Common Stock

Convertible Preferred Stock

The Company is authorized to and has issued two classes of stock: convertible preferred stock and common stock. Convertible preferred stock is carried at the issuance price, net of issuance costs.

In July 2013, the Company sold an aggregate of 2,887,086 shares of Series A-1 convertible preferred stock at $0.864 per share for gross proceeds of $2.0 million. From January 2014 through March 2015, the Company closed three tranches of Series A-2 convertible preferred stock financing and sold an aggregate of 5,826,839 shares of Series A-2 convertible preferred stock at $0.876 per share for gross proceeds of $4.9 million.

In February 2016, the Company closed the final tranche of Series A-2 convertible preferred stock financing by selling an aggregate of 4,671,430 shares of Series A-2 convertible preferred stock at $0.876 per share for gross proceeds of $4.0 million.

In October 2016, the Company closed the first tranche of its Series B round of financing by selling an aggregate of 7,519,592 shares of Series B convertible preferred stock at $12.125 per share for gross proceeds of $91.2 million, with an additional $9.0 million of Series B convertible preferred stock to be sold to two investors within 180 days of the first tranche closing at the issuance price per share of the Series B convertible preferred stock. The Company accounted for this issuance as forward options to issue shares at a fixed price. As the forward options expired in 180 days, and there was limited expected volatility in the Series B convertible preferred stock issuance price, the value of the forward options was considered immaterial at December 31, 2016. In March 2017, the Company issued an

aggregate of 659,821 shares of Series B convertible preferred stock at $12.125 per share for gross proceeds of $8.0 million in full settlement of one of the forward options while the other expired unexercised.

In June 2017, the Company closed the second and final tranche of its Series B convertible preferred stock round of financing by selling an aggregate of 2,879,288 shares of Series B convertible preferred stock at $12.125 per share for gross proceeds of $34.9 million.

Included in the terms of the Series B Preferred Stock Agreement were rights to purchase additional tranches of Series B convertible preferred stock under the same terms as those provided at the initial closing. The Company did not separately account for these tranche purchase rights as a forward option as neither the purchasers nor the Company had a commitment or obligation to purchase or sell additional shares until the tranche closing occurred.

The Company evaluated the other rights, preferences and privileges of each series of convertible preferred stock and concluded that there were (i) no freestanding derivative instruments, or (ii) any embedded derivatives requiring bifurcation, or (iii) the fair value of any such freestanding derivative instruments requiring bifurcation was insignificant.

Convertible preferred stock consisted of the following:

	At December 31, 2016			
	Shares Authorized	Shares Issued and Outstanding	Liquidation Preference	Carrying Value
	(in thousands, except for share amounts)			
Series A-1	9,085,738	2,887,086	$ 2,495	$ 2,457
Series A-2	32,653,411	10,498,269	9,198	9,214
Series B	38,000,000	11,235,260	136,222	119,418
Total convertible preferred stock	79,739,149	24,620,615	$ 147,915	$ 131,089

	At December 31, 2017			
	Shares Authorized	Shares Issued and Outstanding	Liquidation Preference	Carrying Value
	(in thousands, except for share amounts)			
Series A-1	9,085,738	2,887,086	$ 2,495	$ 2,457
Series A-2	32,653,411	10,498,269	9,198	9,214
Series B	50,000,000	14,774,369	179,132	162,285
Total convertible preferred stock	91,739,149	28,159,724	$ 190,825	$ 173,956

Conversion Rights

Each share of convertible preferred stock is convertible at the right and option of the stockholder, at any time after the date of issuance, into such number of fully paid and non-assessable shares of common stock on a one for one ratio (1:1 conversion ratio). The Series A-1 conversion price is $0.864 per share, the Series A-2 conversion price is $0.876 per share and the Series B conversion price is $12.125 per share, in each case, subject to certain antidilution adjustments as provided in the Company's amended and restated certificate of incorporation.

