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

FORM 10-Q

(Mark One)

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

For the quarterly period ended June 30, 2017

or

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

For the transition period from _____ to _____

Commission File Number 001-36310

CONCERT PHARMACEUTICALS, INC.

(Exact name of registrant as specified in its charter)

Delaware	**20-4839882**
(State or other jurisdiction of incorporation or organization)	**(I.R.S. Employer Identification No.)**
99 Hayden Avenue, Suite 500 Lexington, Massachusetts	**02421**
(Address of principal executive offices)	**(Zip Code)**

(781) 860-0045

(Registrant's telephone number, including area code)

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

Indicate by check mark whether the registrant has submitted electronically and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). Yes ☒ No ☐

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

Large accelerated filer	☐	Accelerated filer	☒
Non-accelerated filer	☐ (Do not check if a smaller reporting company)	Smaller reporting company	☐
		Emerging Growth Company	☒

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

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

The number of shares outstanding of the registrant's common stock as of August 4, 2017: 22,687,187

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PART I. FINANCIAL INFORMATION

Item 1. Financial Statements.

CONCERT PHARMACEUTICALS, INC.
CONDENSED CONSOLIDATED BALANCE SHEETS (UNAUDITED)
(Amounts in thousands, except share and per share data)

	June 30, 2017	December 31, 2016
Assets		
Current assets:		
Cash and cash equivalents	$ 27,591	$ 40,555
Investments, available for sale	75,829	55,630
Interest receivable	218	164
Accounts receivable	273	27
Prepaid expenses and other current assets	2,318	1,353
Total current assets	106,229	97,729
Property and equipment, net	1,944	2,199
Restricted cash	400	400
Other assets	49	67
Total assets	$ 108,622	$ 100,395
Liabilities and stockholders' equity		
Current liabilities:		
Accounts payable	$ 1,000	$ 545
Accrued expenses and other liabilities	3,909	3,853
Deferred revenue, current portion	1,168	1,172
Total current liabilities	6,077	5,570
Deferred revenue, net of current portion	8,857	8,878
Deferred lease incentive, net of current portion	84	249
Deferred rent, net of current portion	35	104
Loan payable, net of discount	29,188	—
Total liabilities	44,241	14,801
Commitments		
Stockholders' equity:		
Preferred stock, $0.001 par value per share; 5,000,000 shares authorized; no shares issued and outstanding in 2017 and 2016, respectively		
Common stock, $0.001 par value per share; 100,000,000 shares authorized; 22,620,822 and 22,319,516 shares issued and 22,616,067 and 22,316,982 outstanding in 2017 and 2016, respectively	23	22
Additional paid-in capital	262,644	257,461
Accumulated other comprehensive loss	(44)	(7)
Accumulated deficit	(198,242)	(171,882)
Total stockholders' equity	64,381	85,594
Total liabilities and stockholders' equity	$ 108,622	$ 100,395

See accompanying notes.

CONCERT PHARMACEUTICALS, INC.

CONDENSED CONSOLIDATED STATEMENTS OF OPERATIONS AND COMPREHENSIVE LOSS (UNAUDITED)
(Amounts in thousands, except per share data)

	Three Months Ended June 30,		Six Months Ended June 30,	
	2017	2016	2017	2016
Revenue:				
License and research and development revenue	$ 15	$ 71	$ 35	$ 127
Total revenue	15	71	35	127
Operating expenses:				
Research and development	7,285	9,816	15,522	20,269
General and administrative	5,707	3,828	10,960	7,405
Total operating expenses	12,992	13,644	26,482	27,674
Loss from operations	(12,977)	(13,573)	(26,447)	(27,547)
Investment income	155	132	292	226
Interest and other expense	(205)	—	(205)	—
Net loss	(13,027)	(13,441)	(26,360)	(27,321)
Other comprehensive (loss) income:				
Unrealized (loss) gain on investments	(10)	12	(37)	61
Comprehensive loss	$ (13,037)	$ (13,429)	$ (26,397)	$ (27,260)
Net loss per share applicable to common stockholders — basic and diluted	$ (0.58)	$ (0.60)	$ (1.17)	$ (1.23)
Weighted-average number of common shares used in net loss per share applicable to common stockholders— basic and diluted	22,579	22,217	22,479	22,208

See accompanying notes.

CONCERT PHARMACEUTICALS, INC.
CONDENSED CONSOLIDATED STATEMENTS OF CASH FLOWS (UNAUDITED)
(Amounts in thousands)

	Six Months Ended June 30,	
	2017	**2016**
Operating activities		
Net loss	$ (26,360)	$ (27,321)
Adjustments to reconcile net loss to net cash used in operating activities:		
Depreciation and amortization	493	430
Stock-based compensation expense	3,216	2,569
Accretion of premiums and discounts on investments	100	265
Amortization of discount on loan payable	42	—
Amortization of deferred lease incentive	(161)	(156)
Loss on disposal of asset	4	2
Changes in operating assets and liabilities:		
Accounts receivable	(246)	(63)
Interest receivable	(54)	(30)
Prepaid expenses and other current assets	(965)	348
Other assets	18	56
Accounts payable	455	1,901
Accrued expenses and other liabilities	(8)	(1,399)
Income taxes payable	—	(75)
Deferred rent	(44)	(19)
Deferred revenue	(25)	(82)
Net cash used in operating activities	(23,535)	(23,574)
Investing activities		
Purchases of property and equipment	(229)	(231)
Purchases of investments	(64,919)	(75,906)
Maturities of investments	44,583	60,613
Net cash used in investing activities	(20,565)	(15,524)
Financing activities		
Proceeds from loan, net	29,680	—
Proceeds from exercise of stock options	1,456	239
Net cash provided by financing activities	31,136	239
Net decrease in cash and cash equivalents	(12,964)	(38,859)
Cash and cash equivalents at beginning of period	40,555	92,510
Cash and cash equivalents at end of period	$ 27,591	$ 53,651
Supplemental cash flow information:		
Cash paid for income taxes	$ —	$ 85
Purchases of property and equipment unpaid at period end	$ 6	$ 23
Issuance of stock warrants	$ 512	$ —

See accompanying notes.

1. Nature of Business

Concert Pharmaceuticals, Inc., or Concert or the Company, was incorporated on April 12, 2006 as a Delaware corporation with operations based in Lexington, Massachusetts. The Company is a clinical stage biopharmaceutical company that applies its extensive knowledge of deuterium chemistry to discover and develop novel small molecule drugs. The Company's approach typically starts with approved drugs that the Company believes can be improved with deuterium substitution to provide better pharmacokinetic or metabolic properties, thereby enhancing clinical safety, tolerability or efficacy. The Company believes this approach may enable drug discovery and clinical development that is more efficient and less expensive than conventional small molecule drug research and development. The Company has a pipeline of clinical candidates as well as research efforts to identify new product candidates.

On March 3, 2017, the Company entered into an Asset Purchase Agreement (the "Asset Purchase Agreement") with Vertex Pharmaceuticals, Inc., through Vertex Pharmaceuticals (Europe) Limited ("Vertex"), pursuant to which the Company agreed to sell and assign CTP-656 and other cystic fibrosis assets of the Company, for up to $250 million subject to the satisfaction of certain closing conditions. On May 24, 2017, Concert shareholders authorized the sale of CTP-656 and other assets related to the treatment of cystic fibrosis. In July 2017 the U.S. Federal Trade Commission (the "FTC") terminated the waiting period for the pending sale of CTP-656 under the Hart-Scott-Rodino Antitrust Improvements Act of 1976 (HSR Act). The expiration of the HSR Act waiting period represented the final regulatory closing condition required to complete the sale. In July 2017, the Asset Purchase Agreement closed and Vertex paid the Company $160 million in cash consideration, with $16 million to initially be held in escrow. Additional information concerning the sale of CTP-656 is discussed further in Note 6.

On June 8, 2017, the Company entered into a Loan and Security Agreement, or the Loan Agreement, with Hercules Capital, Inc., or Hercules, pursuant to which Hercules agreed to make available to the Company a secured term loan facility in the amount of $30 million, or the Term Loan Facility, subject to certain terms and conditions. Additional information concerning the Loan Agreement is discussed further in Note 11.

The Company had cash and cash equivalents and investments of $103.4 million at June 30, 2017. The Company believes that its cash and cash equivalents and investments at June 30, 2017, will be sufficient to allow the Company to fund its current operating plan for at least the next twelve months. The Company may pursue additional cash resources through public or private financings and by establishing collaborations with or licensing its technology to other companies and through other arrangements.

Since its inception, the Company has generated an accumulated deficit of $198.2 million through June 30, 2017. The Company's operating results may fluctuate significantly from year to year, depending on the timing and magnitude of cash payments received pursuant to collaboration and licensing arrangements and other agreements and the timing and magnitude of clinical trial and other development activities under its current development programs. Substantially all the Company's net losses have resulted from costs incurred in connection with its research and development programs and from general and administrative costs associated with its operations. The Company expects to continue to incur significant expenses and increasing operating losses for at least the next several years.

The Company is subject to risks common to companies in the biotechnology industry, including, but not limited to, risks of failure or unsatisfactory results of nonclinical studies and clinical trials, the need to obtain additional financing to fund the future development of its pipeline, the need to obtain marketing approval for its product candidates, 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 and ability to transition from pilot-scale manufacturing to large-scale production of products.

Unless otherwise indicated, all amounts are in thousands except share and per share amounts.

2. Basis of Presentation and Significant Accounting Policies

Basis of Presentation

The accompanying condensed consolidated financial statements have been prepared in accordance with generally accepted accounting principles for interim financial information and with the instructions to Form 10-Q and Article 10 of Regulation S-X. Accordingly, they do not include all of the information and footnotes required by generally accepted accounting principles for complete financial statements. In the opinion of management, all adjustments, consisting of normal recurring accruals and revisions of estimates, considered necessary for a fair presentation of the condensed consolidated financial statements have

been included. Interim results for the three and six months ended June 30, 2017 are not necessarily indicative of the results that may be expected for the fiscal year ending December 31, 2017 or any other future period.

The accompanying condensed consolidated financial statements reflect the accounts of Concert and its subsidiaries. All intercompany transactions between the Company and its subsidiaries have been eliminated. Management has determined that the Company operates in one segment: the development of pharmaceutical products on its own behalf or in collaboration with others. The information included in this quarterly report on Form 10-Q should be read in conjunction with the Company's consolidated financial statements and the accompanying notes included in the Company's Annual Report on Form 10-K for the year ended December 31, 2016 filed with the Securities and Exchange Commission on March 6, 2017.

Use of Estimates and Summary of Significant Accounting Policies

In preparing the condensed consolidated financial statements, management used estimates in the following areas, among others: revenue recognition for multiple-element revenue arrangements; stock-based compensation expense; income tax expense; accrued expenses; and the evaluation of the existence of conditions and events that raise substantial doubt regarding the Company's ability to continue as a going concern. Actual results could differ from those estimates.

There have been no material changes to the significant accounting policies previously disclosed in the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2016.

