The information in this preliminary prospectus is not complete and may be changed. We may not sell these securities until the registration statement filed with the Securities and Exchange Commission is effective. This preliminary prospectus is not an offer to sell these securities and it is not soliciting an offer to buy these securities in any jurisdiction where the offer or sale is not permitted.

Subject to Completion, dated October 23, 2017

PROSPECTUS

5,333,333 Shares

Common Stock

This is the initial public offering of shares of common stock of Allena Pharmaceuticals, Inc. We are offering 5,333,333 shares of our common stock. Prior to this offering, there has been no public market for our common stock. It is currently estimated that the initial public offering price per share will be between $14.00 and $16.00. We have applied to list our common stock on The NASDAQ Global Market under the trading symbol "ALNA."

We are an "emerging growth company" under applicable Securities and Exchange Commission rules and will be subject to reduced public company reporting requirements for this prospectus and future filings. See "Prospectus Summary—Implications of Being an Emerging Growth Company."

Investing in our common stock involves a high degree of risk. See "Risk Factors" beginning on page 12.

	Per Share	Total
Initial public offering price	$	$
Underwriting discounts and commissions(1)	$	$
Proceeds to us, before expenses	$	$

(1) We have agreed to reimburse the underwriters for certain FINRA-related expenses. See "Underwriting" for additional disclosure regarding underwriting discounts, commissions and estimated expenses.

Certain of our existing stockholders, including certain affiliates of our directors, have indicated an interest in purchasing an aggregate of approximately $25.0 million of shares of our common stock in this offering at the initial public offering price. However, because indications of interest are not binding agreements or commitments to purchase, the underwriters may determine to sell more, less or no shares in this offering to any of these stockholders, or any of these stockholders may determine to purchase more, less or no shares in this offering.

We have granted the underwriters an option for a period of 30 days to purchase up to an additional 800,000 shares of common stock from us at the initial price to the public less the underwriting discount.

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

The underwriters expect to deliver the shares against payment in New York, New York on , 2017.

Credit Suisse | **Jefferies** | **Cowen**

Wedbush PacGrow

Prospectus dated , 2017

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We are responsible for the information contained in this prospectus and in any free-writing prospectus we prepare or authorize. We have not, and the underwriters have not, authorized anyone to provide you with different information, and we take no responsibility for any other information others may give you. We are not, 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 not assume that the information contained in this prospectus is accurate as of any date other than the date on the cover page of this prospectus. Our business, financial condition, results of operations and prospects may have changed since that date.

Through and including , 2017 (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 delivery requirement is in addition to the obligation of dealers to deliver a prospectus when acting as underwriters and with respect to their unsold allotments or subscriptions.

For investors outside 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 in the United States. Persons outside 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 the United States.

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Allena Pharmaceuticals, Inc.

Index to Consolidated Financial Statements

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Report of Independent Registered Public Accounting Firm

The Board of Directors and Stockholders of
Allena Pharmaceuticals, Inc.

We have audited the accompanying consolidated balance sheets of Allena Pharmaceuticals, Inc. as of December 31, 2015 and 2016, and the related consolidated statements of operations and comprehensive loss, stockholders' (deficit) equity and cash flows for the years then ended. These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these financial statements based on our audits.

We conducted our audits in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. We were not engaged to perform an audit of the Company's internal control over financial reporting. Our audits included consideration of internal control over financial reporting as a basis for designing audit procedures that are appropriate in the circumstances, 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. An audit also includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements, assessing the accounting principles used and significant estimates made by management, and evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

In our opinion, the financial statements referred to above present fairly, in all material respects, the consolidated financial position of Allena Pharmaceuticals, Inc. at December 31, 2015 and 2016, and the consolidated results of its operations and its cash flows for the years then ended in conformity with U.S. generally accepted accounting principles.

/s/ Ernst & Young LLP

Boston, Massachusetts
August 18, 2017,
except for Note 16, as to which the date is October 23, 2017

Allena Pharmaceuticals, Inc.
Consolidated Balance Sheets
(in thousands, except share and per share data)

	December 31, 2015	December 31, 2016	June 30, 2017 (unaudited)	Pro forma June 30, 2017 (unaudited)
Assets				
Current assets:				
Cash and cash equivalents	$ 69,011	$ 25,250	$ 34,713	$ 34,713
Short-term investments	—	23,505	3,249	3,249
Prepaid expenses and other current assets	863	520	350	350
Total current assets	69,874	49,275	38,312	38,312
Property and equipment, net	89	169	153	153
Other assets	45	35	114	114
Total assets	$ 70,008	$ 49,479	$ 38,579	$ 38,579
Liabilities, Convertible Preferred Stock and Stockholders' (Deficit) Equity				
Current liabilities:				
Accounts payable	$ 1,959	$ 1,464	$ 1,236	$ 1,236
Loan payable, net of discount	2,253	176	2,088	2,088
Accrued expenses	927	1,610	846	846
Total current liabilities	5,139	3,250	4,170	4,170
Loan payable, net of current portion and discount	3,932	9,409	7,553	7,553
Warrants for the purchase of shares subject to redemption	68	267	299	—
Other liabilities	180	103	210	210
Total liabilities	9,319	13,029	12,232	11,933
Commitments and contingencies (Note 13)				
Series A convertible preferred stock, $0.001 par value; 18,510,200 shares authorized at December 31, 2015 and 2016 and June 30, 2017 (unaudited); 18,367,344 shares issued and outstanding at December 31, 2015 and 2016 and June 30, 2017 (unaudited) (aggregate liquidation preference of $18,000 at December 31, 2016 and June 30, 2017 (unaudited)); no shares authorized, issued or outstanding, pro forma (unaudited)	17,959	17,967	17,971	—
Series B convertible preferred stock, $0.001 par value; 21,428,572 shares authorized at December 31, 2015 and 19,841,270 shares authorized at December 31, 2016 and June 30, 2017 (unaudited); 19,841,270 shares issued and outstanding at December 31, 2015 and 2016 and June 30, 2017 (unaudited) (aggregate liquidation preference of $25,000 at December 31, 2016 and June 30, 2017 (unaudited)); no shares authorized, issued or outstanding, pro forma (unaudited)	24,913	24,931	24,939	—
Series C convertible preferred stock, $0.001 par value; 20,000,000 shares authorized at December 31, 2015 and 20,037,736 shares authorized at December 31, 2016 and June 30, 2017 (unaudited); 20,000,000 shares issued and outstanding at December 31, 2015 and 2016 and June 30, 2017 (unaudited) (aggregate liquidation preference of $53,000 at December 31, 2016 and June 30, 2017 (unaudited)); no shares authorized, issued or outstanding, pro forma (unaudited)	52,786	52,829	52,851	—
Stockholders' (deficit) equity:				
Common stock, $0.001 par value; 75,000,000 shares authorized at December 31, 2015 and 2016 and June 30, 2017 (unaudited); 1,316,615, 1,341,385 and 1,343,006 shares issued at December 31, 2015 and 2016 and June 30, 2017 (unaudited), respectively; 1,315,940, 1,341,385 and 1,343,006 shares outstanding at December 31, 2015 and 2016 and June 30, 2017 (unaudited), respectively; 15,288,515 shares issued and outstanding, pro forma at June 30, 2017 (unaudited)	1	1	1	15
Additional paid-in capital	830	1,031	1,195	97,241
Accumulated other comprehensive loss	—	(2)	—	—
Accumulated deficit	(35,800)	(60,307)	(70,610)	(70,610)
Total stockholders' (deficit) equity	(34,969)	(59,277)	(69,414)	26,646
Total liabilities, convertible preferred stock and stockholders' (deficit) equity	$ 70,008	$ 49,479	$ 38,579	$ 38,579

See accompanying notes.

Allena Pharmaceuticals, Inc.
Consolidated Statements of Operations and Comprehensive Loss
(in thousands, except share and per share data)

	Years Ended December 31,		Six Months Ended June 30,	
	2015	2016	2016	2017
			(unaudited)	
Operating expenses:				
Research and development	$ 11,540	$ 20,103	$ 10,025	$ 7,809
General and administrative	2,365	4,083	2,057	2,208
Total operating expenses	13,905	24,186	12,082	10,017
Other income (expense):				
Interest income (expense), net	(335)	(200)	(71)	(255)
Other income (expense), net	(7)	(121)	1	(31)
Other income (expense), net	(342)	(321)	(70)	(286)
Net loss	$ (14,247)	$ (24,507)	$ (12,152)	$ (10,303)
Net loss per share attributable to common stockholders—basic and diluted	$ (11.35)	$ (18.35)	$ (9.11)	$ (7.70)
Weighted-average common shares outstanding—basic and diluted	1,258,123	1,339,254	1,337,100	1,342,628
Pro forma net loss per share attributable to common stockholders—basic and diluted (unaudited)		$ (1.59)		$ (0.67)
Pro forma weighted-average common shares outstanding—basic and diluted (unaudited)		15,284,763		15,288,137
Net loss	$ (14,247)	$ (24,507)	$ (12,152)	$ (10,303)
Other comprehensive income (loss):				
Unrealized gain (loss) on investments	—	(2)	25	2
Total other comprehensive income (loss)	—	(2)	25	2
Comprehensive loss	$ (14,247)	$ (24,509)	$ (12,127)	$ (10,301)

See accompanying notes.