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Each share of convertible preferred stock will automatically convert into a fully paid, non-assessable share of common stock at the then-effective conversion rate for such share (i) upon the closing of a firm commitment, underwritten initial public offering of the Company's common stock at an aggregate offering price of not less than $30.0 million and a price per share to the public of not less than $12.125 per share, or (ii) upon the receipt by the Company of a written request for such conversion from at least 60% of holders the convertible preferred stock then outstanding (voting together as a single class and on an as-converted basis), or if later, the effective date for conversion specified in such requests.

Liquidation Rights

In the event of any voluntary or involuntary liquidation, dissolution or winding up of the Company or a deemed liquidation event, as further defined in the Company's amended and restated certificate of incorporation, prior to and in preference to any distribution of any of the assets of the Company to the holders of the Series A convertible preferred stock and the holders of common stock, the holders of Series B convertible preferred stock shall be paid, on a pari passu basis, an amount per share equal to the Series B liquidation preference of $12.125 per share, plus an amount equal to any dividends declared but unpaid thereon (the "Series B Liquidation Preference"). If upon any such liquidation, dissolution or winding up of the Company or a deemed liquidation event, the assets of the Company available for distribution to its stockholders shall be insufficient to pay the holders of Series B convertible preferred stock the full Series B Liquidation Preference, the holders of the Series B convertible preferred stock shall share ratably in any distribution of the assets available for distribution in proportion to the respective amounts which would otherwise be payable in respect of the shares held by them upon such distribution if all amounts payable on or with respect to such shares were paid in full.

After the payment or setting aside for payment to the holders of the Series B convertible preferred stock of the full amount of the Series B Liquidation Preference, prior to any distribution of any of the assets of the Company to the holders of the common stock, the holders of Series A-1 and Series A-2 convertible preferred stock shall be paid, on a pari passu basis, an amount per share equal to $0.864 per share for Series A-1 and $0.876 per share for Series A-2, plus, in each case, an amount equal to any dividends declared but unpaid thereon (the "Series A Liquidation Preference"). If upon any such liquidation, dissolution or winding up of the Company or deemed liquidation event, the assets of the Company available for distribution to its stockholders shall be insufficient to pay the holders of shares of Series A-1 and Series A-2 convertible preferred stock the full amount to which they shall be entitled, the holders of the Series A-1 and Series A-2 convertible preferred stock shall share ratably in any distribution of the assets available for distribution in proportion to the respective amounts which would otherwise be payable in respect of the shares held by them upon such distribution if all amounts payable on or with respect to such shares were paid in full.

After the payments or setting aside for payment to the holders of convertible preferred stock of the full amounts specified above, the entire remaining assets of the Company legally available for distribution shall be distributed pro rata to holders of the common stock of the Company in proportion to the number of shares of common stock held by them.

Voting Rights

The holders of outstanding shares of Series A-1 and Series A-2 convertible preferred stock, voting together as a single class, are entitled to elect two members of the Company's Board of

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Directors. The holders of outstanding shares of Series B convertible preferred stock, voting together as a single class, are entitled to elect one member of the Company's Board of Directors.

Additionally, each holder of the Company's convertible preferred stock is entitled to a vote equal to the number of shares of common stock into which the shares of convertible preferred stock could be converted as of the record date. The holders of convertible preferred are be entitled to vote on all matters on which the common stock shall be entitled to vote.

Dividend Rights

Holders of the Series A-1, Series A-2 and Series B convertible preferred stock are entitled to receive non-cumulative dividends at a rate of 6% of the original respective series of convertible preferred stock issuance price. Only after payment of the dividends to the holders of Series B convertible preferred stock shall the holders of shares of Series A-1 and Series A-2 convertible preferred stock be entitled to receive dividends, out of any assets legally available therefore, prior and in preference to any declaration or payment of any dividend (other than dividends on the common stock payable solely in common stock) on the common stock.

After the payment or setting aside for payment of the dividends described above, any additional dividends (other than dividends on common stock payable solely in common stock) set aside or paid in any fiscal year shall be set aside or paid among the holders of the convertible preferred stock and common stock then outstanding on a pari passu basis in proportion to the greatest whole number of shares of common stock which would be held by each such holder if all shares of convertible preferred stock were converted at the then-effective conversion rate.