Recent Accounting Pronouncements

In May 2014, the Financial Accounting Standard Board, or FASB, issued Accounting Standards Update, or ASU, No. 2014-09, Revenue from Contracts with Customers (Topic 606), or ASU 2014-09, which stipulates that an entity should recognize revenue to depict the transfer of promised goods or services to customers in an amount that reflects the consideration to which the entity expects to be entitled in exchange for those goods or services. To achieve this core principle, ASU 2014-09 provides that an entity should apply the following steps: (1) identify the contract(s) with a customer, (2) identify the performance obligations in the contract, (3) determine the transaction price, (4) allocate the transaction price to the performance obligations in the contract and (5) recognize revenue when (or as) the entity satisfies a performance obligation. This update will be effective for the Company beginning in the first quarter of fiscal 2018 as a result of the FASB's one year deferral of the effective date for this standard. The amendments may be applied retrospectively to each prior period (full retrospective) or retrospectively with the cumulative effect recognized as of the date of initial application (modified retrospective). Previously, the Company disclosed that it intended to apply ASU 2014-09 using the full retrospective approach. Due to the additional adoption efforts required of issuers under the full retrospective approach, the Company now intends to adopt ASU 2014-09 in the first quarter of 2018 using the modified retrospective approach. Under the modified retrospective approach, the cumulative effect of applying the standard would be recognized at the date of initial application within retained earnings. The Company is currently evaluating the effect of adopting the requirements of ASU 2014-09 as it relates to the accounting for its collaboration arrangements with Celgene Pharmaceuticals, Inc., Jazz Pharmaceuticals plc and Avanir Pharmaceuticals, Inc., and its patent assignment agreement with Auspex Pharmaceuticals, Inc. The Company is also in the process of evaluating appropriate changes to its controls to support revenue recognition and disclosure under the new standard.

In August 2014, the FASB issued ASU No. 2014-15, Disclosure of Uncertainties About an Entity's Ability to Continue as a Going Concern, or ASU 2014-15. ASU 2014-15 amends FASB Accounting Standards Codification, or ASC, 205-40, Presentation of Financial Statements – Going Concern, by providing guidance on determining when and how reporting entities must disclose going-concern uncertainties in their financial statements, including requiring management to perform interim and annual assessments of an entity's ability to continue as a going concern within one year of the date of issuance of the entity's financial statements and providing certain disclosures if there is substantial doubt about the entity's ability to continue as a going concern. The Company was required to apply the requirements of ASU 2014-15 in its interim financial statements beginning in the first quarter of fiscal 2017. With respect to the interim financial statements as of June 30, 2017, the Company did not identify any conditions or events that raise substantial doubt about its ability to continue as a going concern within one year after the date the financial statements are issued.

In February 2016, the FASB issued ASU No. 2016-02, Leases (Topic 842), or ASU 2016-02. ASU 2016-02 requires lessees to recognize assets and liabilities on the balance sheet for the rights and obligations created by all leases with terms of more than 12 months. ASU 2016-02 also will require certain qualitative and quantitative disclosures designed to give financial statement users information on the amount, timing, and uncertainty of cash flows arising from leases. ASU 2016-02 will be effective for the Company on January 1, 2019, with early adoption permitted. The Company is currently evaluating the impact ASU 2016-02 will have on its financial statements.

In March 2016, the FASB issued ASU No. 2016-09, Compensation-Stock Compensation-Improvements to Employee Share-Based Payment Accounting, or ASU 2016-09. This update simplifies several aspects of the accounting for share-based compensation arrangements, including accounting for income taxes, forfeitures and statutory tax withholding requirements as well as classification of related amounts on the statement of cash flows. The Company adopted this ASU on January 1, 2017 and it did not have a material effect on the consolidated financial statements and related disclosures.

In June 2016, the FASB issued ASU No. 2016-13, Financial Instruments-Credit Losses (Topic 326)-Measurement of Credit Losses on Financial Instruments, or ASU 2016-13. The new standard requires entities to measure all expected credit losses for financial assets held at the reporting date based on historical experience, current conditions and reasonable and supportable forecasts. ASU 2016-13 will become effective for the Company for fiscal years beginning after December 15, 2019, with early adoption permitted. The Company is currently evaluating the impact ASU 2016-13 will have on its financial statements and related disclosures.

3. Fair Value Measurements

The Company has certain financial assets and liabilities that are recorded at fair value which have been classified as Level 1, 2 or 3 within the fair value hierarchy as described in the accounting standards for fair value measurements:

- Level 1—quoted prices for identical instruments in active markets;
- Level 2—quoted prices for similar instruments in active markets, quoted prices for identical or similar instruments in markets that are not active, and model-derived valuations in which all significant inputs and significant value drivers are observable in active markets; and
- Level 3—valuations derived from valuation techniques in which one or more significant value drivers are unobservable.

The tables below present information about the Company's financial assets and liabilities that are measured and carried at fair value as of June 30, 2017 and December 31, 2016 (in thousands) and indicate the level within the fair value hierarchy where each measurement is classified.

	Level 1	Level 2	Level 3	Total
June 30, 2017				
Cash equivalents:				
Money market funds	$ 23,790	$ —	$ —	$ 23,790
Investments, available for sale:				
U.S. Treasury obligations	21,527	—	—	21,527
Government agency securities	53,304	998	—	54,302
Total	$ 98,621	$ 998	$ —	$ 99,619

	Level 1	Level 2	Level 3	Total
December 31, 2016				
Cash equivalents:				
Money market funds	$ 26,257	$ —	$ —	$ 26,257
U.S. Treasury obligations	—	1,001	—	1,001
Investments, available for sale:				
U.S. Treasury obligations	10,034	5,503	—	15,537
Government agency securities	24,545	15,548	—	40,093
Total	$ 60,836	$ 22,052	$ —	$ 82,888

The carrying amount of financial instruments not carried at fair value, such as the loan payable, approximate fair value. The carrying value of the Company's loan payable approximates fair value because the interest rate yield for the loan approximates

current market yields. The disclosed fair value of the Company's loan payable represents a Level 3 measurement within the fair value hierarchy.

4. Cash, Cash Equivalents and Investments

Cash equivalents include all highly liquid investments maturing within 90 days from the date of purchase. Investments consist of securities with original maturities greater than 90 days when purchased. The Company classifies these investments as available-for-sale and records them at fair value in the accompanying consolidated balance sheets. Unrealized gains or losses are included in accumulated other comprehensive income (loss). Premiums or discounts from par value are amortized to investment income over the life of the underlying investment.

Cash, cash equivalents and investments, available for sale included the following at June 30, 2017 and December 31, 2016:

	Average maturity	Amortized cost	Unrealized gains	Unrealized losses	Fair value
June 30, 2017					
Cash		$ 3,801	$ —	$ —	$ 3,801
Money market funds		23,790	—	—	23,790
Cash and cash equivalents		$ 27,591	$ —	$ —	$ 27,591
U.S. Treasury obligations	184 days	21,544	—	(17)	21,527
Government agency securities	187 days	54,329	—	(27)	54,302
Investments, available for sale		$ 75,873	$ —	$ (44)	$ 75,829

	Average maturity	Amortized cost	Unrealized gains	Unrealized losses	Fair value
December 31, 2016					
Cash		$ 13,297	$ —	$ —	$ 13,297
Money market funds		26,257	—	—	26,257
U.S. Treasury obligations	31 days	1,001	—	—	1,001
Cash and cash equivalents		$ 40,555	$ —	$ —	$ 40,555
U.S. Treasury obligations	125 days	15,534	4	(1)	15,537
Government agency securities	140 days	40,103	1	(11)	40,093
Investments, available for sale		$ 55,637	$ 5	$ (12)	$ 55,630

Although available to be sold to meet operating needs or otherwise, securities are generally held through maturity. The cost of securities sold is determined based on the specific identification method for purposes of recording realized gains and losses. During 2017 and 2016, there were no realized gains or losses on sales of investments, and no investments were adjusted for other than temporary declines in fair value.

5. Accrued Expenses and Other Liabilities

Accrued expenses and other liabilities consisted of the following:

	June 30, 2017	December 31, 2016
Accrued professional fees and other	$ 1,366	$ 487
Employee compensation and benefits	1,320	2,010
Research and development expenses	604	930
Deferred lease incentive, current portion	328	324
Deferred rent, current portion	127	102
Interest payable	164	—
	$ 3,909	$ 3,853

6. Asset Purchase Agreement

On March 3, 2017, the Company, Vertex Pharmaceuticals (Europe) Limited, a U.K. limited company ("Vertex"), and Vertex Pharmaceuticals Inc., a Massachusetts corporation, solely as a guarantor, entered into an Asset Purchase Agreement, pursuant to which, subject to the satisfaction or waiver of the conditions therein, the Company sold and assigned to Vertex, CTP-656 and other cystic fibrosis assets of the Company. On May 24, 2017, Concert shareholders authorized the sale of CTP-656 and other assets related to the treatment of cystic fibrosis. In July 2017 the FTC terminated the waiting period for the pending sale of CTP-656 under the HSR Act of 1976. The expiration of the HSR Act waiting period represented the final regulatory closing condition required to complete the Asset Purchase Agreement. In July 2017, the Asset Purchase Agreement closed and Vertex paid the Company $160 million in cash consideration, with $16 million to initially be held in escrow. The Company will recognize this subsequent event in the third quarter of fiscal 2017. Accordingly, no accounting consideration has been given to the asset sale as of June 30, 2017.

Additionally, upon the achievement of certain milestone events, Vertex has agreed to pay the Company an aggregate of up to $90 million. Of this amount, $50 million will become payable to the Company upon receipt of FDA marketing approval for a combination treatment regimen containing CTP-656 for patients with cystic fibrosis, and $40 million will become payable to the Company upon completion of a pricing and reimbursement agreement in the first of the United Kingdom, Germany or France with respect to a combination treatment regimen containing CTP-656 for patients with cystic fibrosis.

Pursuant to the Asset Purchase Agreement, the Company has agreed to indemnify Vertex for certain matters, including breaches of specified representations and warranties, covenants included in the Asset Purchase Agreement and specified tax claims. Representations and warranties, other than certain fundamental representations and warranties, survive for a period of eighteen months following the Closing and the maximum liability of the Company for claims by Vertex related to the breaches of such representations and warranties, with limited exceptions, is limited to the escrow amount, or $16 million. In no event will the aggregate liability of the Company for indemnification exceed the purchase price paid by Vertex, including any milestone payments. Eighteen months after the Closing, any remaining balance in the escrow account not subject to indemnity claims by Vertex will be released to the Company.

7. Income Taxes

Deferred tax assets and deferred tax liabilities are recognized based on temporary differences between the financial reporting and tax basis of assets and liabilities using statutory rates. A valuation allowance is recorded against deferred tax assets if it is more likely than not that some or all of the deferred tax assets will not be realized.