Allena Pharmaceuticals, Inc.
Consolidated Statements of Convertible Preferred Stock and Stockholders' (Deficit) Equity
(in thousands, except share amounts)

	Series A convertible preferred stock		Series B convertible preferred stock		Series C convertible preferred stock		Common stock		Additional paid-in capital	Accumulated other comprehensive income (loss)	Accumulated deficit	Total stockholders' (deficit) equity
	Shares	Amount	Shares	Amount	Shares	Amount	Shares	Amount				
Balance at December 31, 2014	18,367,344	$ 17,948	19,841,270	$ 24,891	—	$ —	1,135,653	$ 1	$ 650	$—	$(21,553)	$(20,902)
Issuance of Series C convertible preferred stock, net of issuance costs of $218	—	—	—	—	20,000,000	52,782	—	—	—	—	—	—
Exercise of common stock options	—	—	—	—	—	—	17,394	—	7	—	—	7
Vesting of restricted common stock	—	—	—	—	—	—	162,893	—	3	—	—	3
Accretion of convertible preferred stock to redemption value	—	11	—	22	—	4	—	—	(37)	—	—	(37)
Stock-based compensation	—	—	—	—	—	—	—	—	207	—	—	207
Net loss	—	—	—	—	—	—	—	—	—	—	(14,247)	(14,247)
Balance at December 31, 2015	18,367,344	17,959	19,841,270	24,913	20,000,000	52,786	1,315,940	1	830	—	(35,800)	(34,969)
Exercise of common stock options	—	—	—	—	—	—	24,770	—	19	—	—	19
Vesting of restricted common stock	—	—	—	—	—	—	675	—	—	—	—	—
Accretion of convertible preferred stock to redemption value	—	8	—	18	—	43	—	—	(69)	—	—	(69)
Stock-based compensation	—	—	—	—	—	—	—	—	251	—	—	251
Change in unrealized gain (loss) on available for sale investments	—	—	—	—	—	—	—	—	—	(2)	—	(2)
Net loss	—	—	—	—	—	—	—	—	—	—	(24,507)	(24,507)
Balance at December 31, 2016	18,367,344	17,967	19,841,270	24,931	20,000,000	52,829	1,341,385	1	1,031	(2)	(60,307)	(59,277)
Exercise of common stock options (unaudited)	—	—	—	—	—	—	1,621	—	2	—	—	2
Accretion of convertible preferred stock to redemption value (unaudited)	—	4	—	8	—	22	—	—	(34)	—	—	(34)
Stock-based compensation (unaudited)	—	—	—	—	—	—	—	—	196	—	—	196
Change in unrealized gain (loss) on available for sale investments (unaudited)	—	—	—	—	—	—	—	—	—	2	—	2
Net loss (unaudited)	—	—	—	—	—	—	—	—	—	—	(10,303)	(10,303)
Balance at June 30, 2017 (unaudited)	18,367,344	17,971	19,841,270	24,939	20,000,000	52,851	1,343,006	1	1,195	—	(70,610)	(69,414)
Conversion of preferred stock into common stock (unaudited)	(18,367,344)	(17,971)	(19,841,270)	(24,939)	(20,000,000)	(52,851)	13,945,509	14	95,747	—	—	95,761
Conversion of warrant liability to equity (unaudited)	—	—	—	—	—	—	—	—	299	—	—	299
Balance at June 30, 2017 pro forma (unaudited)	—	$ —	—	$ —	—	$ —	15,288,515	$ 15	$97,241	$—	$(70,610)	$ 26,646

See accompanying notes.

Allena Pharmaceuticals, Inc.
Consolidated Statements of Cash Flows
(in thousands)

	Years Ended December 31,		Six Months Ended June 30,	
	2015	2016	2016	2017
			(unaudited)	
Cash flows from operating activities:				
Net loss	$(14,247)	$(24,507)	$(12,152)	$(10,303)
Adjustments to reconcile net loss to net cash used in operating activities:				
Stock-based compensation expense	207	251	99	196
Depreciation expense	98	46	21	34
Non-cash interest expense	167	204	62	163
Amortization of premium on investments	—	153	71	33
Loss on disposal of equipment	7	—	—	—
Change in fair value of warrant liability	36	132	3	32
Changes in assets and liabilities:				
Prepaid expenses and other current assets	(639)	343	353	205
Other assets	—	—	—	(114)
Accounts payable	1,001	(525)	1,514	(190)
Accrued expenses	219	689	(187)	(764)
Other liabilities	(24)	(180)	(175)	—
Net cash used in operating activities	(13,175)	(23,394)	(10,391)	(10,708)
Cash flows from investing activities:				
Purchases of property and equipment	—	(102)	(14)	(56)
Purchases of investments	—	(53,210)	(39,170)	(1,247)
Maturities of investments	—	29,550	5,500	21,472
Sale of property and equipment	5	—	—	—
Net cash provided by (used in) investing activities	5	(23,762)	(33,684)	20,169
Cash flows from financing activities:				
Proceeds from the sale of Series C convertible preferred stock, net of issuance costs	52,782	—	—	—
Proceeds from exercise of stock options	7	19	19	2
Proceeds from loan payable	3,250	10,000	7,500	—
Repayment of loan payable	(744)	(6,256)	(6,256)	—
Debt issuance costs paid	—	(368)	(368)	—
Net cash provided by financing activities	55,295	3,395	895	2
Net increase (decrease) in cash and cash equivalents	42,125	(43,761)	(43,180)	9,463
Cash and cash equivalents, beginning of period	26,886	69,011	69,011	25,250
Cash and cash equivalents, end of period	$ 69,011	$ 25,250	$ 25,831	$ 34,713
Supplemental disclosure of non-cash activities:				
Cash paid for interest	$ 193	$ 472	$ 157	$ 212
Property and equipment purchases included in accounts payable	$ 9	$ 38	$ —	$ —
Issuance of warrants in connection with loan payable	$ 7	$ 67	$ 45	$ —
Accretion of convertible preferred stock to redemption value	$ 37	$ 69	$ 34	$ 34

See accompanying notes.

Allena Pharmaceuticals, Inc.
Notes to Consolidated Financial Statements
(information as of June 30, 2017 and for the six months ended June 30, 2017 and 2016 is unaudited)

1. Organization and Basis of Presentation

Allena Pharmaceuticals, Inc. (the "Company") is a late-stage clinical biopharmaceutical company dedicated to developing and commercializing first-in-class, oral enzyme therapeutics to treat patients with rare and severe metabolic and kidney disorders. The Company is focused on metabolic disorders that result in excess accumulation of certain metabolites that can cause kidney stones, damage the kidney, and potentially lead to chronic kidney disease ("CKD"), and end-stage renal disease. The Company's lead product candidate, ALLN-177, is a first-in-class, oral enzyme therapeutic that it is developing for the treatment of hyperoxaluria, a metabolic disorder commonly associated with kidney stones, CKD and other serious kidney diseases. The Company was incorporated under the laws of the State of Delaware on June 24, 2011 and is located in Newton, Massachusetts.

The Company is subject to risks common to companies in the biotechnology industry, including but not limited to, risks of failure of preclinical studies and clinical trials, the need to obtain marketing approval for any drug product candidate that it may identify and develop, the need to successfully commercialize and gain market acceptance of its product candidates, dependence on key personnel, protection of proprietary technology, compliance with government regulations, development by competitors of technological innovations, reliance on third party manufacturers, ability to transition from pilot-scale manufacturing to large-scale production of products and the need to obtain adequate additional financing to fund the development of its product candidates.

The Company has an accumulated deficit of $70.6 million at June 30, 2017, and will require substantial additional capital to fund operations. The future success of the Company is dependent on its ability to identify and develop its product candidates and ultimately upon its ability to attain profitable operations. At June 30, 2017, the Company had $38.0 million of cash, cash equivalents and investments.

The Company believes its cash, cash equivalents and investments as of June 30, 2017 will be sufficient to fund the Company's operating plan for a period of at least one year from the issuance date of the consolidated financial statements. Thereafter, the Company will be required to obtain additional funding. The Company intends to pursue a public offering of its common stock to fund future operations. If the Company is unable to complete a sufficient public offering in a timely manner, it would need to pursue other financing alternatives, such as private financing of debt or equity or collaboration agreements. There can be no assurances, however, that the current operating plan will be achieved or that additional funding will be available on terms acceptable to the Company, or at all.

Basis of Presentation

The accompanying consolidated financial statements have been prepared in accordance with accounting principles generally accepted in the United States of America ("GAAP"). Any reference in these notes to applicable guidance is meant to refer to the authoritative United States generally accepted accounting principles as found in the Accounting Standard Codification ("ASC") and Accounting Standards Updates ("ASU") of the Financial Accounting Standards Board ("FASB").

The accompanying consolidated balance sheet as of June 30, 2017, the consolidated statements of operations and comprehensive loss and of cash flows for the six months ended June 30, 2016 and 2017, and the consolidated statement of convertible preferred stock and stockholders' (deficit) equity for the six months ended June 30, 2017 are unaudited. The unaudited interim consolidated financial statements have been prepared on the same basis as the audited annual financial statements and, in the opinion of management, reflect all adjustments, which include only normal recurring adjustments, necessary for the fair statement of the Company's financial

position as of June 30, 2017 and the results of its operations and its cash flows for the six months ended June 30, 2016 and 2017. The financial data and other information disclosed in these notes related to the six months ended June 30, 2016 and 2017 are unaudited. The results for the six months ended June 30, 2017 are not necessarily indicative of results to be expected for the year ending December 31, 2017, any other interim periods, or any future year or period.