Dividends are only payable as and if declared by the Board of Directors. To date, the Company has not declared or paid any dividends.

Redemption Rights

The convertible preferred stock is not mandatorily redeemable as it does not have a set redemption date or a date after which the shares may be redeemed by the holders. A redemption event will occur only upon the occurrence of certain change in control events that are outside the Company's control, including a sale, lease, transfer, or other disposition of all or substantially all of the Company's assets. The Company has elected not to adjust the carrying values of the convertible preferred stock to the liquidation preferences of such shares because it is uncertain whether or when an event would occur that would obligate the Company to pay the liquidation preferences to holders of shares of convertible preferred stock. Subsequent adjustments to the carrying values of the liquidation preferences will be made only when it becomes probable that such a liquidation event will occur.

Common Stock

Subject to the rights, if any, of the holders of convertible preferred stock, each holder of shares of common stock are entitled to one vote for each share thereof held, and are entitled to notice of any meeting of stockholders in accordance with the Bylaws of the Company, and are entitled to vote upon such matters and in such manner as provided in the amended and restated certificate of incorporation and as may be provided by law. The number of authorized shares of common stock may be increased or decreased (but not below the number of shares thereof then outstanding or reserved for issuance) by the affirmative vote of the holders of a majority of the capital stock of the Company entitled to vote (as determined viewing the preferred stock on an as-if converted to common stock basis) and without a separate class vote of the common stock.

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As of December 31, 2017, the Company had reserved shares of common stock for issuance as follows:

Series A-1 convertible preferred stock	2,887,086
Series A-2 convertible preferred stock	10,498,269
Series B convertible preferred stock	14,774,369
Options issued and outstanding	4,365,694
Options available for future grants	918,595
Contingently issuable shares under in-licensing agreements	739,551
Warrants to purchase convertible preferred stock	763,501
Warrants to purchase common stock	96,610
Total	35,043,675

12. Stock-Based Compensation

2013 Equity Incentive Plan

In June 2013, the Company adopted the 2013 Equity Incentive Plan (the "Plan"), which provides for the granting of incentive stock options ("ISOs"), non-statutory stock options ("NSOs") and restricted shares to employees, directors, and consultants at the discretion of management and the Board of Directors. As of December 31, 2017, there were an aggregate of 6,720,478 shares of common stock authorized for issuance under the Plan.

The exercise price of an ISO and NSO shall not be less than 100% of the estimated fair value of the shares on the date of grant, and the exercise price of an ISO and NSO granted to a 10% stockholder shall not be less than 110% of the estimated fair value of the shares on the date of grant. For awards granted between September 2017 and December 2017 with an exercise price of $3.42, a deemed fair value ranging from $3.95 to $5.43 per share was used in calculating stock-based compensation expense, which was determined using management hindsight. Options granted under the Plan expire no later than 10 years from the date of grant and generally vest over a four-year period but may be granted with different vesting terms. The Plan also provides that unvested options that were not exercised as of an employee's termination date shall revert to the Plan.

The Company permits early exercise of certain stock options prior to vesting. These unvested shares are subject to repurchase by the Company at the original issuance price in the event the optionee's employment is terminated either voluntarily or involuntarily. The amounts paid for shares purchased under an early exercise of stock options and subject to repurchase by the Company are reported as a liability and reclassified into additional paid-in capital as the shares vest. As of December 31, 2016 and 2017, 1,287,435 and 831,439 shares of common stock, respectively, were subject to repurchase related to early exercise with a resulting short-term liability balance of $0.4 million and $0.3 million, respectively. During the years ended December 31, 2016 and 2017, the Company repurchased zero and 155,518 shares of common stock, respectively, related to unvested early-exercised options.