The Company records a provision or benefit for income taxes on ordinary pre-tax income or loss based on its estimated effective tax rate for the year. As of June 30, 2017, the Company forecast an ordinary pre-tax loss for the year ended December 31, 2017 and, since it maintains a full valuation allowance on its deferred tax assets, the Company did not record an income tax benefit for the six months ended June 30, 2017.

In July 2017, the Asset Purchase Agreement described in Note 6 closed and Vertex paid the Company $160 million in cash consideration, with $16 million of such consideration to initially be held in escrow. The Company will recognize this subsequent event in the third quarter of fiscal 2017 and the cash consideration will be included in the Company's estimated effective tax rate in the third quarter of 2017. The effect of a non-recognized subsequent event is considered in the Company's estimated effective tax rate in the period in which the event occurs. Accordingly, no income tax provision or benefit was recorded during the quarter or six month period ended June 30, 2017 as a result of the closing of the asset purchase with Vertex in July 2017.

The Company's ability to use its operating loss carryforwards and tax credits to offset future taxable income is subject to restrictions under Sections 382 and 383 of the United States Internal Revenue Code (the "Internal Revenue Code"). 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 percent, as defined under Sections 382 and 383 of the Internal Revenue Code. Such changes would limit the Company's use of its operating loss carryforwards and tax credits. In such a situation, the Company may be required to pay income taxes, even though significant operating loss carryforwards and tax credits exist. The Company is currently in the process of evaluating the extent of any such ownership changes and annual limitations under Section 382 and 383 of the Internal Revenue Code.

8. Collaborations

Celgene

In April 2013, the Company entered into a master development and license agreement with Celgene Corporation and Celgene International Sàrl, referred to together as Celgene, which is primarily focused on the research, development and commercialization of specified deuterated compounds targeting inflammation or cancer.

The initial program in the collaboration is CTP-730, a deuterium-modified analog of apremilast. Celgene has an exclusive worldwide license to develop, manufacture and commercialize deuterated analogs of apremilast and certain close chemical derivatives thereof. The Company further granted Celgene licenses with respect to two additional programs and an option with respect to a third additional program.

The Company was responsible for conducting and funding research and early development activities for the CTP-730 program at its own expense pursuant to mutually agreed upon development plans. This included the completion of single and multiple ascending dose Phase 1 clinical trials in 2015.

Under the terms of the agreement, the Company received a non-refundable upfront payment of $35.0 million. In October 2015, the Company earned and recognized as milestone revenue an $8.0 million development milestone based on the completion of Phase 1 clinical evaluation of CTP-730. In addition, the Company is eligible to earn an additional $15.0 million development milestone payment, up to $247.5 million in regulatory milestone payments and up to $50.0 million in sales-based milestone payments related to products within the CTP-730 program. The next milestone payment the Company may be entitled to achieve under the CTP-730 program is $15.0 million related to the first actual dosing in a Phase 3 clinical trial or, if earlier, acceptance for filing of a new drug application, or NDA. If Celgene exercises its rights with respect to either of the two additional license programs, the Company will receive a license exercise fee for the applicable program of $30.0 million and will also be eligible to earn up to $23.0 million in development milestone payments and up to $247.5 million in regulatory milestone payments for that program. Additionally, with respect to one of the additional license programs, the Company is eligible to receive up to $100.0 million in milestone payments based on net sales of products, and with respect to the other additional license program, the Company is eligible to receive up to $50.0 million in milestone payments based on net sales of products. If Celgene exercises its option with respect to the option program, in respect of a compound to be identified at a later time, the Company will receive an option exercise fee of $10.0 million and will be eligible to earn up to $23.0 million in development milestone payments and up to $247.5 million in regulatory milestone payments.

In addition, with respect to each program, Celgene is required to pay the Company royalties on worldwide net sales of each licensed product at defined percentages ranging from the mid-single digits to low double digits below 20%. The royalty rate is reduced on a country-by-country basis during any period within the royalty term when there is no patent claim or regulatory exclusivity covering the licensed product in the particular country.

During the three months ended June 30, 2017, the Company did not recognize any revenue for the R&D Services and Supply Deliverables, as no services were performed. During the three months ended June 30, 2016, the Company recognized revenue of $11 thousand for the R&D Services Deliverable and $18 thousand for the Supply Deliverable, respectively. During the six months ended, June 30, 2017 and 2016, the Company recognized revenue of $2 thousand and $19 thousand for the R&D Services Deliverable and $10 thousand and $38 thousand for the Supply Deliverable, respectively. The revenue was classified as license and research and development revenue in the accompanying condensed consolidated statements of operations and comprehensive loss.

As of June 30, 2017, there was $7.2 million of deferred revenue related to the Company's collaboration with Celgene, $1.1 million of which was classified as a current liability and $6.1 million of which was classified as a noncurrent liability, in the accompanying condensed consolidated balance sheet.

Jazz Pharmaceuticals

In February 2013, the Company entered into a development and license agreement with Jazz Pharmaceuticals, Inc., or Jazz Pharmaceuticals, to research, develop and commercialize products containing a deuterated sodium oxybate analog, or D-SXB. Jazz Pharmaceuticals is initially focusing on one analog, designated as JZP-386. Under the terms of the agreement, the Company granted Jazz Pharmaceuticals an exclusive, worldwide, royalty-bearing license under intellectual property controlled by the Company to develop, manufacture and commercialize D-SXB products including, but not limited to, JZP-386.

The Company, together with Jazz Pharmaceuticals, has conducted certain development activities for Phase 1 clinical trials with respect to JZP-386 pursuant to an agreed upon development plan. The Company was responsible under the development plan

for conducting the Phase 1 clinical trials with respect to JZP-386. The Company's obligations to conduct further development activities are subject to mutual agreement. Jazz Pharmaceuticals has assumed all manufacturing and development responsibilities relating to JZP-386. Pursuant to the agreement, the Company's costs for activities under the development plan were reimbursed by Jazz Pharmaceuticals, except for the costs of a Phase 1 clinical trial that was conducted in the first half of 2015, which was shared between Jazz Pharmaceuticals and the Company.

Under the agreement, the Company received a non-refundable upfront payment of $4.0 million and is eligible to earn an aggregate of up to $8.0 million in development milestone payments, up to $35.0 million in regulatory milestone payments and up to $70.0 million in sales-based milestone payments based on net product sales of licensed products. The next milestone payment that the Company may be entitled to receive is $4.0 million related to initiation of the first Phase 2 clinical trial of JZP-386.

In addition, Jazz Pharmaceuticals is required to pay the Company royalties at defined percentages ranging from the mid-single digits to low double digits below 20% on worldwide net sales of licensed products. The royalty rate is lowered, on a country-by-country basis, under certain circumstances as specified in the agreement.

For the three months ended June 30, 2017 and 2016, the Company recognized revenue of $15 thousand and $34 thousand respectively, related to the performance of development support services. For the six months ended June 30, 2017 and 2016, the Company recognized revenue of $22 thousand and $68 thousand related to the performance of development support services, respectively.

Avanir

In February 2012, the Company entered into a development and license agreement with Avanir Pharmaceuticals, Inc., or Avanir, under which the Company granted Avanir an exclusive worldwide license to develop, manufacture and commercialize deudextromethorphan containing products. Avanir is currently focused on developing AVP-786, which is a combination of a deudextromethorphan and an ultra low dose of quinidine. Subsequent to the Company's agreement, Avanir was acquired by Otsuka Pharmaceutical Co., Ltd. and it is now a wholly owned subsidiary of Otsuka America, Inc.

Since June 2012, Avanir has elected to conduct all research and development activities, including manufacturing activities; however, the Company has received intellectual property cost reimbursements.

Under the agreement, the Company received a non-refundable upfront payment of $2.0 million and has received milestone payments of $6.0 million. The Company is also eligible to earn, with respect to licensed products comprising a combination of deudextromethorphan and quinidine, up to $37.0 million in regulatory and commercial launch milestone payments, of which $21.5 million in development and regulatory milestone payments are associated with the first indication, and up to $125.0 million in sales-based milestone payments. The next milestone payments that the Company may be entitled to receive are $5.0 million upon acceptance for filing of a NDA, $3.0 million upon acceptance for filing of a Marketing Authorization Application, or MAA, and $1.5 million upon acceptance for filing of a NDA by the Ministry of Health, Labour and Welfare, or MHLW, related to AVP-786. In addition, the Company is eligible for higher development milestones, up to an additional $43.0 million, for licensed products that do not require quinidine. Avanir is currently developing deudextromethorphan only in combination with quinidine.

Avanir also is required to pay the Company royalties at defined percentages ranging from the mid-single digits to low double digits below 20% on net sales of licensed products on a country-by-country basis. The royalty rate is reduced, on a country-by-country basis, during any period within the royalty term when there is no patent claim covering the licensed product in the particular country.

9. Stock-Based Compensation

The Company's equity incentive plans provide for the issuance of a variety of stock-based awards, including incentive stock options, nonstatutory stock options and awards of stock, to directors, officers and employees of the Company, as well as consultants and advisors to the Company. As of June 30, 2017, the Company has granted awards solely in the form of stock options, which have generally been granted with an exercise price equal to the fair value of the underlying common stock on the date of grant, expire no later than ten years from the date of grant and generally vest over three or four years.

Effective January 1, 2017, an additional 892,679 shares were added to the Company's 2014 Stock Incentive Plan, or the 2014 Plan, for future issuance pursuant to the terms of the 2014 Plan. As of June 30, 2017, there were 1,709,515 shares of common stock available for future award grants under the 2014 Plan.

Total stock-based compensation expense related to all stock-based awards recognized in the condensed consolidated statements of operations and comprehensive loss consisted of:

	Three Months Ended June 30,		Six Months Ended June 30,	
	2017	2016	2017	2016
Research and development	$ 686	$ 553	$ 1,403	$ 1,106
General and administrative	887	734	1,813	1,463
Total stock-based compensation expense	$ 1,573	$ 1,287	$ 3,216	$ 2,569

Stock Options

Stock options are valued using the Black-Scholes-Merton option valuation model and compensation cost is recognized based on such fair value over the period of vesting. The weighted average fair value of options granted in the three and six months ended June 30, 2017 and 2016 reflect the following weighted-average assumptions:

	Three Months Ended June 30,		Six Months Ended June 30,	
	2017	2016	2017	2016
Expected volatility	78.30%	78.12%	78.16%	78.31%
Expected term	6.0 years	6.0 years	6.0 years	6.0 years
Risk-free interest rate	2.02%	1.15%	2.07%	1.35%
Expected dividend yield	—%	—%	—%	—%

For the three and six months ended June 30, 2017, expected volatility was estimated using a weighted-average of the Company's historical volatility of its common stock and the historical volatility of the common stock of a group of similar companies that were publicly traded. The Company will continue to apply this process until a sufficient amount of historical information regarding the volatility of its own stock price becomes available.

For the three and six months ended June 30, 2016, expected volatility was estimated using the historical volatility of the common stock of a group of similar companies that were publicly traded.