Unaudited Pro Forma Financial Information

The accompanying unaudited pro forma balance sheet as of June 30, 2017 has been prepared to give effect to the automatic conversion of all outstanding shares of convertible preferred stock into 13,945,509 shares of common stock as if the Company's proposed initial public offering had occurred on June 30, 2017.

In the accompanying statements of operations and comprehensive loss, the unaudited pro forma net loss attributable to common stockholders used in the calculation of unaudited basic and diluted pro forma net loss per share attributable to common stockholders does not include the effects of the accretion of issuance costs on convertible preferred stock because it assumes that the conversion of convertible preferred stock into common stock occurred on the later of the beginning of the reporting period or the issuance date of the convertible preferred stock.

The unaudited pro forma basic and diluted weighted average common shares outstanding used in the calculation of unaudited pro forma basic and diluted net loss per share attributable to common stockholders for the year ended December 31, 2016 and the six months ended June 30, 2017 give effect to the automatic conversion of all outstanding shares of convertible preferred stock into shares of common stock as if the conversion had occurred on the later of January 1, 2016 or the issuance date of the convertible preferred stock for the year ended December 31, 2016, and on the later of January 1, 2017 or the issuance date of the convertible preferred stock for the six months ended June 30, 2017.

2. Summary of Significant Accounting Policies

Principles of Consolidation

The consolidated financial statements include the accounts of Allena Pharmaceuticals, Inc. and its wholly owned subsidiaries Allena Pharmaceuticals Security Corporation ("Security Corporation"), which was incorporated in December 2014, and Allena Pharmaceuticals Ireland Limited, which was incorporated in March 2017. All intercompany transactions and balances have been eliminated.

Use of Estimates

The preparation of the Company's consolidated financial statements in conformity with GAAP requires management to make estimates and assumptions that affect the reported amounts of assets, liabilities, expenses and related disclosure of contingent assets and liabilities at the date of the financial statements and reported amounts of expenses during the reporting period. On an ongoing basis, the Company's management evaluates its estimates, which include but are not limited to management's judgments of accrued expenses, fair value of common stock, valuation of share-based awards, fair value of warrants and income taxes. Actual results could differ from those estimates.

The Company utilizes significant estimates and assumptions in determining the fair value of its common stock. The Company has utilized various valuation methodologies in accordance with the framework of the

American Institute of Certified Public Accountants Technical Practice Aid, *Valuation of Privately-Held Company Equity Securities Issued as Compensation* (the "Practice Aid"), to estimate the fair value of its common stock. Each valuation methodology includes estimates and assumptions that require the Company's judgment. These estimates and assumptions include a number of objective and subjective factors, including external market conditions, the prices at which the Company sold shares of preferred stock, the superior rights and preferences of securities senior to the Company's common stock at the time of, and the likelihood of, achieving a liquidity event, such as an initial public offering or sale. Significant changes to the key assumptions used in the valuations could result in different fair values of common stock at each valuation date.

Segment Information

Operating segments are defined as components of an enterprise about which separate discrete information is available for evaluation by the chief operating decision-maker in deciding how to allocate resources and assess performance. The Company and the Company's chief operating decision-maker, the Company's chief executive officer, views the Company's operations and manages its business as a single operating segment, which is the business of discovering and developing non-absorbed oral enzyme therapeutics.

Comprehensive Income (Loss)

Comprehensive income (loss) is defined as the change in equity of a business enterprise during a period from transactions and other events and circumstances from non-owner sources. The Company's only element of other comprehensive income (loss) is unrealized gains and losses on available-for-sale investments.

Cash and Cash Equivalents

The Company considers all highly liquid investments with an original maturity of three months or less to be cash equivalents. Cash and cash equivalents include cash held in banks and amounts held in money market funds. Cash equivalents are stated at cost, which approximates market value.

Cash and cash equivalents consist of the following at December 31, 2015 and 2016 and June 30, 2017 (in thousands):

	December 31,		June 30,
	2015	2016	2017
Cash and cash equivalents:			
Cash	$ 686	$ 948	$ 936
Money market funds	68,325	24,302	33,777
	$69,011	$25,250	$34,713

Investments

The Company invests available cash primarily in U.S. and foreign corporate debt securities and United States government treasury securities. The Company classifies its investments as available-for-sale. Available-for-sale investments are carried at fair value with unrealized gains and losses included in stockholders' (deficit) equity. Any premium or discount arising at purchase is amortized and/or accreted to interest income and/or expense. All investments are classified as current assets as they have contractual maturities of less than one year and are available to meet working capital needs and to fund current operations.

The cost of securities sold is determined on a specific identification basis, and realized gains and losses are included in interest income (expense) within the statement of operations and comprehensive loss.

The Company evaluates its investments with unrealized losses for other-than-temporary impairment. When assessing investments for other-than-temporary declines in value, the Company considers such factors as, among other things, how significant the decline in value is as a percentage of the original cost, how long the market value of the investment has been less than its original cost, the Company's ability and intent to retain the investment for a period of time sufficient to allow for any anticipated recovery in fair value and market conditions in general. If any adjustment to fair value reflects a decline in the value of the investment that the Company considers to be "other than temporary", the Company reduces the investment to fair value through a charge to the statement of operations and comprehensive loss. No such adjustments were necessary during the periods presented.

Concentration of Credit Risk and Off-Balance Sheet Risk

Financial instruments that potentially expose the Company to concentrations of credit risk consist primarily of cash, cash equivalents and investments. The Company maintains all of its cash, cash equivalents and investments balances at a single accredited financial institution, in amounts that exceed federally insured limits. The Company generally invests its excess cash in money market funds, corporate notes and United States government securities that are subject to minimal credit and market risk. Management has established guidelines relative to credit ratings and maturities intended to safeguard principal balances and maintain liquidity. The investment portfolio is maintained in accordance with the Company's investment policy, which defines allowable investments, specifies credit quality standards and limits the credit exposure of any single issuer.

The Company has no significant off-balance sheet risk such as foreign exchange contracts, option contracts, or other foreign hedging arrangements.

Significant Suppliers

The Company is dependent on third-party manufacturers to supply products for research and development activities of its programs, including preclinical and clinical testing. In particular, the Company relies and expects to continue to rely on a small number of manufacturers to supply it with its requirements for the active pharmaceutical ingredients and formulated drugs related to these programs. These programs could be adversely affected by a significant interruption in the supply of active pharmaceutical ingredients and formulated drugs.

Fair Value of Financial Instruments

Fair value is defined as the price that would be received upon sale of an asset or paid to transfer a liability between market participants at measurement dates. ASC Topic 820, *Fair Value Measurement* ("ASC 820"), establishes a three-level valuation hierarchy for instruments measured at fair value. The hierarchy is based on the transparency of inputs to the valuation of an asset or liability as of the measurement date. The hierarchy defines three levels of valuation inputs, of which the first two are considered observable and the last is considered unobservable:

Level 1 inputs: Quoted prices in active markets for identical assets or liabilities.

Level 2 inputs: Inputs other than quoted prices included within Level 1 that are either directly or indirectly observable, such as quoted market prices, interest rates and yield curves.

Level 3 inputs: Unobservable inputs developed using estimates or assumptions developed by the Company, which reflect those that a market participant would use in pricing the asset or liability.

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

Property and Equipment

Property and equipment consists of laboratory equipment, computer equipment, software and leasehold improvements recorded at cost. These amounts are depreciated using the straight-line method over the estimated useful lives of the assets as follows:

Laboratory equipment	4 years
Computer equipment	3 years
Software	5 years
Leasehold improvements	Shorter of useful life or remaining term of related lease

Upon retirement or sale, the cost of the assets disposed of and the related accumulated depreciation are eliminated from the balance sheet and related gains or losses are reflected in the statement of operations and comprehensive loss.

Repairs and maintenance costs are expensed as incurred and costs of significant improvements are capitalized.

Impairment of Long-Lived Assets

The Company continually evaluates long-lived assets for potential impairment when events or changes in circumstances indicate the carrying value of the assets may not be recoverable. Recoverability is measured by comparing the book values of the assets to the expected future net undiscounted cash flows that the assets are expected to generate. If such assets are considered to be impaired, the impairment to be recognized is measured by the amount by which the book values of the assets exceed their fair value. The Company did not recognize any impairment losses for the years ended December 31, 2015 and 2016 and the six months ended June 30, 2016 and 2017.

Warrants to Purchase Shares Subject to Redemption

The Company accounts for warrant instruments that either conditionally or unconditionally obligate the issuer to transfer assets as liabilities regardless of the timing of the redemption feature or price, even though the underlying shares may be classified as equity. These warrants are subject to revaluation at each balance sheet date, and any changes in fair value are recorded as a component of other income (expense) in the statements of operations and comprehensive loss, until the earlier of their exercise or expiration or the completion of a liquidation event, at which time the warrant liability may be reclassified to stockholders' (deficit) equity if the criteria for recording the warrant as an equity instrument are met.

Research and Development

The Company expenses all costs incurred in performing research and development activities. Research and development expenses include salaries and benefits, materials and supplies, preclinical and clinical trial expenses, manufacturing expenses, stock-based compensation expense, depreciation of equipment, contract services and other outside expenses. Costs of certain development activities, such as manufacturing, are recognized based on an evaluation of the progress to completion of specific tasks. Payments for these activities are based on the terms of the individual arrangements, which may differ from the pattern of costs incurred, and are reflected in the consolidated financial statements as prepaid or accrued research and development costs. Nonrefundable advance payments for goods or services to be received in the future for use in research and development activities are deferred and capitalized. The capitalized amounts are expensed as the related goods are delivered or the services are performed.