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Stock Option Activity

A summary of the Company's stock option activity under the Plan is as follows:

	Shares Available for Grant	Outstanding Options	Weighted-Average Exercise Price	Weighted-Average Remaining Contract Term (in Years)	Aggregate Intrinsic Value (in thousands)
Balances at December 31, 2015	978,271	741,249	$ 0.27		
Authorized	2,850,185	—	—		
Granted	(1,259,385)	1,259,385	0.32		
Exercised	—	(1,436,902)	0.31		
Canceled	55,314	(55,314)	0.28		
Balances at December 31, 2016	2,624,385	508,418	$ 0.26		
Authorized	1,870,204	—	—		
Granted	(3,784,727)	3,784,727	3.40		
Exercised	—	(43,727)	0.30		
Repurchased	155,518	—	—		
Canceled	53,215	(53,215)	3.00		
Balances at December 31, 2017	918,595	4,196,203	$ 3.06	9.15	$ 11,925
Vested and exercisable at December 31, 2017		858,272	$ 2.03	8.23	$ 3,322
Vested and expected to vest at December 31, 2017		4,196,203	$ 3.06	9.15	$ 11,925

The total intrinsic value of options exercised was $20,000 and $0.1 million for the years ended December 31, 2016 and 2017, respectively. The weighted-average estimated fair value of stock options granted was $0.32 and $3.40 for the years ended December 31, 2016 and 2017, respectively.

The aggregate intrinsic value of options exercisable was $1.1 million and $3.3 million as of December 31, 2016 and 2017, respectively.

As of December 31, 2017, the total stock-based compensation cost related to options granted but not yet amortized was $8.7 million and will be recognized over a weighted-average period of approximately 3.8 years. The total grant-date fair value of stock options granted to employees that vested during the year ended December 31, 2017 was approximately $1.5 million.

Stock Options Granted to Employees with Service-Based Vesting

The fair value of stock options granted to employees was estimated on the date of grant using the Black-Scholes option pricing model using the following assumptions:

	Year Ended December 31,	
	2016	2017
Expected dividend yield	—	—
Expected term of options (in years)	5.3–6.1	5.6–6.7
Risk-free interest rate	1.2%–2.1%	1.8%–2.2%
Expected stock price volatility	76.1%–79.7%	77.0%–82.0%

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The valuation assumptions were determined as follows:

Expected Term—The expected term represents the period that the options granted are expected to be outstanding and is determined using the simplified method (based on the mid-point between the vesting date and the end of the contractual term) as the Company has concluded that its stock option exercise history does not provide a reasonable basis upon which to estimate expected term.

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

Risk-Free Interest Rate—The Company based the risk-free interest rate over the expected term of the options based on the constant maturity rate of U.S. Treasury securities with similar maturities as of the date of the grant.

Expected Dividends—The Company has never paid any dividends and does not plan to pay dividends in the foreseeable future. Therefore, the expected dividend yield is zero.

Performance Contingent Stock Options Granted to Employees

During the year ended December 31, 2016 and 2017, the Board of Directors granted performance contingent stock option awards exercisable for 200,216 and 75,704 shares, respectively, to certain of the Company's executive officers. These awards had a weighted average exercise price of $0.31 and $3.41, respectively, which was based on the fair market value on the grant date, as determined by the Board of Directors, and vest upon the successful achievement of one or more specified performance goals.

The total estimated fair value of employee performance contingent stock option awards was estimated at the date of grant using a Black-Scholes option-pricing model using the same assumptions as the stock options granted to employees with service-based vesting conditions, and for grants in 2016 and 2017 was $50,000 and $208,000, respectively. As of December 31, 2016 and 2017, the Company determined that the achievement of the requisite performance conditions was not probable and, as a result, no compensation cost was recognized for the performance contingent awards.

Performance and Market Contingent Stock Options Granted to Employees

During the year ended December 31, 2016 and 2017, the Board of Directors granted performance and market contingent stock option awards exercisable for 133,476 and 227,115 shares, respectively, to certain members of the Company's senior management team. These awards had a weighted average exercise price of $0.31 and $3.41, respectively, which were based on the fair market value on the grant date, as determined by the Board of Directors. The total estimated grant-date fair value of these options was $21,000 and $497,000 in 2016 and 2017, respectively. Key assumptions in the valuation model included expected volatility, a risk-free interest rate, expected dividend yield, and an expected term unique to the terms of these awards.