The following table provides certain information related to the Company's outstanding stock options:

	Three Months Ended June 30,		Six Months Ended June 30,	
	2017	2016	2017	2016
	(in thousands, except per share data)			
Weighted average fair value of options granted, per option	$ 9.29	$ 8.72	$ 7.66	$ 10.91
Aggregate grant date fair value of options vested during the period	$ 1,691	$ 1,352	$ 2,967	$ 2,384
Total cash received from exercises of stock options	$ 317	$ 63	$ 1,456	$ 239
Total intrinsic value of stock options exercised	$ 645	$ 131	$ 3,309	$ 628

The following is a summary of stock option activity for the six months ended June 30, 2017:

	Number of Option Shares	Weighted Average Exercise Price per Share	Weighted Average Remaining Contractual Term	Aggregate Intrinsic Value
			(In years)	(In thousands)
Outstanding at December 31, 2016	2,953,961	$ 10.49		
Granted	1,059,300	$ 11.23		
Exercised	(301,306)	$ 4.96		
Forfeited or expired	(174,685)	$ 12.17		
Outstanding at June 30, 2017	3,537,270	$ 11.10	6.84	$ 12,333
Exercisable at June 30, 2017	1,747,298	$ 9.57	5.41	$ 8,527
Vested and expected to vest at June 30, 2017 (1)	3,371,158	$ 11.03	6.76	$ 11,966

(1) This represents the number of vested stock option shares as of June 30, 2017, plus the number of unvested stock option shares that the Company estimated as of June 30, 2017 would vest, based on the unvested stock option shares at June 30, 2017 and an estimated forfeiture rate of 7%.

As of June 30, 2017, there was $13.2 million of unrecognized compensation cost related to stock options that are expected to vest. These costs are expected to be recognized over a weighted average remaining vesting period of 2.7 years.

10. Earnings (Loss) Per Share

Basic net earnings (loss) per common share is calculated by dividing net earnings (loss) allocable to common stockholders by the weighted-average common shares outstanding during the period, without consideration of common stock equivalents. Diluted net earnings per share is calculated by adjusting the weighted-average shares outstanding for the dilutive effect of common stock equivalents, including stock options and warrants, outstanding for the period as determined using the treasury stock method. For purposes of the diluted net loss per share calculation, common stock equivalents are excluded from the calculation if their effect would be anti-dilutive. Therefore, basic and diluted net loss per share applicable to common stockholders is the same for periods with a net loss.

	Three Months Ended June 30,		Six Months Ended June 30,	
	2017	2016	2017	2016
	(in thousands, expect per share amounts)			
Numerator:				
Net loss applicable to common stockholders - basic and diluted	(13,027)	$ (13,441)	(26,360)	$ (27,321)
Denominator:				
Weighted average shares outstanding - basic	22,579	22,217	22,479	22,208
Dilutive stock options	—	—	—	—
Dilutive warrants	—	—	—	—
Weighted average shares outstanding - diluted	22,579	22,217	22,479	22,208
Net loss per share applicable to common stockholders - basic and diluted	$ (0.58)	$ (0.60)	$ (1.17)	$ (1.23)
Anti-dilutive potential common stock equivalents excluded from the calculation of net loss per share:				
Stock options	637	667	610	717
Warrants	132	71	132	71

11. Loan Payable and Warrant to Purchase Common Stock

On June 8, 2017, the Company entered into a Loan and Security Agreement, or the Loan Agreement, with Hercules Capital, Inc., or Hercules, pursuant to which Hercules agreed to make available to the Company a secured term loan facility in the amount of $30.0 million, or the Term Loan Facility, subject to certain terms and conditions. The Company borrowed $30 million under the Loan Agreement in one advance. The Company incurred $0.3 million in loan issuance costs paid directly to the lenders, which have been offset against the loan proceeds as a loan discount.

The advance under the Loan and Security Agreement bears interest at a variable rate of the greater of 8.55% and an amount equal to 8.55% plus the prime rate of interest minus 4.50%. Through June 30, 2017, the Notes had an interest rate of 8.55%. Interest-only payments are due monthly on the first day of each month beginning the month after the date of the advance until January 1, 2019. Thereafter the aggregate principal balance outstanding becomes payable in 30 equal monthly installments of principal and interest continuing through the maturity date of June 1, 2021.

The Company may prepay the principal of the Loan Agreement at any time subject to a prepayment charge equal to: 2.0% of amounts prepaid on or prior to June 1, 2018; 1.0% of amounts prepaid during the period from June 1, 2018 to June 1, 2019; and 0.5% of amounts prepaid on and after June 1, 2019. The Prepayment Charge will be waived if the Company completes the sale of CTP-656 to Vertex Pharmaceuticals, discussed further in Note 6, and prepays the Notes after the 90th day following the closing date of the Loan Agreement but prior to the six month anniversary of the closing date of the Loan Agreement.

The Company evaluated the embedded features inherent in the Loan Agreement to determine if any of the embedded features require bifurcation and, therefore, separate accounting as a derivative liability. As a result of the Company's determination that the prepayment features are clearly and closely related to the debt host, bifurcation and separate accounting is not required.

The Company will pay an End of Term Charge of $1.5 million on the date that the Notes are paid in full or become due and payable. The Company is amortizing the End of Term Charge over the life of the loan. The End of Term Charge will be reduced to $0.7 million if the Company completes the sale of CTP-656 to Vertex Pharmaceuticals and prepays the Notes after the 90th day following the closing date of the Loan Agreement but prior to the six month anniversary of the closing date of the Loan Agreement.

The Loan Agreement is secured by substantially all of the Company's assets, including all securities in domestic subsidiaries and 65% of the securities in foreign subsidiaries, but excluding its intellectual property, and subject to certain exceptions and exclusions.

Future principal payments, which exclude the end of term charge, in connection with the Loan and Security Agreement, as of June 30, 2017 are as follows (in thousands):

Fiscal Year	Principal Payments
2017	$ —
2018	—
2019	11,209
2020	12,216
2021	6,575
Total	30,000

In connection with the entry into the Loan Agreement, the Company issued warrants, or the Warrants, to certain entities affiliated with Hercules, exercisable for an aggregate of 61,273 shares of the Company's common stock at an exercise price of $12.24 per share. The Warrants have a five year term, expiring June 8, 2022, and may be exercised on a cashless basis. The Hercules Warrants have a total relative fair value of $0.5 million.

Pursuant to ASC Topic 480, *Distinguishing Liabilities from Equity* and ASC Topic 815, *Derivatives and Hedging*, the Warrants were classified as equity and were measured at relative fair value. Subsequent changes to fair value will not be recognized so long as the instrument continues to be equity classified. To determine the relative fair value, the Company measured the fair value of the Warrants as of June 8, 2017 using the Black-Scholes-Merton option pricing model. The significant assumptions used in estimating the fair value of the Warrants include the volatility of the stock underlying the warrants, risk-free interest rate, and estimated life of the warrant. The Company used the following weighted-average assumptions:

Expected volatility	73.71%
Expected term (in years)	5
Risk-free interest rate	1.75%
Expected dividend yield	—%

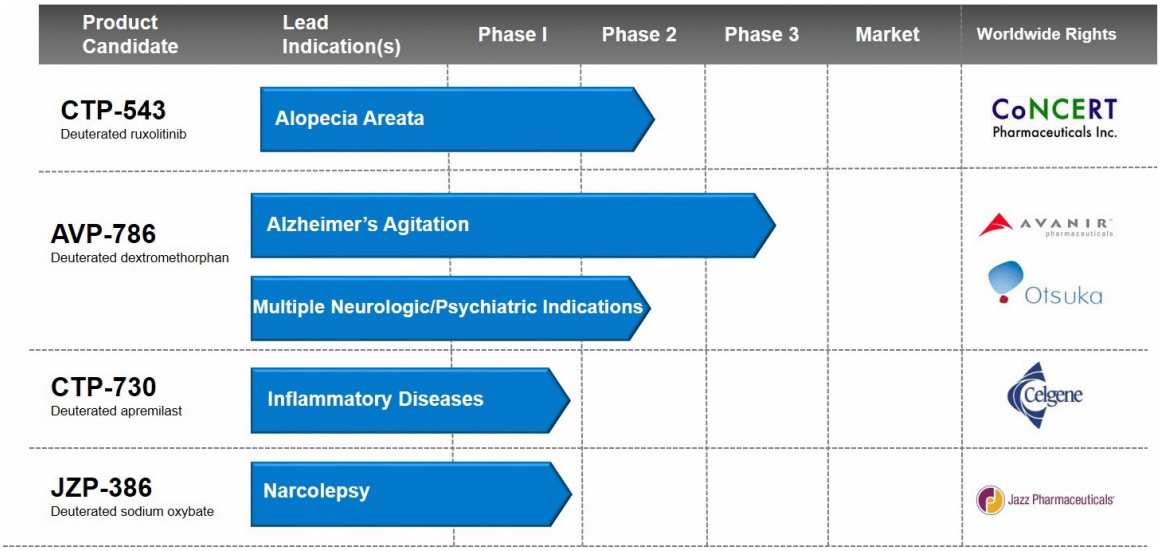
Consistent with the Company's weighted-average assumptions used in determining the fair value of options, expected volatility was estimated using a weighted-average of the Company's historical volatility of its common stock and the historical volatility of the common stock of a group of similar companies that were publicly traded.

Item 2. Management's Discussion and Analysis of Financial Condition and Results of Operations.

You should read the following discussion and analysis of our financial condition and results of operations together with our condensed consolidated financial statements and the related notes appearing elsewhere in this Quarterly Report on Form 10-Q. Statements contained or incorporated by reference in this Quarterly Report on Form 10-Q that are not based on historical fact are "forward-looking statements" within the meaning of the Private Securities Litigation Reform Act of 1995, Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended. These forward-looking statements regarding future events and our future results are based on current expectations, estimates, projections, intentions, goals, strategies, plans, prospects and the beliefs and assumptions of our management including, without limitation, our expectations regarding results of operations, general and administrative expenses, research and development expenses, current and future development and manufacturing efforts, regulatory filings, nonclinical and clinical trial results, and the sufficiency of our cash for future operations. You should read the "Risk Factors" section in Part II—Item 1A. of this report for a discussion of important factors that could cause actual results to differ materially from the results described in or implied by the forward-looking statements contained in the following discussion and analysis.

OVERVIEW

We are a clinical stage biopharmaceutical company applying our extensive knowledge of deuterium chemistry to discover and develop novel small molecule drugs. Selective incorporation of deuterium into known molecules has the potential, on a case-by-case basis, to provide better pharmacokinetic or metabolic properties, thereby enhancing their clinical safety, tolerability or efficacy. Our approach typically starts with approved drugs that we believe may be improved with deuterium substitution. Our technology provides the opportunity to develop products that may compete with the non-deuterated drug in existing markets or to leverage the known activity of approved drugs to expand into new indications. Our deuterated chemical entity platform, or DCE Platform®, has broad potential across numerous therapeutic areas. We have a pipeline of clinical candidates as well as research efforts to identify new product candidates.