Patent Costs

The Company expenses patent application and related legal costs as incurred and classifies such costs as general and administrative expenses in the accompanying consolidated statements of operations and comprehensive loss.

Accounting for Stock-Based Compensation

The Company accounts for its stock-based compensation in accordance with ASC Topic 718, *Compensation—Stock Compensation* ("ASC 718"). ASC 718 requires all share-based payments to employees and directors to be recognized as expense in the statements of operations and comprehensive loss based on their grant date fair values. The Company accounts for share-based payments to non-employees in accordance with ASC Topic 505, *Equity-Based Payments to Non-Employees* ("ASC 505"). Since our non-employee awards do not contain performance commitments, ASC 505 requires that the expense be recognized in the statement of operations and comprehensive loss based on the awards' vesting date fair values. The Company estimates the fair value of options granted using the Black-Scholes option pricing model for stock option grants to both employees and non-employees. The Company believes the fair value of the stock options granted to non-employees is more reliably determinable than the fair value of the services provided.

The Black-Scholes option pricing model requires inputs based on certain subjective assumptions, including (a) the expected stock price volatility, (b) the expected term of the award, (c) the risk-free interest rate and (d) expected dividends. Due to the lack of a public market for the Company's common stock and a lack of company-specific historical and implied volatility data, the Company has based its computation of expected volatility on the historical volatility of a representative group of public companies with similar characteristics to the Company, including stage of product development and life science industry focus. The historical volatility is calculated based on a period of time commensurate with the expected term assumption. The Company uses the simplified method as prescribed by the SEC Staff Accounting Bulletin No. 107, *Share-Based Payment*, to calculate the expected term for options granted to employees as it does not have sufficient historical exercise data to provide a reasonable basis upon which to estimate the expected term. The expected term is applied to the stock option grant group as a whole, as the Company does not expect substantially different exercise or post-vesting termination behavior among its employee population. For options granted to non-employees, the Company utilizes the contractual term of the share-based payment as the basis for the expected term assumption. The risk-free interest rate is based on a treasury instrument whose term is consistent with the expected term of the stock options. The expected dividend yield is assumed to be zero as the Company has never paid dividends and has no current plans to pay any dividends on its common stock.

There are significant judgments and estimates inherent in the determination of the fair value of the Company's common stock. These estimates and assumptions include a number of objective and subjective factors, including external market conditions, the prices at which the Company sold shares of preferred stock, the superior rights and preferences of securities senior to its common stock at the time of, and the likelihood of, achieving a liquidity event, such as an initial public offering or sale.

The Company prepared a common stock valuation as of November 6, 2014 which supported the fair value of the Company's common stock for certain awards in the year ended December 31, 2015 using the backsolve method to calculate the total equity value and the option-pricing method ("OPM") to allocate the total equity value. The backsolve method derives the implied equity value for one type of equity security from a contemporaneous transaction involving another type of security to calculate the equity value. The Company's subsequent common stock valuations were prepared using the backsolve method to calculate the total equity value and a hybrid of the OPM and probability-weighted expected return method ("PWERM"), including a future IPO scenario, to allocate the total equity value.

In the first quarter of 2017, the Company made an accounting policy election to recognize forfeitures as they occur upon adoption of guidance per ASU No. 2016-09, *Compensation—Stock Compensation*. The adoption of ASU No. 2016-09 did not have a material impact on the Company's financial statements. In reporting periods prior to 2017, the Company estimated forfeitures at the time of grant and revised the forfeitures rate in subsequent periods as necessary if actual forfeitures differed from estimates.

Through December 31, 2016, the Company was required to estimate forfeitures at the time of grant, and revise those estimates in subsequent periods if actual forfeitures differed from its estimates. The Company used historical data to estimate pre-vesting forfeitures and recorded stock-based compensation expense only for those awards that were expected to vest. To the extent that actual forfeitures differed from estimates, the difference was recorded as a cumulative adjustment in the period the estimates were revised.

The Company expenses the fair value of its share-based compensation awards to employees on a straight-line basis over the requisite service period, which is generally the vesting period. Stock-based compensation awards to non-employees are adjusted through stock-based compensation expense at each reporting period end to reflect the current fair value of such awards and are expensed on a straight-line basis.

Income Taxes

The Company accounts for income taxes using the liability method in accordance with ASC Topic 740, *Income Taxes* ("ASC 740"). The difference between the financial statement and tax basis of the assets and liabilities is determined annually. Deferred income tax assets and liabilities are computed using the tax laws and rates that are expected to apply for periods in which such differences reverse. Valuation allowances are established, if necessary, to reduce the deferred tax asset to the amount that will more likely than not be realized.

The Company recognizes the effect of income tax positions only if those positions are more likely than not of being sustained. Recognized income tax positions are measured at the largest amount that is greater than 50% likely of being realized. Changes in recognition or measurement are reflected in the period in which the change in judgment occurs.

Net Loss per Share

The Company has reported losses since inception and has computed basic net loss per share attributable to common stockholders by dividing net loss attributable to common stockholders by the weighted-average number

of common shares outstanding for the period, without consideration for potentially dilutive securities. The Company has computed diluted net loss per common share after giving consideration to all potentially dilutive common shares, including options to purchase common stock, restricted common stock, convertible preferred stock and warrants to purchase convertible preferred stock, outstanding during the period determined using the treasury-stock and if-converted methods, except where the effect of including such securities would be antidilutive. Because the Company has reported net losses since inception, these potential common shares have been anti-dilutive and basic and diluted loss per share have been the same.

Basic and diluted net loss per share attributable to common stockholders was calculated as follows (in thousands, except share and per share data):

	Years Ended December 31,		Six Months Ended June 30,	
	2015	2016	2016	2017
Numerator:				
Net loss	$ (14,247)	$ (24,507)	$ (12,152)	$ (10,303)
Accretion of convertible preferred stock	(37)	(69)	(34)	(34)
Net loss attributable to common stockholders	$ (14,284)	$ (24,576)	$ (12,186)	$ (10,337)
Denominator:				
Weighted-average common shares—basic and diluted	1,258,123	1,339,254	1,337,100	1,342,628
Net loss per share attributable to common stockholders—basic and diluted	$ (11.35)	$ (18.35)	$ (9.11)	$ (7.70)

The following table sets forth the potentially dilutive securities that have been excluded from the calculation of diluted net loss per share because to include them would be anti-dilutive (in common stock equivalent shares):

	Years Ended December 31,		Six Months Ended June 30,	
	2015	2016	2016	2017
Series A convertible preferred stock	4,400,410	4,400,410	4,400,410	4,400,410
Series B convertible preferred stock	4,753,536	4,753,536	4,753,536	4,753,536
Series C convertible preferred stock	4,791,563	4,791,563	4,791,563	4,791,563
Warrants	34,225	43,265	41,005	43,265
Stock options	759,167	1,348,845	1,120,881	1,394,299
Restricted stock	675	—	—	—
Total	14,739,576	15,337,619	15,107,395	15,383,073

Pro Forma Net Loss per Share

Unaudited pro forma net loss per share attributable to common stockholders is computed using the weighted-average number of common shares outstanding after giving effect to the conversion of all the convertible preferred stock into shares of common stock as if such conversion had occurred at the beginning of the period presented or the date of original issuance, if later.

The following table summarizes the Company's unaudited pro forma net loss per share attributable to common stockholders (in thousands, except share and per share data):

	Year Ended December 31, 2016	Six Months Ended June 30, 2017
Numerator:		
Net loss attributable to common stockholders	$ (24,507)	$ (10,303)
Accretion of convertible preferred stock	69	34
Change in fair value of warrant liability	132	32
Pro forma net loss attributable to common stockholders	$ (24,306)	$ (10,237)
Denominator:		
Weighted-average common shares outstanding—basic and diluted	1,339,254	1,342,628
Adjustment for assumed conversion of convertible preferred stock	13,945,509	13,945,509
Pro forma weighted-average common shares outstanding—basic and diluted	15,284,763	15,288,137
Pro forma net loss per share attributable to common stockholders—basic and diluted	$ (1.59)	$ (0.67)

Loss Contingencies

In accordance with ASC 450, *Contingencies*, the Company accrues anticipated costs of settlement, damages, and losses for loss contingencies based on historical experience or to the extent specific losses are probable and estimable. Otherwise, the Company expenses these costs as incurred. If the estimate of a probable loss is a range, and no amount within the range is more likely, the Company accrues the minimum amount of the range.

Guarantees

The Company has identified the guarantees described below as disclosable, in accordance with ASC 460, *Guarantees*.

As permitted under Delaware law, the Company indemnifies its officers and directors for certain events or occurrences while the officer or director is, or was, serving at the Company's request in such capacity. The maximum potential amount of future payments the Company could be required to make is unlimited; however, the Company has directors' and officers' insurance coverage that should limit its exposure and enable it to recover a portion of any future amounts paid.

The Company is a party to a number of agreements entered into in the ordinary course of business that contain typical provisions that obligate the Company to indemnify the other parties to such agreements upon the occurrence of certain events. Such indemnification obligations are usually in effect from the date of execution of the applicable agreement for a period equal to the applicable statute of limitations. The aggregate maximum potential future liability of the Company under such indemnification provisions is uncertain.

The Company leases office space under several noncancelable operating leases. The Company has standard indemnification arrangements under these leases that require it to indemnify the landlord against all costs, expenses, fines, suits, claims, demands, liabilities, and actions directly resulting from any breach, violation, or nonperformance of any covenant or condition of the respective lease.