Of the total 360,591 shares under performance and market contingent awards, 142,442 shares have three separate market triggers for vesting based upon (i) the closing of a financing where the Company sells shares of its equity securities to institutional investors at a minimum price per share, (ii) a change in control with aggregate proceeds payable to the Company's common stock at a

minimum price per share, or (iii) an initial public offering that becomes effective at a minimum specified price per share. The remaining 218,149 shares have three separate market triggers for vesting based upon (i) the closing of a financing where the Company sells shares of its equity securities to institutional investors at a minimum pre-money valuation, (ii) a change in control with a minimum aggregate proceeds payable to the Company's common stock, or (iii) an initial public offering that becomes effective with a minimum market capitalization, as measured by a trailing 30 day volume-weighted average price.

By definition, the market condition in these awards can only be achieved after the performance condition of a liquidity event has been achieved. As such, the requisite service period is based on the estimated period over which the market condition can be achieved. When a performance goal is deemed to be probable of achievement, time-based vesting and recognition of stock-based compensation expense commences. As of December 31, 2016 and 2017, the Company determined that the achievement of the requisite performance conditions was not probable and, as a result, no compensation cost was recognized for these awards.

Stock-Based Compensation for Nonemployees

The Company has granted options to purchase shares of common stock to consultants in exchange for services performed. During the years ended December 31, 2016 and 2017, the Company granted options to purchase an aggregate of 350,213 and 235,250 shares (of which an aggregate of 169,491 were issued outside of the Plan) of the Company's common stock with a weighted average exercise price of $0.32 and $3.39 per share, respectively.

The fair value of stock options granted to nonemployees was estimated on the date of grant using the Black-Scholes option pricing model. The valuation assumptions used were substantially consistent with the assumption used to value the employee options with the exception of the expected term which was based on the contractual term of the award. During the years ended December 31, 2016 and 2017, stock-based compensation expense recognized related to nonemployee options was $0.1 million and $0.4 million, respectively.

During the year ended December 31, 2016, non-employees were granted stock options with vesting terms based on various performance conditions. When a performance condition is deemed to be probable of achievement, the vesting and recognition of stock-based compensation expense occurs for those stock options. In the event any vesting terms are not achieved by the specified timelines, such vesting tranche will terminate and no longer be exercisable with respect to that portion of the shares. The total fair value of these awards was $0.1 million as of December 31, 2016. The Company determined that the achievement of certain performance conditions was probable as of December 31, 2016 and compensation cost was recognized for those performance awards. As of December 31, 2017, no additional performance conditions were determined to be probable and no additional compensation cost was recognized.

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Restricted Stock

A summary of the Company's restricted stock activity for the years ended December 31, 2016 and 2017 was as follows:

	Shares	Weighted Average Grant Date Fair Value
Unvested at December 31, 2015	—	
Granted	76,271	$ 0.32
Vested	(76,271)	$ 0.32
Unvested at December 31, 2016	—	
Granted	625,931	$ 4.57
Vested	(146,960)	$ 4.57
Unvested at December 31, 2017	478,971	$ 4.57

In October 2017, the Company and an executive officer entered into two restricted stock agreements whereby the executive officer purchased an aggregate of 625,084 shares of restricted stock of which 146,113 shares vested immediately, 119,742 shares vest on January 1, 2018 and 359,229 shares vest on January 1, 2019. As discussed in Note 9, the purchase of the restricted stock was through the issuance of promissory notes which were considered to be non-recourse in substance and accordingly, considered an option for accounting purposes. The Company measured compensation cost for this option based on its fair value on the grant date using the Black-Scholes option pricing model considering an expected term commensurate with the expected timing to a liquidity event which would trigger repayment of these promissory notes and an exercise price consistent with the repayment term of the promissory notes. The Company is recognizing compensation cost over the requisite service period with an offsetting credit to additional paid-in capital. The shares of restricted stock have only been included in the shares issued and outstanding as such shares are legally issued.

As of December 31, 2017, the total unrecognized stock-based compensation cost related to unvested restricted stock was $0.8 million which will be recognized over the remaining period of one year.