CTP-656 Asset Purchase Agreement

On March 3, 2017, we entered into an Asset Purchase Agreement with Vertex Pharmaceuticals, through Vertex Pharmaceuticals (Europe) Limited, pursuant to which we agreed to sell and assign, subject to the satisfaction or waiver of certain conditions, CTP-656 and other cystic fibrosis assets of the Company, for up to $250 million. On May 24, 2017, Concert shareholders authorized the sale of CTP-656 and other assets related to the treatment of cystic fibrosis. In July 2017 the U.S. Federal Trade Commission (the "FTC") terminated the waiting period on the pending sale of CTP-656 under the Hart-Scott-Rodino Antitrust Improvements Act of 1976 (HSR Act). The expiration of the HSR Act waiting period represented the final regulatory closing condition required to complete the Asset Purchase Agreement.

In July 2017, the transaction contemplated by the Asset Purchase Agreement closed and Vertex paid the Company $160 million in cash consideration, with $16 million to initially be held in escrow. Additional information concerning the sale of CTP-656 is discussed further in Note 6, appearing elsewhere in this Quarterly Report on Form 10-Q.

CTP-543

CTP-543 Overview

Alopecia areata is an autoimmune disease affecting up to 650,000 Americans at any given time and that results in partial or complete loss of hair on the scalp or body. CTP-543 was discovered by applying Concert's deuterium chemistry technology to modify ruxolitinib, which is commercially available under the name Jakafi® in the United States for the treatment of certain blood disorders. Ruxolitinib has been used to treat alopecia areata in academic settings, including an investigator-sponsored clinical trial, and has been shown to promote hair growth in individuals with moderate-to-severe disease. There are currently no drugs approved by the FDA for the treatment of alopecia areata. *Clinical Development of CTP-543*

In 2016, we completed single and multiple ascending dose Phase 1 trials. The single and multiple ascending dose trials enrolled a total of 77 healthy volunteers. The pharmacokinetic measurements showed increased exposure with increasing doses. CTP-543 was well-tolerated across all dose groups and there were no serious adverse events reported in subjects who received CTP-543. The safety and exposure observed with 16 mg of CTP-543 twice daily appeared comparable to the reported exposure of 20 mg ruxolitinib twice daily. In the multiple ascending dose Phase 1 trial of CTP-543, pharmacodynamic analyses were performed to assess the inhibition of IL-6- and IFN-gamma-mediated JAK/STAT signaling. Consistent with the established pharmacological activity of CTP-543, a dose-related reduction in IL-6-stimulated phosphorylated STAT3 was observed. Also, IFN-gamma-mediated STAT1 signaling, which is believed to play a key role in the pathogenesis of alopecia areata, was significantly inhibited in disease-relevant immune cell types at all doses evaluated.

We also conducted a Phase 1 crossover study evaluating the metabolite profiles of CTP-543 and ruxolitinib. In this study, except for the presence of deuterium, no new metabolites were observed with CTP-543.

In May 2017, we announced that we had received notice from the FDA that our CTP-543 Phase 2a clinical trial for alopecia areata had been placed on clinical hold, pending the review of certain non-clinical toxicology studies. In July 2017, we announced that the FDA had lifted the clinical hold.

The Phase 2a trial is now underway with a modified trial design evaluating two doses of CTP-543 (4 and 8 mg twice daily) and a placebo control. Approximately 90 patients with moderate-to-severe alopecia areata will be enrolled in the study. The primary outcome measure of the Phase 2a trial remains the effect on treating hair loss as measured by the severity of alopecia tool (SALT) after 24 weeks of dosing. We expect to complete the trial in the second half of 2018.

COLLABORATION PRODUCT CANDIDATES

We have several collaborative arrangements with companies to develop deuterium-modified versions of their marketed products. In each of these collaborations, the deuterium-modified compound was independently discovered at Concert. Our collaborators are responsible for any future clinical development activities and disclosures associated with these following programs.

- AVP-786 is a combination of deudextromethorphan and an ultra-low dose of quinidine being investigated for the treatment of neurologic and psychiatric disorders that is being developed under a collaboration with Avanir. Avanir is conducting several Phase 2 and Phase 3 clinical trials to evaluate AVP-786, the most advanced of which are Phase 3 clinical trials for the treatment of agitation associated with Alzheimer’s disease.
- CTP-730 is a deuterated analog of apremilast that is being developed under a collaboration with Celgene. Apremilast is a selective phosphodiesterase 4 (PDE4) inhibitor approved for the treatment of psoriasis and psoriatic arthritis. We have completed the Phase 1 clinical evaluation of CTP-730. Once daily dosing of 50 mg of CTP-730 administered for seven days in the Phase 1 clinical trial demonstrated similar steady state exposure to historical data for 30 mg of apremilast twice daily. Treatment with CTP-730 was generally well-tolerated and no serious adverse events were observed. Celgene is responsible for any development of CTP-730 beyond the completed Phase 1 clinical trials. Celgene is assessing the path forward for CTP-730. However, CTP-730 has not advanced into new trials at this time.

- JZP-386 is a product candidate containing a deuterated sodium oxybate analog for potential use in patients with narcolepsy that is being developed under a collaboration with Jazz Pharmaceuticals. In May 2015, we and Jazz Pharmaceuticals announced the completion of a Phase 1 clinical study. Clinical data from this Phase 1 study demonstrated that JZP-386 provided favorable deuterium-related effects, including higher serum concentrations and correspondingly increased PD effects at clinically relevant time points compared to Xyrem® (sodium oxybate) oral solution. The safety profile of JZP-386 was similar to that observed with Xyrem. Jazz Pharmaceuticals is responsible for any further development of JZP-386 and is continuing to evaluate once-nightly dosing.

FINANCIAL OPERATIONS OVERVIEW

Since our inception in 2006, we have devoted substantially all of our resources to our research and development efforts, including activities to develop our deuterated chemical entity platform, or DCE Platform®, and our core capabilities in deuterium chemistry, identify potential product candidates, undertake nonclinical studies and clinical trials, manufacture clinical trial material in compliance with current good manufacturing practices, provide general and administrative support for these operations and establish our intellectual property. We have generated an accumulated deficit of $198.2 million since inception through June 30, 2017 and will require substantial additional capital to fund our research and development. We do not have any products approved for sale and have not generated any revenue from product sales. We have funded our operations primarily through the public offering and private placement of our equity, debt financing, funding from collaborations and patent assignments and other arrangements.

Our operating results may fluctuate significantly from year to year, depending on the timing and magnitude of cash payments received pursuant to collaboration and licensing arrangements and other agreements and the timing and magnitude of clinical trial and other development activities under our current development programs. Substantially all of our net losses have resulted from costs incurred in connection with our research and development programs and from general and administrative costs associated with our operations.

We expect to continue to incur significant expenses and increasing operating losses for at least the next several years. We expect our expenses will increase substantially in connection with our ongoing activities as we continue research and development efforts and develop and conduct additional nonclinical studies and clinical trials with respect to our product candidates.

We do not expect to generate revenue from product sales unless and until we, or our collaborators, obtain marketing approval for one or more of our product candidates, which we expect will take a number of years and is subject to significant uncertainty. If we obtain, or believe that we are likely to obtain, marketing approval for any product candidates for which we retain commercialization rights, and intend to commercialize a product, we expect to incur significant commercialization expenses related to product sales, marketing, manufacturing and distribution. In addition to using the proceeds from the sale of assets to Vertex, we expect to seek to fund our operations through a combination of equity offerings, debt financings and additional collaborations and licensing arrangements and other arrangements for at least the next several years. In the future, we may be unable to raise additional funds or enter into such other arrangements when needed on favorable terms or at all. Our failure to raise capital or enter into such other arrangements as and when needed would force us to delay, limit, reduce or terminate our research and development programs and could have a material adverse effect on our financial condition and our ability to develop our products. We will need to generate significant revenues to achieve sustained profitability and we may never do so.

Revenue

We have not generated any revenue from the sales of approved products. All of our revenue to date has been generated through collaboration, license and research arrangements with collaborators and nonprofit organizations for the development and commercialization of product candidates, a patent assignment agreement and an asset sale.

The terms of these agreements include one or more of the following types of payments: non-refundable license fees, payments for research and development activities, payments based upon the achievement of specified milestones, payment of license exercise or option fees relating to product candidates and royalties on any net product sales. To date, we have received non-refundable upfront payments, several milestone payments, payments for research and development services provided to our collaborators and a change in control payment pursuant to a patent assignment agreement. However, we have not yet earned any license exercise or option fees, sales-based milestone payments or royalty revenue as a result of product sales.

In the future, we will seek to generate revenue from a combination of product sales and milestone payments and royalties on product sales in connection with our current collaborations with Avanir, Celgene, and Jazz Pharmaceuticals, or other collaborations we may enter into.

Research and development expenses

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

- employee-related expenses, including salary, benefits, travel and stock-based compensation expense;
- expenses incurred under agreements with contract research organizations and investigative sites that conduct our clinical trials;
- the cost of acquiring, developing and manufacturing clinical trial materials;
- facilities, depreciation and other expenses, which include direct and allocated expenses for rent and maintenance of facilities, insurance and other supplies;
- platform-related lab expenses, which includes costs related to synthesis, analysis and *in vitro* and *in vivo* characterization of deuterated compounds and in some cases their non-deuterated analogs to support the selection and progression of potential product candidates;
- expenses related to consultants and advisors; and
- costs associated with nonclinical activities and regulatory operations.

Research and development costs are expensed as incurred. Costs for certain development activities are recognized based on an evaluation of the progress to completion of specific tasks using information and data provided to us by our vendors and our clinical sites.

A significant portion of our research and development costs have been external costs, which we track on a program-by-program basis. These external costs include fees paid to investigators, consultants, central laboratories and contract research organizations in connection with our clinical trials, and costs related to acquiring and manufacturing clinical trial materials. Our internal research and development costs are primarily personnel-related costs, depreciation and other indirect costs. We do not track our internal research and development expenses on a program-by-program basis as they are deployed across multiple projects under development.

The successful development of any of our product candidates is highly uncertain. As such, at this time, we cannot reasonably predict with certainty the duration and completion costs of the current or future clinical trials of any of our product candidates or if, when, or to what extent we will generate revenues from the commercialization and sale of any of our product candidates that obtain marketing approval. We may never succeed in achieving regulatory approval for any of our product candidates. The duration, costs, and timing of clinical trials and development of our product candidates will depend on a variety of factors, including:

- the scope and rate of progress of our ongoing as well as any additional clinical trials and other research and development activities;
- conduct of and results from ongoing as well as any additional clinical trials and research and development activities;
- significant and changing government regulation;
- the terms and timing and receipt of any regulatory approvals;
- the performance of our collaborators;
- our ability to manufacture any of our product candidates that we are developing or may develop in the future; and
- the expense and success of filing, prosecuting, defending and enforcing any patent claims and other intellectual property rights, including potential claims that we infringe other parties' intellectual property.