As of December 31, 2015 and 2016 and June 30, 2017, the Company had not experienced any losses related to these indemnification obligations, and no material claims with respect thereto were outstanding. The Company does not expect significant claims related to these indemnification obligations and, consequently, concluded that the fair value of these obligations is negligible, and no related reserves have been established.

Deferred Initial Public Offering Costs

The Company capitalizes deferred initial public offering ("IPO") costs, which primarily consist of direct, incremental legal, professional, accounting and other third-party fees relating to the Company's initial public offering, within other non-current assets. The deferred IPO costs will be offset against IPO proceeds upon the consummation of an offering. There were no deferred IPO costs as of December 31, 2016 and approximately $114,000 of deferred IPO costs were incurred and capitalized as of June 30, 2017.

Recently Issued Accounting Pronouncements

From time to time, new accounting pronouncements are issued by the FASB or other standard setting bodies and adopted by the Company as of the specified effective date. Unless otherwise discussed, the Company believes that the impact of recently issued standards that are not yet effective will not have a material impact on its consolidated financial position or results of operations upon adoption.

In August 2014, the FASB issued ASU No. 2014-15, *Presentation of Financial Statements—Going Concern* ("ASU No. 2014-15"), which defines management's responsibility to evaluate, at each annual and interim reporting period, whether there are conditions or events that raise substantial doubt about an entity's ability to continue as a going concern within one year after the date the financial statements are issued and to provide related footnote disclosures in certain circumstances. In connection with each annual and interim period, management must assess if there is substantial doubt about the company's ability to continue as a going concern within one year after the issuance date. Disclosures are required if conditions give rise to substantial doubt. This standard is effective for all companies in the first annual period ending after December 15, 2016, and interim periods thereafter, with early adoption permitted. The Company adopted ASU No. 2014-15 for the year ended December 31, 2016. The adoption of ASU No. 2014-15 did not have a significant impact on the Company's financial statement disclosures. Refer to Note 1 for a discussion of the Company's liquidity.

In April 2015, the FASB issued ASU No. 2015-03, *Simplifying the Presentation of Debt Issuance Costs*. This standard amends existing guidance to require the presentation of debt issuance costs in the balance sheet as a deduction from the carrying amount of the related debt liability rather than as a deferred charge. It is effective for annual reporting periods beginning after December 15, 2015. The Company adopted the standard on January 1, 2016 and reclassified its debt issuance costs to a reduction of the debt balances, accordingly. The adoption did not have a material impact on the Company's consolidated financial statements.

In November 2015, the FASB issued ASU No. 2015-17, *Balance Sheet Classification of Deferred Taxes* ("ASU No. 2015-17"), which simplifies the presentation of deferred income taxes by eliminating the need for entities to separate deferred income tax liabilities and assets into current and noncurrent amounts in a classified statement of financial position. For non-public entities, the guidance in this ASU is effective for annual periods beginning after December 15, 2017 and interim periods within annual periods beginning after December 15, 2018. Earlier application is permitted for all entities as of the beginning of an interim or an annual reporting period. The Company prospectively adopted this ASU as of January 1, 2017. Prior period amounts were not retrospectively adjusted, and the adoption of ASU No. 2015-17 did not have a material impact on the Company's consolidated balance sheets.

In February 2016, the FASB issued ASU No. 2016-02, *Leases (Topic 842)* ("ASU No. 2016-02"). The new standard aims to increase transparency and comparability among organizations by requiring lessees to recognize lease assets and lease liabilities on the balance sheet and requiring disclosure of key information about leasing arrangements. ASU No. 2016-02 is effective for public entities for annual periods beginning after December 15, 2018 and for interim periods within those fiscal years. Early adoption is permitted. The Company is currently evaluating the potential impact that ASU No. 2016-02 may have on its financial position and results of operations.

In March 2016, the FASB issued ASU No. 2016-09, *Compensation-Stock Compensation* ("ASU No. 2016-09"), which amends ASC Topic 718, *Compensation-Stock Compensation.* ASU No. 2016-09 identifies areas for simplification involving several aspects of accounting for share-based payment transactions, including the income tax consequences, classification of awards as either equity or liabilities, an option to recognize gross stock compensation expense with actual forfeitures recognized as they occur, as well as certain classifications on the statement of cash flows. The amendments are effective for annual periods beginning after December 15, 2016, and interim periods within those annual periods. The Company adopted ASU No. 2016-09 effective January 1, 2017. The adoption of ASU No. 2016-09 did not have a material impact on the Company's financial statements. Upon adoption, the Company elected to account for forfeitures as they occur. The Company did not have any excess tax benefits associated with stock option exercises and therefore there was no deferred tax asset recorded upon adoption.

In August 2016, the FASB issued ASU No. 2016-15, *Statement of Cash Flows: Classification of Certain Cash Receipts and Cash Payments* ("ASU No. 2016-15"). This guidance addresses the presentation and classification of certain cash receipts and cash payments in the statement of cash flows. The standard is effective for annual periods beginning after December 15, 2017 and for interim periods within those fiscal years. Early adoption is permitted. The Company is currently evaluating the potential impact that the adoption of ASU No. 2016-15 will have on its financial statements.

In May 2017, the FASB issued ASU No. 2017-09, *Compensation-Stock Compensation (Topic 718): Scope of Modification Accounting* ("ASU No. 2017-09"). This update clarifies the changes to terms or conditions of a share-based payment award that require an entity to apply modification accounting. ASU No. 2017-09 is effective for annual reporting periods, and interim periods therein, beginning after December 15, 2017. Early application is permitted and prospective application is required. The Company does not expect that the adoption of this guidance will have a significant impact on the Company's financial position, results of operations or cash flows.

3. Investments

The Company did not have any investments as of December 31, 2015.

The following table summarizes the Company's investments as of December 31, 2016 (in thousands):

	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Estimated Fair Value
Available-for-sale securities:				
U.S. treasury securities	$13,258	$ 3	$ (2)	$13,259
U.S. corporate debt securities	7,397	—	(3)	7,394
Foreign corporate debt securities	2,852	—	—	2,852
Total available-for-sale securities	$23,507	$ 3	$ (5)	$23,505

The aggregate fair value of investments with unrealized losses was approximately $16.5 million at December 31, 2016. At December 31, 2016, 10 investments were in an unrealized loss position. All such investments have been in an unrealized loss position for less than a year and these losses are considered temporary. The Company has the ability and intent to hold these investments until a recovery of their amortized cost.

The following table summarizes the Company's investments as of June 30, 2017 (in thousands):

	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Estimated Fair Value
Available-for-sale securities:				
U.S. treasury securities	$3,249	$—	$—	$3,249
Total available-for-sale securities	$3,249	$—	$—	$3,249

4. Fair Value Measurements

The following tables present information about the Company's financial assets and liabilities that have been measured at fair value at December 31, 2015 and 2016 and June 30, 2017 and indicates the fair value hierarchy of the valuation inputs utilized to determine such fair value (in thousands):

Description	December 31, 2015	Quoted Prices in Active Markets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Assets:				
Money market funds, included in cash and cash equivalents	$68,325	$68,325	$—	$—
Total assets	$68,325	$68,325	$—	$—
Liabilities:				
Warrants for the purchase of shares subject to redemption	$ 68	$ —	$—	$ 68
Total liabilities	$ 68	$ —	$—	$ 68

Description	December 31, 2016	Quoted Prices in Active Markets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Assets:				
Money market funds, included in cash and cash equivalents	$24,302	$24,302	$ —	$—
Investments:				
U.S. treasury securities	13,259	13,259	—	—
U.S. corporate debt securities	7,394	—	7,394	—
Foreign corporate debt securities	2,852	—	2,852	—
Total assets	$47,807	$37,561	$10,246	$—
Liabilities:				
Warrants for the purchase of shares subject to redemption	$ 267	$ —	$ —	$267
Total liabilities	$ 267	$ —	$ —	$267

Description	June 30, 2017	Quoted Prices in Active Markets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Assets:				
Money market funds, included in cash and cash equivalents	$33,777	$33,777	$—	$—
Investments:				
U.S. treasury securities	3,249	3,249	—	—
Total assets	$37,026	$37,026	$—	—
Liabilities:				
Warrants for the purchase of shares subject to redemption	$ 299	$ —	$—	$299
Total liabilities	$ 299	$ —	$—	$299

At December 31, 2015 and 2016 and June 30, 2017, all of the Company's cash equivalents were comprised of money market funds.

At December 31, 2016 and June 30, 2017, items classified as Level 2 within the valuation hierarchy consist of U.S. and foreign corporate debt securities. The Company estimates the fair values of these investments by taking into consideration valuations obtained from third-party pricing sources. These pricing sources 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 market pricing based on real-time trade data for the same or similar securities, issuer credit spreads, benchmark yields, and other observable inputs. The Company validates the prices provided by its third-party pricing sources by understanding the models used, obtaining market values from other pricing sources and analyzing pricing data in certain instances.

At December 31, 2015 and 2016 and June 30, 2017, the Company's warrants for the purchase of shares subject to redemption were the only financial instruments classified as Level 3.

There have been no changes to the valuation methods used during the years ended December 31, 2015 and 2016 and the six months ended June 30, 2017. There were no transfers within the fair value hierarchy during the years ended December 31, 2015 and 2016 and the six months ended June 30, 2017.