Stock-Based Compensation Expense

The following table sets forth the total stock-based compensation expense for all options granted to employees and nonemployees, including shares sold through the issuance of non-recourse promissory notes which are considered to be options for accounting purposes (as discussed above and in Note 9), included in the Company's statement of operations:

	Year Ended December 31,	
	2016	2017
	(in thousands)	
Research and development	$ 164	$ 1,695
General and administrative	60	1,339
Total	$ 224	$ 3,034

UNITY BIOTECHNOLOGY, INC.
NOTES TO THE FINANCIAL STATEMENTS

13. Warrants

In June 2013, the Company granted warrants to its then Chief Executive Officer ("CEO"), considered to be a related party, to purchase 192,823 shares of Series A-1 convertible preferred stock with an exercise price of $0.65 per share and 190,226 shares of Series A-2 convertible preferred stock at a price of $0.66 per share as compensation. In January 2015, the Company granted warrants to the aforementioned CEO to purchase an aggregate of 380,452 shares of Series A-2 convertible preferred stock with an exercise price of $0.66 per share as compensation. These warrants are exercisable beginning on January 1, 2018 and will expire on the earlier of (i) December 31, 2018, (ii) December 31 of the year in which a change of control occurs or (iii) December 31 of the year in which the holder terminates service. As the warrants were issued as compensation and are considered equity-classified awards, they are not recorded as a liability until vested and exercisable on January 1, 2018. Upon vesting, the Company is contingently obligated to issue convertible preferred stock and the warrants will be recorded as a liability and re-measured in each subsequent period until the warrants expire, are exercised or convert into warrants to purchase common stock.

In October 2013, the Company granted warrants to a nonemployee to purchase an aggregate of 96,610 shares of common stock with an exercise price of $0.18 per share of which 9,425 warrants vested immediately. The remainder of the warrants are subject to a vesting schedule tied to certain milestone achievements, none of which were probable of being achieved as of December 31, 2016 and 2017. As of December 31, 2016, and 2017, none of these warrants have been exercised. The warrants will expire at the earlier of October 2023 or a closing of an underwritten initial public offering of the Company's common stock.

14. Net Loss and Unaudited Pro Forma Net Loss per Common Share

The following table sets forth the computation of the Company's basic and diluted net loss per common share:

	December 31,	
	2016	2017
	(in thousands, except share and per share amounts)	
Numerator:		
Net loss	$ (30,404)	$ (44,656)
Denominator:		
Weighted average number of shares outstanding—basic and diluted	2,662,841	3,197,516
Net loss per share—basic and diluted	$ (11.42)	$ (13.97)

UNITY BIOTECHNOLOGY, INC.
NOTES TO THE FINANCIAL STATEMENTS

Since the Company was in a loss position for all periods presented, basic net loss per common share is the same as diluted net loss per common share as the inclusion of all potential common shares outstanding would have been anti-dilutive. Potentially dilutive securities that were not included in the diluted per share calculations because they would be anti-dilutive were as follows:

	December 31,	
	2016	2017
Convertible preferred stock	24,620,615	28,159,724
Options to purchase common stock	508,418	4,365,694
Early exercised common stock subject to future vesting	1,287,435	831,439
Restricted stock accounted for as options	—	625,084
Warrants to purchase convertible preferred stock	763,501	763,501
Warrants to purchase common stock	96,610	96,610
Total	27,276,579	34,842,052

Unaudited Pro Forma Net Loss Per Share

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

	Year Ended December 31, 2017 (unaudited)
Net loss used in computing pro forma net loss per share, basic and diluted	$ (44,656)
Weighted-average shares used in computing net loss per share, basic and diluted	3,197,516
Pro forma adjustment to reflect assumed conversion of convertible preferred stock	26,841,869
Weighted-average shares of common stock used in computing pro forma net loss per share, basic and diluted	30,039,385
Pro forma net loss per share, basic and diluted	$ (1.49)

15. Defined Contribution Plan

The Company sponsors a 401(k) Plan that stipulates that eligible employees can elect to contribute to the 401(k) Plan, subject to certain limitations, on a pretax basis. The Company does not match any employee contributions.