A change in the outcome of any of these variables with respect to the development of a product candidate could mean a significant change in the costs and timing associated with the development of that product candidate. For example, if the FDA or another regulatory authority were to require us to conduct clinical trials or other research and development activities beyond those that we currently anticipate will be required for the completion of clinical development of a product candidate, or if we experience significant delays in enrollment in any of our clinical trials, we could be required to expend significant additional financial resources and time on the completion of clinical development.

Research and development activities are central to our business model. Product candidates in later stages of clinical development generally have higher development costs than those in earlier stages of clinical development, due to the increased size and duration of later-stage clinical trials and the manufacturing that is typically required for those later-stage clinical

trials. We expect research and development costs to increase significantly for the foreseeable future as our product candidate development programs progress but we do not believe that it is possible at this time to accurately project total program-specific expenses through commercialization. There are numerous factors associated with the successful commercialization of any of our product candidates, including future trial design and various regulatory requirements, many of which cannot be determined with accuracy at this time based on our stage of development. Additionally, future commercial and regulatory factors beyond our control will impact our clinical development programs and plans.

General and administrative expenses

General and administrative expenses consist primarily of salaries and related costs for personnel, including stock-based compensation and travel expenses for our employees in executive, operational, finance, legal, business development and human resource functions. Other general and administrative expenses include facility-related costs, depreciation and other expenses not allocated to research and development expense and professional fees for directors, accounting and legal services and expenses associated with obtaining and maintaining patents. In 2017, we also incurred expenses responding to the FTC's requests for information and documentation in connection with their review of the Vertex Asset Purchase Agreement.

We anticipate that our general and administrative expenses will increase in the future as our pipeline grows and matures. Additionally, if and when we believe a regulatory approval of the first product candidate that we intend to commercialize on our own appears likely, we anticipate an increase in payroll and related expenses as a result of our preparation for commercial operations, especially as it relates to the sales, marketing and distribution of our product candidates.

Investment income

Investment income consists of interest income earned on cash equivalents and investments. The amount of investment income earned in any particular period may vary primarily as a result of the amount of cash equivalents and investments held during the period and the types of securities included in our portfolio during the period. Our current investment policy is to maintain a diversified investment portfolio of U.S. government-backed securities and money market mutual funds consisting of U.S. government-backed securities.

Interest and other expense

Interest and other expense consists primarily of interest expense on amounts outstanding under our debt facility with Hercules and amortization of debt discount.

Income Taxes

We record a provision or benefit for income taxes on pre-tax income or loss based on our estimated effective tax rate for the year. As of June 30, 2017, we forecast an ordinary pre-tax loss for the year ended December 31, 2017 and, since we maintain a full valuation allowance on our deferred tax assets, we did not record an income tax benefit for the three and six months ended June 30, 2017.

To the extent new information becomes available, we may revise our forecast of ordinary pre-tax income or loss, and therefore the estimated effective tax rate, in future periods. The effect of a non-recognized subsequent event is considered in our estimated effective tax rate in the period in which the event occurs. Accordingly, no income tax provision was recorded during the quarter ended June 30, 2017 as a result of the closing of the asset purchase with Vertex in July 2017.

Critical Accounting Policies and Significant Judgments and Estimates

Our critical accounting policies are those policies which require the most significant judgments and estimates in the preparation of our condensed consolidated financial statements.

During the three months ended June 30, 2017, there were no material changes to our critical accounting policies as detailed in our Annual Report on Form 10-K for the fiscal year ended December 31, 2016, which was filed with the Securities and Exchange Commission on March 6, 2017.

Pending and Recently Adopted Accounting Pronouncements

In May 2014, the FASB issued Accounting Standards Update, or ASU, No. 2014-09, *Revenue from Contracts with Customers (Topic 606)*, or ASU 2014-09, which stipulates that an entity should recognize revenue to depict the transfer of promised goods or services to customers in an amount that reflects the consideration to which the entity expects to be entitled in exchange for those goods or services. To achieve this core principle, ASU 2014-09 provides that an entity should apply the following steps: (1) identify the contract(s) with a customer, (2) identify the performance obligations in the contract, (3) determine the transaction price, (4) allocate the transaction price to the performance obligations in the contract and (5) recognize revenue when (or as) the entity satisfies a performance obligation. This update will be effective for us beginning in the first quarter of fiscal 2018 as a result of the FASB's one year deferral of the effective date for this standard. The amendments may be applied retrospectively to each prior period (full retrospective) or retrospectively with the cumulative effect recognized as of the date of initial application (modified retrospective). Previously, we disclosed that we intended to apply ASU 2014-09 using the full retrospective approach. Due to the additional adoption efforts required of issuers under the full retrospective approach, we now intend to adopt ASU 2014-09 in the first quarter of 2018 using the modified retrospective approach. Under the modified retrospective approach, the cumulative effect of applying the standard would be recognized at the date of initial application within retained earnings. We are currently evaluating the effect of adopting the requirements of ASU 2014-09 as it relates to the accounting for its collaboration arrangements with Celgene Pharmaceuticals, Inc., Jazz Pharmaceuticals plc and Avanir Pharmaceuticals, Inc., and its patent assignment agreement with Auspex Pharmaceuticals, Inc. We are also in the process of evaluating appropriate changes to our controls to support revenue recognition and disclosure under the new standard.

In August 2014, the FASB issued ASU No. 2014-15, *Disclosure of Uncertainties About an Entity's Ability to Continue as a Going Concern*, or ASU 2014-15. ASU 2014-15 amends FASB Accounting Standards Codification 205-40 *Presentation of Financial Statements – Going Concern*, by providing guidance on determining when and how reporting entities must disclose going-concern uncertainties in their financial statements, including requiring management to perform interim and annual assessments of an entity's ability to continue as a going concern within one year of the date of issuance of the entity's financial statements and providing certain disclosures if there is substantial doubt about the entity's ability to continue as a going concern. We are required to apply the requirements of ASU 2014-15 in our interim financial statements beginning in the first quarter of fiscal 2017. With respect to the interim financial statements as of June 30, 2017, we did not identify any conditions or events that raise substantial doubt about our ability to continue as a going concern within one year after the date the financial statements are issued.

In February 2016, the FASB issued ASU No. 2016-02, *Leases* (Topic 842), or ASU 2016-02. ASU 2016-02 requires lessees to recognize assets and liabilities on the balance sheet for the rights and obligations created by all leases with terms of more than 12 months. ASU 2016-02 also will require certain qualitative and quantitative disclosures designed to give financial statement users information on the amount, timing, and uncertainty of cash flows arising from leases. ASU 2016-02 will be effective for us on January 1, 2019, with early adoption permitted. We are currently evaluating the impact ASU 2016-02 will have on our financial statements.

In March 2016, the FASB issued ASU No. 2016-09, *Compensation-Stock Compensation-Improvements to Employee Share-Based Payment Accounting*, or ASU 2016-09. This update simplifies several aspects of the accounting for share-based compensation arrangements, including accounting for income taxes, forfeitures and statutory tax withholding requirements as well as classification of related amounts on the statement of cash flows. We adopted this ASU on January 1, 2017 and it did not have a material effect on our consolidated financial statements and related disclosures.

In June 2016, the FASB issued ASU No. 2016-13, *Financial Instruments-Credit Losses (Topic 326)-Measurement of Credit Losses on Financial Instruments*, or ASU 2016-13. The new standard requires entities to measure all expected credit losses for financial assets held at the reporting date based on historical experience, current conditions and reasonable and supportable forecasts. ASU 2016-13 will become effective for fiscal years beginning after December 15, 2019, with early adoption permitted. We are currently evaluating the impact ASU 2016-13 will have on our financial statements and related disclosures.

RESULTS OF OPERATIONS

Comparison of the three months ended June 30, 2017 and 2016

The following table summarizes our results of operations for the three months ended June 30, 2017 and 2016, together with the changes in those items in dollars.

(in thousands)	Three months ended June 30, 2017	2016	Change
Revenue:			
License and research and development revenue	$ 15	$ 71	$ (56)
Total revenue	15	71	(56)
Operating expenses:			
Research and development	7,285	9,816	(2,531)
General and administrative	5,707	3,828	1,879
Total operating expenses	12,992	13,644	(652)
Loss from operations	(12,977)	(13,573)	596
Investment income	155	132	23
Interest and other expense	(205)	—	(205)
Net loss	$ (13,027)	$ (13,441)	$ 414

License and Research and Development Revenue

License and research and development revenue was $15 thousand for the three months ended June 30, 2017 as compared to $71 thousand for the prior year period, a decrease of approximately $56 thousand. The decrease in revenue in the 2017 period was attributable to a decrease in our activities related to Phase 1 clinical trials performed under our collaborations with Celgene and Jazz Pharmaceuticals.

As of June 30, 2017, we had deferred revenue of:

- $7.2 million related to our collaboration with Celgene, $1.1 million of which is attributable to the CTP-730 program and is currently expected to be recognized as revenue in the next twelve months as we satisfy our remaining research and development activities pursuant to mutually agreed upon development plans, and $6.1 million of which is attributable to two additional license programs that we will not recognize as revenue until Celgene exercises its rights with respect to those programs, or at such time that Celgene's rights lapse, as detailed in our Annual Report on Form 10-K for the fiscal year ended December 31, 2016, which was filed with the Securities and Exchange Commission on March 6, 2017;
- $0.1 million related to our collaboration with Jazz Pharmaceuticals and associated with research and development services to be performed and recognized as revenue over the estimated remaining performance period of 18 months; and
- $2.8 million related to a payment received from GlaxoSmithKline, or GSK, that we will not recognize as revenue until all repayment obligations lapse.

Research and development expenses

The following table summarizes our external research and development expenses, by program, for the three months ended June 30, 2017 and 2016, with our internal research expenses separately classified by category. Because Avanir is conducting the clinical development of AVP-786 at its expense, we made minimal investments in the program during these periods.

(in thousands)	Three Months Ended June 30, 2017	2016
CTP-656 external costs	$ 1,308	$ 2,533
CTP-543 external costs	929	2,285
JZP-386 external costs	—	10
External costs for other programs	300	473
Employee and contractor-related expenses	3,842	3,628
Facility and other expenses	906	887
Total research and development expenses	$ 7,285	$ 9,816

Research and development expenses were $7.3 million for the three months ended June 30, 2017, compared to $9.8 million for the prior year period, a decrease of $2.5 million, which was attributable to a decrease of $1.2 million in direct external expenses associated with CTP-656 and a decrease of $1.4 million in direct external expenses associated with CTP-543. The decrease in CTP-656 expenses was primarily attributable to the costs incurred related to Phase 1 clinical testing and manufacturing activities to support the Phase 2 clinical trial during the 2016 period, compared to costs related to Phase 2 clinical testing incurred during the 2017 period. The decrease in CTP-543 expenses was driven by the timing to initiate the Phase 2a clinical trial.