The carrying amounts reflected in the consolidated balance sheets for cash and cash equivalents, prepaid expenses and other current assets, accounts payable and accrued expenses approximate their carrying values. The Company believes the terms of the loan payable reflect current market conditions for an instrument with similar terms and maturity, therefore the carrying value of the Company's debt approximates its fair value based on Level 3 of the fair value hierarchy.

Warrants to Purchase Shares Subject to Redemption

In connection with entering into a Loan and Security Agreement ("Loan Agreement") in August 2014 (Note 7), the Company issued a warrant for the purchase of 71,428 shares of Series A preferred stock ("Series A Warrant") when the Loan Agreement was executed. In connection with the first advance under the Loan Agreement, the Series A Warrant became exercisable for an additional 38,265 shares. In connection with a second advance under the Loan Agreement in March 2015, the Series A Warrant became exercisable for an additional 33,163 shares. The Company amended the Loan Agreement in May 2016. In connection with the first advance under the amended Loan Agreement in May 2016, the Company issued a warrant for the purchase of up to 28,302 shares of Series C preferred stock ("Series C Warrant", together with the Series A Warrant, the "Warrants"). In connection with the second advance under the amended Loan Agreement in December 2016, the Series C Warrant became exercisable for an additional 9,434 shares. The estimated fair value of the Warrants was determined using the Black- Scholes option-pricing model. A significant input to the fair value of the warrants is the fair value of the Series A Preferred Stock and the C Preferred Stock which was determined based upon the Company's common stock valuations. The fair value of the Warrants is remeasured at each reporting date using then-current assumptions with changes in fair value charged to other income (expense) on the statements of operations and comprehensive loss. As of December 31, 2015 and 2016 and June 30, 2017, the Warrants were valued at $68,000, $0.3 million and $0.3 million, respectively. The following assumptions were used in valuing the Warrants:

		Original Issuance Date		
	August 18, 2014	March 30, 2015	May 2, 2016	December 28, 2016
Risk-free interest rate	2.4%	2.0%	1.9%	2.5%
Estimated fair value of underlying shares	$0.98	$0.31	$1.92	$2.73
Expected dividend yield	—%	—%	—%	—%
Expected term (in years)	10.0	9.4	10.0	9.4
Expected volatility	80%	88%	90%	90%

	December 31,		
	2015	2016	June 30, 2017
Risk-free interest rate	2.2%	2.3%-2.5%	2.1%-2.2%
Expected dividend yield	—%	—%	—%
Expected term (in years)	8.6	7.6-9.3	7.1-8.9
Expected volatility	85%	90%	87%-91%

The following table sets forth a summary of changes in the fair value of the Warrants, which represented a recurring measurement classified within Level 3 of the fair value hierarchy, wherein fair value was estimated using significant unobservable inputs (in thousands, except share data):

Balance at December 31, 2014	$ 25
Initial fair value of Series A Warrant for the purchase of 33,163 shares	7
Change in fair value of Series A Warrant included in other income (expense)	36
Balance at December 31, 2015	68
Initial fair value of Series C Warrant for the purchase of 28,302 shares	45
Initial fair value of Series C Warrant for the purchase of 9,434 shares	22
Change in fair value of Warrants included in other income (expense)	132
Balance at December 31, 2016	267
Change in fair value of Warrants included in other income (expense)	32
Balance at June 30, 2017	$299

An entity may choose to measure many financial instruments and certain other items at fair value at specified election dates. Subsequent unrealized gains and losses on items for which the fair value option has been elected will be reported in earnings. The Company did not elect to measure any financial instruments or other items at fair value.

5. Property and Equipment, Net

Property and equipment includes the following at December 31, 2015 and 2016 and June 30, 2017 (in thousands):

	December 31,		June 30,
	2015	2016	2017
Property and equipment:			
Laboratory equipment	$ 165	$ 232	$ 251
Computer equipment	—	6	6
Software	—	39	39
Leasehold improvements	109	—	—
	274	277	296
Less: Accumulated depreciation	(185)	(108)	(143)
Property and equipment, net	$ 89	$ 169	$ 153

The Company recognized $0.1 million, $46,000, $21,000 and $34,000 of depreciation expense for the years ended December 31, 2015 and 2016 and the six months ended June 30, 2016 and 2017, respectively.

In September 2016, the Company wrote-off $0.1 million of fully depreciated leasehold improvements upon moving out of a laboratory facility.

6. Accrued Expenses

Accrued expenses consist of the following (in thousands):

	December 31,		June 30,
	2015	2016	2017
Payroll and employee-related expenses	$534	$ 914	$566
Professional fees	179	172	138
Third-party research and development expenses	149	413	93
Loan interest	18	28	38
Other	47	83	11
Total accrued expenses	$927	$1,610	$846

7. Loan and Security Agreement

In August 2014, the Company entered into a Loan Agreement with Silicon Valley Bank ("SVB") to borrow up to $7.0 million. Upon entering into the Loan Agreement, SVB advanced $3.8 million to the Company. In March 2015, SVB advanced the remaining $3.2 million available under the Loan Agreement.

In May 2016, the Loan Agreement was amended ("Amended Loan Agreement") to borrow up to $10.0 million with a portion of the proceeds to be used to pay down the outstanding balance of the original $7.0 million of advances. At the time of the Amended Loan Agreement, SVB advanced a gross amount of $7.5 million to the Company. Net proceeds received by the Company were $1.6 million after deducting $5.3 million for repayment of the original advances and $0.6 million for final interest due upon maturity or prepayment of the original advances. The Amended Loan Agreement was accounted for as a debt modification pursuant to ASC 450-70, *Modifications or Extinguishments*. In December 2016, upon the achievement of certain milestones, SVB advanced the remaining $2.5 million available under the Amended Loan Agreement.

The borrowings are secured by a lien on all Company assets, excluding intellectual property. The May 2016 and December 2016 advances have a floating per annum interest rate of the greater of 4.0% or 0.5% above the prime rate. The interest rate on the borrowings at December 31, 2016 and June 30, 2017 was 4.25% and 4.75%, respectively. Beginning in May 2016, payments were interest only for a period of 12 months. In December 2016, the interest only period was extended to 18 months. Upon the expiration of the interest only period, amounts borrowed will be repaid over 30 equal monthly payments of principal and interest. At its option, the Company may prepay all, but not less than all, of the outstanding borrowings subject to a prepayment premium as defined in the Amended Loan Agreement. The Company is also required to make a final payment equal to 8.25% of the total borrowings which is due on the earliest of the loan maturity date, an acceleration of the loan as defined in the Amended Loan Agreement or at the time of prepayment. The final payment is being accreted to interest expense through the maturity date of the loan.

The minimum aggregate future loan and interest payments at December 31, 2016 are as follows (in thousands):

Years Ending December 31,	
2017	$ 742
2018	4,223
2019	4,223
2020	2,585
Total minimum payments	11,773
Less: Amount representing interest	(1,773)
Less: Discount	(415)
Less: Current portion	(176)
Loan payable, net of current portion	$ 9,409

The Company issued the Series A Warrant to SVB to purchase 71,428 shares of Series A convertible preferred stock ("Series A Preferred Stock") at $0.98 per share upon executing the Loan Agreement. In addition, the Company issued an additional Warrant to SVB to purchase a number of shares of Series A Preferred Stock equal to 1.0% of each additional loan advance amount. In connection with the initial advance and the advance in March 2015, the Series A Warrant became exercisable for an additional 38,265 and 33,163 shares of Series A Preferred Stock at $0.98 per share, respectively. The Series A Warrant expires on August 17, 2024. Under the terms of the Amended Loan Agreement, the Company issued a Series C Warrant to SVB to purchase a number of shares of Series C convertible preferred stock ("Series C Preferred Stock") at $2.65 per share equal to 1.0% of each loan advance amount. In connection with the initial advance and the advance in December 2016, the Series C Warrant became exercisable for 28,302 and 9,434 shares of Series C Preferred Stock at $2.65 per share, respectively. The Series C Warrant expires on May 1, 2026.

The Company recorded the fair value of the Warrants at issuance as a reduction to the loan payable balance. The discount is being accreted to interest expense over the period that the loan will be outstanding. The offsetting credit was recorded as warrants to purchase shares subject to redemption in the long-term liabilities section on the consolidated balance sheets. The fair value of the Warrants is remeasured at each reporting period and changes in fair value are recognized in other income (expense) in the statement of operations.

The Amended Loan Agreement contains negative covenants restricting the Company's activities, including limitations on dispositions, mergers or acquisitions, incurring indebtedness or liens, paying dividends or making investments and certain other business transactions. There are no financial covenants associated with the Amended Loan Agreement. The obligations under the Amended Loan Agreement are subject to acceleration upon the occurrence of specified events of default, including a material adverse change in the Company's business, operations or financial or other condition. The Company has determined that the risk of subjective acceleration under the material adverse events clause is remote and therefore has classified the outstanding principal in current and long-term liabilities based on scheduled principal payments.

The Loan Agreement was previously amended in December 2014 in conjunction with the formation of the Security Corporation, requiring the Company to maintain a balance of cash and cash equivalents in the Company's operating, depository and securities accounts in an amount not less than 125% of the outstanding debt balance so long as the Company maintains a cash balance in the Security Corporation. At December 31, 2015 and 2016 and June 30, 2017, the Company was required to have and had a balance of not less than $7.8 million, $12.5 million and $12.5 million, respectively, included in cash and cash equivalents, representing

125% of the outstanding debt balances at December 31, 2015 and 2016 and June 30, 2017 of $6.3 million, $10.0 million and $10.0 million, respectively, in the Company's operating account.