16. Income Taxes

The Company has incurred net operating losses for all the periods presented. The Company has not reflected the benefit of any such net operating loss carryforwards in the accompanying financial statements. The Company has established a full valuation allocate against its deferred tax assets due to the uncertainty surrounding the realization of such assets. All losses to date have been incurred domestically as the Company has no international operations or subsidiaries.

UNITY BIOTECHNOLOGY, INC.
NOTES TO THE FINANCIAL STATEMENTS

The effective tax rate for the years ended December 31, 2016 and 2017 is different from the federal statutory rate primarily due to the valuation allowance against deferred tax assets as a result of insufficient sources of income. The effective tax rate of the provision for income taxes differs from the federal statutory rate as follows:

	Year Ended December 31,	
	2016	2017
Taxes at the U.S. statutory tax rate	34.0%	34.0%
Change in valuation allowance	(21.0)	(13.3)
Other permanent differences	—	(0.5)
Non-deductible interest expense	(13.0)	—
Other	—	(1.7)
Change in tax rate due to Tax Act	—	(18.5)
Total provision for income taxes	0.0%	0.0%

The U.S. Tax Cuts and Jobs Act (“Tax Act”) was enacted on December 22, 2017 and introduces significant changes to U.S. income tax law. Effective in 2018, the Tax Act reduces the U.S. statutory tax rate from 35% to 21% for years after 2017. Accordingly, the Company has remeasured its deferred taxes as of December 31, 2017 to reflect the reduced rate that will apply in future periods when these deferred taxes are settled or realized. The Company recognized a reduction to the deferred tax assets of $8.3 million to reflect the reduced U.S. tax rate of the Tax Act, which was off-set by reduction in valuation allowance.

SAB 118 addresses the application of GAAP in situations when a registrant does not have the necessary information available, prepared, or analyzed (including computations) in reasonable detail to complete the accounting for certain income tax effects of the Tax Act and allows the registrant to record provisional amounts during a measurement period not to extend beyond one year of the enactment date. The Company has recognized a net tax benefit of $8.3 million offset by an equal amount to the valuation allowance for the provisional tax impacts related to the revaluation of deferred tax balances and included this estimate in its financial statements for the year ended December 31, 2017. The Company is in the process of analyzing the impact of the various provisions of the Tax Act. The ultimate impact may differ from provisional amounts recorded. The Company expects to complete its analysis within the measurement period in accordance with SAB 118.

UNITY BIOTECHNOLOGY, INC.
NOTES TO THE FINANCIAL STATEMENTS

The components of the Company's deferred tax assets consist of the following:

	December 31, 2016	December 31, 2017
	(in thousands)	
Deferred tax assets:		
Net operating loss	$ 9,621	$ 16,530
Research and development credits	771	1,879
Stock-based compensation	—	671
Charitable Contributions	—	330
Accruals and other	473	895
Total deferred tax assets	10,865	20,305
Valuation allowance	(10,865)	(20,236)
Net deferred tax assets	—	69
Deferred tax liability	—	(69)
Net deferred tax assets	$ —	$ —

Realization of the future tax benefits is dependent on the Company's ability to generate sufficient taxable income within the carryforward period. Due to the Company's history of U.S. operating losses, the Company believes that the recognition of the deferred tax assets arising from the above-mentioned future tax benefits is currently not more likely than not to be realized and, accordingly, have provided a full valuation allowance against net U.S. deferred tax assets.

For the years ended December 31, 2016 and 2017, the net increase in the valuation allowance was $7.9 million and $9.4 million, respectively.

As of December 31, 2017, the Company had federal net operating loss carryforwards of $64.9 million that expire beginning in 2030 if not utilized and federal tax credit carryforwards of approximately $1.6 million that expire beginning in 2031 if not utilized. As of December 31, 2017, the Company had state net operating loss carryforwards of approximately $65.5 million, which begin to expire in 2030. In addition, the Company had state tax credit carryforwards of approximately $1.1 million, which do not expire.