General and administrative expenses

General and administrative expenses were $5.7 million for the three months ended June 30, 2017, compared to $3.8 million for the prior year period. The increase was primarily attributable to a $1.9 million increase in professional fees associated with the CTP-656 asset purchase agreement and the defense of our CTP-543 patent.

Investment income

Investment income was $0.2 million and $0.1 million for the three months ended June 30, 2017 and 2016 respectively, and consists of interest earned on our cash equivalents and short-term investments.

Interest and other expense

On June 8, 2017, we entered into a Loan and Security Agreement, or the Loan Agreement, with Hercules Capital, Inc., or Hercules, pursuant to which Hercules provided a $30 million secured term loan facility. Interest expense recorded during the three months ended June 30, 2017 is attributable to the interest due for the period and the amortization of the loan discount.

Provision for income taxes

No tax provision was recorded during the three months ended June 30, 2017 and June 30, 2016 due to the net loss generated in both periods. The effect of a non-recognized subsequent event is considered in our estimated effective tax rate in the period in which the event occurs. Accordingly, no income tax provision or benefit was recorded during the three months ended June 30, 2017 as a result of the closing of the asset purchase with Vertex in July 2017.

Comparison of the six months ended June 30, 2017 and 2016

The following table summarizes our results of operations for the six months ended June 30, 2017 and 2016, together with the changes in those items in dollars.

	Six months ended June 30,		
(in thousands)	**2017**	**2016**	**Change**
Revenue:			
License and research and development revenue	$ 35	$ 127	$ (92)
Total revenue	35	127	(92)
Operating expenses:			
Research and development	15,522	20,269	(4,747)
General and administrative	10,960	7,405	3,555
Total operating expenses	26,482	27,674	(1,192)
Loss from operations	(26,447)	(27,547)	1,100
Investment income	292	226	66
Interest and other expense	(205)	—	(205)
Net loss	$ (26,360)	$ (27,321)	$ 961

License and Research and Development Revenue

License and research and development revenue was $35 thousand for the six months ended June 30, 2017 as compared to $0.1 million for the prior year period, a decrease of $0.1 million. The decrease in revenue in the 2017 period was primarily due to a decrease in revenue recognized for services performed under our Celgene and Jazz Pharmaceuticals collaboration agreements. These changes were attributable to a decrease in our activities related to Phase 1 clinical trials performed under our collaborations with Celgene and Jazz Pharmaceuticals.

Research and development expenses

The following table summarizes our external research and development expenses, by program, for the six months ended June 30, 2017 and 2016, with our internal research expenses separately classified by category. Because Avanir is conducting the clinical development of AVP-786 at its expense, we made minimal investments in the program during these periods.

	Six Months Ended June 30,	
(in thousands)	**2017**	**2016**
CTP-656 external costs	$ 2,681	$ 6,691
CTP-543 external costs	2,452	3,242
CTP-730 external costs	12	30
JZP-386 external costs	—	19
External costs for other programs	538	1,013
Employee and contractor-related expenses	8,015	7,550
Facility and other expenses	1,824	1,724
Total research and development expenses	$ 15,522	$ 20,269

Research and development expenses were $15.5 million for the six months ended June 30, 2017, compared to $20.3 million for the prior year period, a decrease of $4.8 million. This decrease was primarily due to a decrease of $4.0 million and $0.8 million in direct external expenses associated with CTP-656 and CTP-543, respectively. The decrease in CTP-656 expenses in the 2017 period was primarily attributable to costs incurred related to the Phase 1 clinical testing and Phase 2 manufacturing activities during the six months ended June 30, 2016, compared to costs incurred related to the Phase 2 clinical testing during the six months ended June 30, 2017. The decrease in CTP-543 expenses was driven by the timing to initiate the Phase 2a clinical trial. The decrease in external costs for other programs of $0.5 million was due to decreased consulting expenses for outsourced research development. The increase in employee and contractor-related expenses of $0.5 million was attributable to higher compensation expenses as compared to the 2016 period, primarily due to an increase in non-cash stock-based compensation and cash compensation expense.

General and administrative expenses

General and administrative expenses were $11.0 million for the six months ended June 30, 2017 compared to $7.4 million for the prior year period. The increase was primarily attributable to a $3.1 million increase in professional fees associated with the CTP-656 asset purchase agreement and the defense of our CTP-543 patent.

Investment income

Investment income was $0.3 million for the six months ended June 30, 2017 compared to $0.2 million for the prior year period. The increase is attributable to higher yielding investments, resulting in higher interest earned on our investments.

Interest and other expense

Interest expense recorded during the six months ended June 30, 2017 is attributable to the interest due under our loan facility with Hercules and amortization of the loan discount.

Provision for income taxes

No tax provision was recorded during the six months ended June 30, 2017 and June 30, 2016 due to the net loss generated in both periods. The effect of a non-recognized subsequent event is considered in our estimated effective tax rate in the period in

which the event occurs. Accordingly, no income tax provision or benefit was recorded during the six months ended June 30, 2017 as a result of the closing of the asset purchase with Vertex in July 2017.

OFF-BALANCE SHEET ARRANGEMENTS

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

LIQUIDITY AND CAPITAL RESOURCES

We have incurred cumulative losses and negative cash flows from operations since our inception in April 2006, and as of June 30, 2017, we had an accumulated deficit of $198.2 million. We anticipate that we will continue to incur losses for at least the next several years. We expect that our research and development and general and administrative expenses will continue to increase and, as a result, we will need additional capital to fund our operations, which we may raise through a combination of equity offerings, debt financings, additional collaborations and licensing arrangements, and other sources.

We have financed our operations to date primarily through the public offering and private placement of our equity, debt financing and funding from collaborations, patent assignments, and an asset sale. During February 2014, we completed our initial public offering, or IPO, whereby we sold 6,649,690 shares of common stock at a price to the public of $14.00 per share, raising aggregate net proceeds of $83.1 million. During March 2015, we sold 3,300,000 shares of common stock through an underwritten public offering at a price to the public of $15.15 per share, raising aggregate net proceeds of $46.7 million.

In June 2015, we received proceeds of $50.2 million in connection with the change in control payment from Auspex, relating to Teva Pharmaceutical Industries Ltd.'s acquisition of Auspex.

In June 2017, we entered into a $30 million secured term loan facility with Hercules, discussed further in Note 11 to the condensed consolidated financial statements appearing elsewhere in this Quarterly report on Form 10-Q.

Subsequent to quarter end, on July 25, 2017, the Vertex Asset Purchase Agreement, discussed further in Note 6 to the condensed consolidated financial statements appearing elsewhere in this Quarterly report on Form 10-Q, was completed and Vertex paid the Company $160 million in cash consideration, with $16 million of such consideration to initially be held in escrow.

As of June 30, 2017 we had cash and cash equivalents and investments of $103.4 million. Cash in excess of immediate requirements is invested in accordance with our investment policy, primarily with a view to liquidity and capital preservation. Currently, our funds are held in U.S. government-backed securities and money market mutual funds consisting of U.S. government-backed securities.

Cash flows

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

	Six months ended June 30,	
(in thousands)	**2017**	**2016**
Net cash provided by (used in):		
Operating activities	$ (23,535)	$ (23,574)
Investing activities	(20,565)	(15,524)
Financing activities	31,136	239
Net decrease in cash and cash equivalents	$ (12,964)	$ (38,859)

Operating activities. The cash used for operating activities generally approximates our net loss adjusted for non-cash items and changes in operating assets and liabilities. During the six months ended June 30, 2017, our operating activities used cash of $23.5 million as compared to cash used by operating activities of $23.6 million during the prior year period. Cash used in operating activities during both the 2017 and prior year period was primarily driven by our development activities associated with CTP-656 and CTP-543, our wholly owned development programs.

Investing activities. Net cash used in investing activities consisted of purchases of investments, purchases of fixed assets and proceeds from the maturity of investments. Net cash used in purchases of investments for the six months ended June 30, 2017 and 2016 was $64.9 million and $75.9 million, respectively. Net cash provided by maturities of investments for the six months ended June 30, 2017 and 2016 was $44.6 million and $60.6 million, respectively. Purchases of fixed assets for the six months ended June 30, 2017 and 2016 was $0.2 million and $0.2 million, respectively.

Financing activities. During the six months ended June 30, 2017 and 2016, our financing activities provided cash of $31.1 million and $0.2 million, respectively. The cash provided by financing activities during the six months ended June 30, 2017

was attributable to net proceeds of $29.7 million under our Loan Agreement with Hercules as well as $1.5 million attributable to proceeds from the exercise of stock options.

Operating capital requirements

We do not anticipate commercializing any of our product candidates for several years. We anticipate that we will continue to generate losses for the foreseeable future, excluding the impact of the cash consideration from the closing of our sale of CTP-656 to Vertex in July 2017, and we expect the losses to increase as we continue the development of, and seek regulatory approvals for, our product candidates, and begin to commercialize any approved products for which we retain commercialization rights. We are subject to all of the risks incident in the development of new drug products, and we may encounter unforeseen expenses, difficulties, complications, delays and other unknown factors that may adversely affect our business, as well as additional risks stemming from the unproven nature of deuterated drugs.

Based on our current expectations, including with respect to our development plans, we believe our existing cash and cash equivalents and investments as of June 30, 2017, together with the cash consideration from the closing of our sale of CTP-656 to Vertex, will enable us to fund our operating expenses and capital expenditure requirements into 2021. However, we may require additional capital for the further development of our existing product candidates and may also need to raise additional funds sooner to pursue other development activities related to additional product candidates.

To date, we have not generated any revenue from product sales. We do not expect to generate significant revenue from product sales unless and until we, or our collaborators, obtain marketing approval of and commercialize one of our current or future product candidates. Because our product candidates are in various stages of development and the outcome of these efforts is uncertain, we cannot estimate the actual amounts necessary to successfully complete development and commercialization of our product candidates or whether or when we will achieve profitability. We anticipate that we will continue to generate losses for the foreseeable future, and we expect the losses to increase as we continue the development of, and seek marketing approvals for, our product candidates, and begin to commercialize any approved products for which we retain commercialization rights.

Until such time, if ever, as we can generate substantial product revenues, we expect to finance our cash needs through a combination of equity offerings, debt financings and additional collaborations, strategic alliances and licensing arrangements, and other arrangements. Except for any obligations of our collaborators to reimburse us for research and development expenses or to make milestone payments under our agreements with them, we do not have any additional committed external sources of funds. Additional capital may not be available on reasonable terms, if at all. If we are unable to raise additional funds when needed, we may be required to delay, limit, reduce or terminate our product development or future commercialization efforts or grant rights to develop and market product candidates that we would otherwise prefer to develop and market ourselves. If we raise additional funds through the issuance of additional debt or equity securities, it could result in dilution to our existing stockholders, increased fixed payment obligations and these securities may have rights senior to those of our common stock. We are subject to covenants under our existing loan and security agreement with Hercules, and may become subject to covenants under any future indebtedness, that limit our ability to take specific actions, such as incurring additional debt, making capital expenditures or declaring dividends, which could adversely impact our ability to conduct our business. In addition, the pledge of substantially all of our assets with the exception of our intellectual property as collateral, and the negative pledge with respect to our intellectual property, under our debt facility with Hercules limit our ability to obtain additional debt financing.