The Company evaluated the Loan Agreement and Amended Loan Agreement for embedded features that require bifurcation, noting that the contingent interest feature and the incremental interest upon an event of default were required to be bifurcated, but were concluded to be de minimus in value at inception and at December 31, 2015 and 2016 and June 30, 2017.

8. Convertible Preferred Stock

Series A Convertible Preferred Stock

From September 2011 to May 2014, the Company issued a total of 18,367,344 shares of Series A Preferred Stock at $0.98 per share for total net proceeds of $17.9 million.

Series B Convertible Preferred Stock

In November 2014, the Company issued 19,841,270 shares of the Series B Convertible Preferred Stock ("Series B Preferred Stock") at $1.26 per share for net proceeds of $24.9 million.

Series C Convertible Preferred Stock

In November 2015, the Company issued 20,000,000 shares of the Series C Preferred Stock (collectively with the Series A Preferred Stock and Series B Preferred Stock, the "Preferred Stock") at $2.65 per share for net proceeds of $52.8 million.

The Preferred Stock has the following rights and preferences:

Conversion

The Preferred Stock is convertible into common stock at any time at the option of the holder, initially on a 1-for-0.2396 basis, and is subject to mandatory conversion upon (1) the closing of a firm commitment underwritten public offering with proceeds of at least $50.0 million or (2) upon the written notice from the holders of at least 60% of the then-outstanding shares of Preferred Stock, voting together as a single class on an as converted basis and at least a majority of the then outstanding shares of the Series C Preferred Stock, voting as a separate class, at the original issue price per share plus any declared but unpaid dividends.

Voting

The holders of the Preferred Stock have voting rights equivalent to the number of shares of common stock into which their shares convert.

Dividends

Holders of Series C Preferred Stock are entitled to receive, before any cash is paid out or set aside for any other class or series of capital stock, dividends at 8% of the Series C Preferred Stock issuance price, subject to adjustment for any stock dividend, stock split, or other similar recapitalization affecting such class or series of capital stock. The dividends are non-cumulative, and are payable only when and if declared by the Board of Directors of the Company.

Holders of shares of Series A Preferred Stock and Series B Preferred Stock are then entitled to receive, before or simultaneously with common stockholders, a dividend at least equal to the amount of dividends per share received by the common stockholders. No dividends have been declared since the Company's inception.

Liquidation Preference

Upon a voluntary or involuntary liquidation, dissolution or winding up of the Company, the holders of the Series A, Series B and Series C Preferred Stock are entitled to receive an amount equal to $0.98 per share, $1.26 per share and $2.65 per share, respectively, plus declared but unpaid dividends. Holders of Series C Preferred Stock are entitled to receive payment prior to holders of Series B Preferred Stock, and holders of Series B Preferred Stock prior to holders of Series A Preferred Stock. After the payment of all preferential amounts required to be paid upon liquidation to the holders of the Preferred Stock, holders of the Preferred Stock will also share in the remaining assets with holders of the common stock on a pro-rata basis, assuming conversion into common stock. However, the aggregate amount paid to the holders of Series A, Series B and Series C Preferred Stock shall not exceed the greater of $1.96 per share, $2.52 per share and $5.30 per share, respectively, and the amount such holder would have received if all shares of Series A, Series B and Series C Preferred Stock had been converted into common stock immediately prior to liquidation. If the assets available for distribution are insufficient to pay the holders the full amount to which they are entitled, the holders of Series C Preferred Stock (and subsequently the holders of Series B and Series A Preferred Stock, as applicable) will share ratably in any distribution of the assets available in proportion to the amounts that would otherwise be payable.

Redemption

The Company shall redeem the outstanding shares of Preferred Stock in three annual installments at any time on or after November 25, 2020 upon the written notice from the holders of at least 60% of the then-outstanding shares of Preferred Stock, voting together as a single class on an as converted basis and at least a majority of the then outstanding shares of Series C Preferred Stock, voting as a separate class, at the original issue price per share plus any declared but unpaid dividends.

The Company's Preferred Stock has been classified as temporary equity on the accompanying consolidated balance sheets in accordance with authoritative guidance for the classification and measurement of redeemable securities as the Preferred Stock is redeemable at a determinable price on a fixed date or upon the occurrence of a deemed liquidation event. The Preferred Stock is being accreted to its redemption value through the earliest redemption date.

9. Stockholders' (Deficit) Equity

Common Stock

The holders of common stock are entitled to one vote for each share held. Common stockholders are not entitled to receive dividends, unless declared by the Board of Directors.

The Company has reserved for future issuances the following shares of common stock as of December 31, 2016 and June 30, 2017:

	As of December 31, 2016	As of June 30, 2017
Series A convertible preferred stock	4,400,410	4,400,410
Series B convertible preferred stock	4,753,536	4,753,536
Series C convertible preferred stock	4,791,563	4,791,563
Warrants	43,265	43,265
Stock options	2,130,560	2,128,938
Total	16,119,334	16,117,712

Restricted Common Stock

In 2011 and 2012, the Company issued a total of 1,211,035 shares of restricted common stock to founders, employees, directors and consultants. These shares of common stock vested over four years. If any of these individuals ceased to be employed or to provide services to the Company prior to vesting, the Company had the right to repurchase any unvested shares of common stock at the price paid by the holder.

A summary of the status of unvested restricted common stock as of December 31, 2015 and 2016 is presented below:

	Shares	Weighted-Average Grant Date Fair Value
Unvested at December 31, 2014	163,568	$0.42
Granted	—	—
Vested	(162,893)	0.42
Cancelled	—	—
Unvested at December 31, 2015	675	0.42
Granted	—	—
Vested	(675)	0.42
Cancelled	—	—
Unvested at December 31, 2016	—	$ —

There was no unvested restricted common stock outstanding at June 30, 2017.

The fair value of restricted stock awards that vested during the years ended December 31, 2015 and 2016, based on estimated fair values of the stock underlying the restricted stock awards on the day of vesting, was $190,400 and $800, respectively.

10. Stock Incentive Plan

In September 2011, the Company adopted the 2011 Stock Incentive Plan ("2011 Plan"). All of the Company's employees, officers, directors, consultants and advisors are eligible to be granted options, restricted

stock units (“RSUs”), and other share-based awards under the terms of the 2011 Plan. The 2011 Plan provides for the grant of awards for 2,293,272 shares of common stock. As of December 31, 2016 and June 30, 2017, 778,074 and 734,590 shares of common stock were available for future grant under the 2011 Plan, respectively.

All stock option grants are nonstatutory stock options except option grants to employees (including officers and directors) intended to qualify as incentive stock options under the Internal Revenue Code of 1986, as amended. Incentive stock options may not be granted at less than the fair market value of the Company’s common stock on the date of grant, as determined in good faith by the Board of Directors at its sole discretion. Nonqualified stock options may be granted at an exercise price established by the Board of Directors at its sole discretion (which has not been less than fair market value on the date of grant) and the vesting periods may vary. Vesting periods are generally four years and are determined by the Board of Directors or a delegated subcommittee. Stock options become exercisable as they vest. Options granted under the 2011 Plan expire no more than 10 years from the date of grant.

Stock-based compensation expense included in the Company’s statements of operations and comprehensive loss is as follows (in thousands):

	Years Ended December 31,		Six Months Ended June 30,	
	2015	2016	2016	2017
Research and development	$ 74	$ 68	$28	$ 57
General and administrative	133	183	71	139
Total	$207	$251	$99	$196

The fair value of each stock option granted to employees and directors was estimated on the date of grant using the Black-Scholes option-pricing model, with the following range of assumptions for the years ended December 31, 2015 and 2016, and the six months ended June 30, 2016 and 2017:

	Years Ended December 31,		Six Months Ended June 30,	
	2015	2016	2016	2017
Risk-free interest rate	1.8%-1.9%	1.3%-1.7%	1.4%-1.7%	1.9%-2.0%
Expected dividend yield	—%	—%	—%	—%
Expected term (in years)	6.25	5.4-6.4	5.4-6.5	5.6-6.3
Expected volatility	85%	77%-84%	83%-84%	84%-87%

The expense related to awards granted to employees and directors for their service on the Board of Directors was $179,000, $227,000, $89,000 and $169,000 for the years ended December 31, 2015 and 2016 and for the six months ended June 30, 2016 and 2017, respectively.

The fair value of each stock option granted to non-employees was estimated on the date of grant using the Black-Scholes option-pricing model, with the following range of assumptions for the years ended December 31, 2015 and 2016, and the six months ended June 30, 2016 and 2017:

	Years Ended December 31,		Six Months Ended June 30, 2016
	2015	2016	
Risk-free interest rate	2.4%	1.9%-2.4%	1.9%-2.4%
Expected dividend yield	—%	—%	—%
Expected term (in years)	10.0	8.9-10.0	8.9-10.0
Expected volatility	85%	89%-96%	89%-96%

We did not grant any stock options to non-employees during the six months ended June 30, 2017. The expense related to awards granted to non-employees was $28,000, $24,000, $10,000 and $27,000 for the years ended December 31, 2015 and 2016 and for the six months ended June 30, 2016 and 2017, respectively.