The net operating loss and research and development credit carryforwards are subject to review and possible adjustment by the Internal Revenue Service ("IRS") and state tax authorities and may become subject to an annual limitation in the event of certain future cumulative changes in the ownership interest of significant stockholders over a three-year period in excess of 50%, as defined under Sections 382 and 383 of the Internal Revenue Code of 1986. The Company has performed this analysis and concluded $1.0 million of net operating losses and research development credits, collectively, were limited under Section 382, which has been reflected in the amounts disclosed in the financials.

The Company determines its uncertain tax positions based on a determination of whether and how much of a tax benefit taken by the Company in its tax filings is more likely than not to be sustained upon examination by the relevant income tax authorities.

UNITY BIOTECHNOLOGY, INC.
NOTES TO THE FINANCIAL STATEMENTS

A reconciliation of the beginning and ending amounts of unrecognized tax benefits is as follows:

	December 31,	
	2016	2017
	(in thousands)	
Gross unrecognized tax benefits at January 1	$ 114	$2,800
Additions for tax positions taken in the current year	2,686	478
Reductions for tax positions taken in the prior year	—	(213)
Gross unrecognized tax benefits at December 31	$2,800	$3,065

If recognized, none of the unrecognized tax benefits as of December 31, 2016 and 2017 would reduce the annual effective tax rate, primarily due to corresponding adjustments to the valuation allowance. The Company will recognize both accrued interest and penalties related to unrecognized benefits in income tax expense. As of December 31, 2016 and 2017, no liability has been recorded for potential interest or penalties. The Company does not expect the unrecognized tax benefits to change significantly over the next 12 months.

Since the Company is in a loss carryforward position, the Company is generally subject to examination by the U.S. federal, state and local income tax authorities for all tax years in which a loss carryforward is available.

17. Subsequent Events

Approval of 2018 Incentive Award Plan

On March 13, 2018, the Company's board of directors adopted the Company's 2018 Incentive Award Plan (the "2018 Plan"). The 2018 Plan was approved by the Company's stockholders on April 20, 2018 and will become effective on the date of effectiveness of the Company's Registration Statement on Form S-1 relating to its initial public offering filed with the U.S. Securities and Exchange Commission ("IPO").

Approval of the 2018 Employee Stock Purchase Plan

On March 13, 2018, the Company's board of directors adopted the Company's 2018 Employee Stock Purchase Plan ("the 2018 ESPP"). The 2018 ESPP was approved by the Company's stockholders on April 20, 2018 and will become effective on the date of effectiveness of the Company's Registration Statement on Form S-1 relating to its IPO.

Amended and Restated Certificate of Incorporation

On March 15, 2018, the Company amended and restated its certificate of incorporation to, among other things, (i) increase its authorized shares of common stock from 122,000,000 to 140,000,000 shares, (ii) increase its authorized shares of preferred stock from 91,739,149 to 103,283,818 shares, of which 11,544,669 shares are designated as Series C convertible preferred stock, and (iii) set forth the rights, preferences and privileges of the Series C convertible preferred stock.

Series C Convertible Preferred Stock Financing

In March 2018, the Company sold 3,590,573 shares of Series C convertible preferred stock at $15.3317 per share for net proceeds of $54.9 million of which $3.0 million was sold to related party

shareholders of the Company. Each share of Series C convertible preferred stock is convertible into one share of the Company's common stock.

In April 2018, the Company sold an additional 322,852 shares of Series C convertible preferred stock $15.3317 per share for net proceeds of $5.0 million.

Related Party Recourse Notes

In April 2018, the Company's board of directors approved the forgiveness of all outstanding principal and accrued interest of $1.6 million on a promissory note considered to be non-recourse in substance, which was issued to an executive officer of the Company. The termination of the note was effective April 4, 2018. All other related party recourse notes outstanding as of December 31, 2017 were repaid on April 4, 2018 in accordance with the terms of such note.

5,000,000 Shares

Unity Biotechnology, Inc.

Common Stock

PROSPECTUS

Goldman Sachs & Co. LLC **Morgan Stanley** **Citigroup**

Mizuho Securities

May 2, 2018