A summary of the stock option activity under the 2011 Plan is as follows:

	Shares	Weighted-Average Exercise Price	Weighted-Average Remaining Contractual Life (in years)	Aggregate Intrinsic Value (in thousands)
Outstanding at December 31, 2015	759,167	$1.04	8.8	$ 399
Granted	620,137	1.59		
Exercised	(24,770)	0.75		
Cancelled	(5,689)	1.34		
Outstanding at December 31, 2016	1,348,845	1.29	8.6	$3,642
Granted	51,067	4.01		
Exercised	(1,621)	1.46		
Cancelled	(3,992)	1.46		
Outstanding at June 30, 2017	1,394,299	$1.42	8.1	$4,850
Exercisable at December 31, 2016	455,417	$1.13	7.9	$1,318
Vested and expected to vest at December 31, 2016	1,348,845	$1.29	8.6	$3,642
Exercisable at June 30, 2017	653,187	$1.21	7.7	$2,411
Vested and expected to vest at June 30, 2017	1,394,299	$1.41	8.1	$4,850

The weighted-average fair value of options granted to employees and directors for their service on the Board of Directors during the years ended December 31, 2015 and 2016 and six months ended June 30, 2016 and 2017 was $0.83, $1.13, $1.13 and $2.92 per share, respectively. The weighted-average fair value of options granted to non-employees during the years ended December 31, 2015 and 2016 and six months ended June 30, 2016 was $1.00, $1.38 and $1.38 per share, respectively. There were no options granted to non-employees during the six months ended June 30, 2017.

The aggregate intrinsic value of stock options is calculated as the difference between the exercise price of the stock options and the fair value of the Company's common stock for those stock options that had exercise prices lower than the fair value of the Company's common stock. The total intrinsic value of options exercised during the years ended December 31, 2015 and 2016 and the six months ended June 30, 2016 and 2017 was $2,000, $21,000, $21,000 and $4,000, respectively.

As of December 31, 2016 and June 30, 2017, total unrecognized stock-based compensation expense relating to unvested stock options was $0.8 million and $0.9 million, respectively. This amount is expected to be recognized over a weighted-average period of 2.4 years.

11. Income Taxes

The Company has incurred net operating losses ("NOLs") from inception. At December 31, 2016, the Company has NOL carryforwards of approximately $58.8 million available to reduce future taxable income,

which expire beginning in 2031. The Company also has federal research and development tax credit carryforwards of approximately $2.4 million available to reduce future tax liabilities and which expire beginning in 2031. The Company has state NOL carryforwards of approximately $57.5 million available to reduce state future taxable income, which will expire beginning in 2031. The Company also has state research and development tax credit carryforwards of $1.6 million available to reduce future tax liabilities and which will expire beginning in 2026.

The Company does not have any NOL carryforwards associated with deductible stock option exercises as of December 31, 2016.

Net operating loss and tax credit carryforwards may become subject to an annual limitation in the event of certain cumulative changes in the ownership interest of significant shareholders over a three-year period in excess of 50%, as defined under Sections 382 and 383 of the Internal Revenue Code of 1986, as amended, respectively, as well as similar state provisions. This could limit the amount of tax attributes that can be utilized annually to offset future taxable income or tax liabilities. The amount of the annual limitation is determined based on the value of the Company immediately prior to the ownership change. Subsequent ownership changes may further affect the limitation in future years. The Company has not determined whether an ownership change has occurred and as such, the Company's NOLs may be limited.

A reconciliation of income taxes computed using the U.S. federal statutory rate to that reflected in operations as of December 31, 2015 and 2016 are as follows:

	2015	2016
Income tax computed at federal statutory tax rate	34.0%	34.0%
Permanent differences	(0.4)%	(0.5)%
State taxes, net of federal benefit	(0.1)%	5.1%
Research and development tax credits	5.5%	6.1%
Other	0.1%	0.0%
Change in deferred tax asset valuation allowance	(39.1)%	(44.7)%
	0.0%	0.0%

The Company's deferred tax assets at December 31, 2016 and 2015, consist of the following (in thousands):

	Years Ended December 31,	
	2015	2016
Deferred tax assets:		
Net operating loss carryforwards	$ 13,592	$ 23,028
Research and development credits	1,922	3,418
Licenses	42	38
Other	63	118
Total gross deferred tax asset	15,619	26,602
Less: Valuation allowance	(15,619)	(26,602)
Net deferred tax asset	$ —	$ —

ASC 740 requires a valuation allowance to reduce the deferred tax assets reported if, based on the weight of the evidence, it is more likely than not that some portion or all of the deferred tax assets will not be realized.

After consideration of all the evidence, both positive and negative, the Company has recorded a valuation allowance against its deferred tax assets at December 31, 2015 and 2016, respectively, because the Company's management has determined that it is more likely than not that the Company will not recognize the benefits of its federal and state deferred tax assets primarily due to its cumulative loss position and, as a result, a valuation allowance of approximately $15.6 million and $26.6 million has been established at December 31, 2015 and 2016, respectively. The valuation allowance increased by $6.3 million and $11.0 million in the years ended December 31, 2015 and 2016, respectively. The increase in the valuation allowance in 2016 primarily relates to the net loss incurred by the Company.

The Company has no unrecognized tax benefits. The Company has not, as yet, conducted a study of its research and development credit carryforwards. This study may result in an adjustment to the Company's research and development credit carryforwards, however, until a study is completed and any adjustment is known, no amounts are being presented as an uncertain tax position. A full valuation allowance has been provided against the Company's research and development credits and, if an adjustment were required, this adjustment would be offset by an adjustment to the valuation allowance. Thus, there would be no impact to the balance sheet or statement of operations if an adjustment were required.

Interest and penalty charges, if any, related to unrecognized tax benefits would be classified as income tax expense in the accompanying statement of operations. As of December 31, 2015 and 2016, the Company had no accrued interest related to uncertain tax positions. The Company's uncertain tax positions are related to years that remain subject to examination by relevant tax authorities. 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.

12. Related Party Transactions

From September 2015 to June 2017, the Company received consulting and management services from one of its investors, Third Rock Ventures LLP ("Third Rock Ventures"). The Company paid Third Rock Ventures $19,000, $69,000 and $2,000 for these services during the years ended December 31, 2015 and 2016, and the six months ended June 30, 2017, respectively. At December 31, 2015, $33,000 was due to Third Rock Ventures for these services. No amounts were payable to Third Rock Ventures at December 31, 2016 and June 30, 2017.

13. Commitments and Contingencies

In August 2011 and October 2013, the Company and an independent third party entered into operating leases for approximately 6,055 square feet of office space in Newton, MA ("Newton Lease") and approximately 3,170 square feet of laboratory space in Natick, MA, respectively. Base rent for the office space during the initial rent period was approximately $0.1 million per year and increased annually. Base rent for the lab space was approximately $59,000 annually. Rent expense, inclusive of the escalating rent payments and free rent period, was recognized on a straight-line basis over the term of each lease agreement. The Company and the independent third party were each jointly and severally liable for the obligations under both leases. In October 2016, the Newton lease was amended to extend the term one year to May 2018 and, effective June 1, 2017 removed the independent third party from the lease and all related obligations of the lease.

In March 2015, the Company and the independent third party entered into a sublease agreement for approximately 5,385 square feet of office space in Newton, MA that expired in February 2017.

In August 2016, the Company entered into an operating lease for approximately 7,162 square feet of laboratory space in Sudbury, MA. This lease was to expire in August 2017. In February 2017, the Company

amended this lease to extend the term to February 2019 and reduce the amount of rentable space to approximately 5,133 square feet, with an option to lease the other 2,029 square feet. Base rent for this space is approximately $0.1 million annually.

Rent expense includes the Company's allocated portion of rental obligations under the leases. The Company recorded $0.2 million, $0.2 million, $0.1 million and $0.2 million, of rent expense for the years ended December 31, 2015 and 2016 and the six months ended June 30, 2016 and 2017, respectively.

The minimum aggregate future operating lease commitments at December 31 2016 and June 30, 2017 are as follows (in thousands):

	Total Minimum Lease Payments	
	December 31, 2016	June 30, 2017
2017	$370	$188
2018	111	253
2019	—	24
	$481	$465

14. License Agreement

In March 2012, the Company entered into an exclusive license agreement with Althea Technologies, Inc. (now known as Ajinomoto Althea, Inc.) ("Althea"), as amended in March 2016, for certain intellectual property ("License Agreement"). The Company reimbursed Althea for patent related costs incurred by Althea totaling $0.1 million in the aggregate and issued a total of 88,186 shares of common stock to Althea. Under the terms of the License Agreement, the Company is obligated to pay milestone payments and mid-single digit royalties on net sales. Milestone payments are triggered upon the achievement of specified regulatory milestones totaling up to $31.0 million and sales-based milestones up to $25.0 million. The milestone payments are not creditable against royalties. Actual amounts due under the License Agreement will vary depending on the number of products developed, the type and development path of the products, and other related factors. The Company may terminate the agreement at any time with 60 days prior written notice.

15. Employee Benefit Plan

Effective January 2012, employees of the Company are eligible to participate in the Company's 401(k) retirement plan ("401(k) Plan"). Participants may contribute up to 100% of their annual compensation to the 401(k) Plan, subject to statutory limitations. The 401(k) Plan does not allow the Company to make matching contributions.

16. Subsequent Events

The Company's Board of Directors and stockholders approved a 1-for-4.174 reverse stock split of the Company's common stock that became effective on October 23, 2017. All share and per share amounts in the consolidated financial statements and notes thereto have been retroactively adjusted for all periods presented to give effect to this reverse split.

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5,333,333 Shares

Common Stock

Prospectus

, 2017

Through and including , 2017 (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 delivery requirement is in addition to the obligation of dealers to deliver a prospectus when acting as underwriters and with respect to their unsold allotments or subscriptions.