Our expectation with respect to the period of time through which our financial resources will be adequate to support our operations is a forward-looking statement and involves risks and uncertainties, and actual results could vary as a result of a number of factors, including those discussed in the “Risk Factors” section of this Quarterly Report on Form 10-Q. We have based this estimate on assumptions that may prove to be wrong, and we could utilize our available capital resources sooner than we currently expect. If we cannot expand our operations or otherwise capitalize on our business opportunities because we lack sufficient capital, our business, financial condition and results of operations could be materially adversely affected.

Contractual obligations

On June 8, 2017, we entered into the Loan and Security Agreement, with Hercules Capital, further discussed in Note 11 to the Condensed Consolidated Financial Statements appearing elsewhere within this Quarterly Report on Form 10-Q. Under the Loan and Security Agreement, Hercules agreed to make available a secured term loan facility in the amount of $30 million which we drew on the closing date of the Loan and Security Agreement. The loan is repayable in monthly installments with principal payments commencing on January 1, 2019 through maturity on June 1, 2021. The interest rate is equal to the greater of 8.55% and an amount equal to 8.55% plus the prime rate of interest minus 4.50%.

The Company may prepay the principal of the Loan Agreement at any time subject to a prepayment charge equal to: 2.0% of amounts prepaid on or prior to June 1, 2018; 1.0% of amounts prepaid during the period from June 1, 2018 to June 1, 2019; and 0.5% of amounts prepaid on and after June 1, 2019. The Prepayment Charge will be waived if the Company completes the sale of CTP-656 to Vertex Pharmaceuticals, discussed further in Note 6, and prepays the Notes after the 90th day following the closing date of the Loan Agreement but prior to the six month anniversary of the closing date of the Loan Agreement.

The Company will pay an End of Term Charge of $1.5 million on the date that the Notes are paid in full or become due and payable. The Company is amortizing the End of Term Charge over the life of the loan. The End of Term Charge will be reduced to $0.7 million if the Company completes the sale of CTP 656 to Vertex Pharmaceuticals and prepays the Notes after the 90th day following the closing date of the Loan Agreement but prior to the six month anniversary of the closing date of the Loan Agreement.

Future principal and interest payments, which exclude the end of term charge of $1.5 million, in connection with the Loan and Security Agreement, as of June 30, 2017 are as follows (in thousands):

Fiscal Year	Obligated Payments (1)
2017	$ 1,254
2018	2,601
2019	13,371
2020	13,371
2021	6,743
Total	37,340

(1) Estimated interest for variable-rate debt was calculated based on the interest rate in effect as of June 30, 2017. The interest rate for our term loan was 8.55% as of June 30, 2017. The variable-rate borrowings as of June 30, 2017 totaled approximately $29.2 million.

Item 3. Quantitative and Qualitative Disclosures About Market Risk.

We are exposed to market risk related to changes in interest rates. Our current investment policy is to maintain a diversified investment portfolio in U.S. government-backed securities and money market mutual funds consisting of U.S. government-backed securities. Our cash is deposited in and invested through highly rated financial institutions in North America. As of June 30, 2017 and December 31, 2016, we had $103.4 million and $96.2 million of cash, cash equivalents and investments, respectively. The fair value of cash equivalents and short-term investments is subject to change as a result of potential changes in market interest rates. Due to the short-term maturities of our cash equivalents and the low risk profile of these investments, an immediate 100 basis point change in interest rates at levels as of June 30, 2017 would not have a material effect on the fair market value of our cash equivalents and short term investments.

We also have exposure to interest rates on our variable-rate debt obligation. The interest rate on the variable-rate debt is determined as the greater of: (i) 8.55% plus the prime rate as reported in The Wall Street Journal minus 4.50%, or (ii) 8.55% per year computed daily on a 360-day basis, payable on the first Business Day of each month. The nature of the interest rate included in the Loan Agreement provides interest rate protection until the prime rate exceeds 4.50%. Based on the amount of our variable-rate borrowings as of June 30, 2017, which totaled approximately $29.2 million, an immediate one percentage point increase in the U.S. prime rate would increase our annual interest expense by approximately $110 thousand. This estimate assumes the amount of the variable-rate borrowings remains constant for the annual period and the interest rate change occurs at the beginning of the period. Because our debt obligation is currently subject to the minimum interest rates defined in the loan agreement, a decrease in the U.S. prime rate would not affect our annual expense.

We contract with suppliers of raw materials and contract manufacturers internationally. Transactions with these providers are predominantly settled in U.S. dollars and, therefore, we believe that we have only minimal exposure to foreign currency exchange risks. We do not hedge against foreign currency risks.

Inflation generally affects us by increasing our cost of labor and clinical trial costs. We do not believe that inflation had a material effect on our business, financial condition or results of operations during the three and six months ended June 30, 2017.

Item 4. Controls and Procedures.

Evaluation of Disclosure Controls and Procedures

The term "disclosure controls and procedures," as defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934, as amended, or the Exchange Act, refers to controls and procedures that are designed to ensure that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is recorded, processed, summarized and reported, within the time periods specified in the Securities and Exchange Commission's rules and forms. Disclosure controls and procedures include, without limitation, controls and procedures designed to ensure that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is accumulated and communicated to the company's management, including its principal executive and principal financial officers, or persons performing similar functions, as appropriate to allow timely decisions regarding required disclosure. Our management recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving their objectives and our management necessarily applies its judgment in evaluating the cost-benefit relationship of possible controls and procedures. Our disclosure controls and procedures are designed to provide reasonable assurance of achieving their control objectives.

Our management, with the participation of our Chief Executive Officer and Principal Financial Officer, has evaluated the effectiveness of our disclosure controls and procedures as of June 30, 2017, the end of the period covered by this Quarterly Report on Form 10-Q. Based upon such evaluation, our Chief Executive Officer and Principal Financial Officer have concluded that our disclosure controls and procedures were effective at the reasonable assurance level as of such date.

Changes in Internal Control over Financial Reporting

There was no change in our internal control over financial reporting that occurred during the period covered by this Quarterly Report on Form 10-Q that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

PART II. OTHER INFORMATION

Item 1A. Risk Factors.

Our business is subject to numerous risks. The following important factors, among others, could cause our actual results to differ materially from those expressed in forward-looking statements made by us or on our behalf in this Quarterly Report on Form 10-Q and other filings with the Securities and Exchange Commission, or the SEC, press releases, communications with investors and oral statements. Actual future results may differ materially from those anticipated in our forward-looking statements. We undertake no obligation to update any forward-looking statements, whether as a result of new information, future events or otherwise.

RISKS RELATED TO OUR FINANCIAL POSITION AND NEED FOR ADDITIONAL CAPITAL

We have incurred significant losses since inception, expect to incur losses for at least the next several years and may never sustain profitability.

As of June 30, 2017, we had an accumulated deficit of $198.2 million. We have not generated any revenues from product sales and have financed our operations to date primarily through the public offering of our common stock, private placements of our preferred stock, debt financings and funding from collaborations, a patent assignment agreement, and an asset sale. We have not completed development of any product candidate and have devoted substantially all of our financial resources and efforts to research and development, including nonclinical studies and our clinical development programs. We expect to continue to incur significant expenses and increasing operating losses for at least the next several years. Our net losses may fluctuate significantly from quarter to quarter and year to year. Net losses and negative cash flows have had, and will continue to have, an adverse effect on our stockholders' equity and working capital.

We anticipate that our expenses will increase substantially if and as we:

- continue to develop and conduct nonclinical studies and clinical trials with respect to our product candidates;
- seek to identify additional product candidates;
- in-license or acquire additional product candidates;
- seek marketing approvals for our product candidates that successfully complete clinical trials;
- establish sales, marketing, distribution and other commercial infrastructure in the future to commercialize various products for which we may obtain marketing approval;
- require the manufacture of larger quantities of product candidates for clinical development and potentially commercialization;
- maintain, expand and protect our intellectual property portfolio;
- hire additional personnel;
- add equipment and physical infrastructure to support our research and development; and
- continue to implement the infrastructure necessary to support our product development and help us comply with our obligations as a public company.

Our ability to become and remain profitable depends on our ability to generate revenue. We do not expect to generate significant revenue unless and until we are, or one of our collaborators is, able to successfully commercialize one or more of our product candidates. This will require success in a range of challenging activities, including completing clinical trials of our product candidates, obtaining marketing approval for these product candidates, manufacturing, marketing and selling those products for which we, or our collaborators, may obtain marketing approval, satisfying any post-marketing requirements and obtaining reimbursement for our products from private insurance or government payors. We, and our collaborators, may never succeed in these activities and, even if we do, or one of our collaborators does, we may never generate revenues that are large enough for us to achieve profitability. Even if we do achieve profitability, we may not be able to sustain or increase profitability on a quarterly or annual basis. Our failure to become and remain profitable would decrease the value of our Company and could impair our ability to raise capital, expand our business, maintain our research and development efforts, diversify our pipeline of product candidates or continue our operations. A decline in the value of our Company could cause our stockholders to lose all or part of their investments in us.

We have a limited operating history and no history of commercializing pharmaceutical products, which may make it difficult to evaluate the prospects for our future viability.

We began operations in April 2006. Our operations to date have been limited to financing and staffing our Company, developing our technology and product candidates and establishing collaborations. We have not yet demonstrated an ability to successfully conduct an international multi-center clinical trial, conduct a large-scale pivotal clinical trial, obtain marketing approvals, manufacture product on a commercial scale or arrange for a third party to do so on our behalf, or conduct sales and marketing activities necessary for successful product commercialization. Consequently, predictions about our future success or viability may not be as accurate as they could be if we had a longer operating history or a history of successfully developing and commercializing pharmaceutical products.

We will need substantial additional funding. If we are unable to raise capital when needed, we could be forced to delay, reduce or eliminate our product development programs or commercialization efforts.

Developing pharmaceutical products, including conducting nonclinical studies and clinical trials, is a very time-consuming, expensive and uncertain process that takes years to complete. We expect our expenses to increase in connection with our ongoing activities, particularly as we initiate new clinical trials of, initiate new research and nonclinical development efforts for and seek marketing approval for, our product candidates, or if we in-license or acquire product candidates. In addition, if we obtain marketing approval for any of our product candidates, we may incur significant commercialization expenses related to product sales, marketing, manufacturing and distribution to the extent that such sales, marketing and distribution are not the responsibility of one of our collaborators. In particular, the costs that we may be required to incur for the manufacture of any product candidate that receives marketing approval may be substantial. Manufacturing a deuterated drug at commercial scale may require specialized facilities, processes and materials. Furthermore, we will continue to incur costs associated with operating as a public company. Accordingly, we will need to obtain substantial additional funding in connection with our continuing operations. If we are unable to raise capital when needed or on attractive terms, we may be forced to delay, reduce or eliminate our research and development programs or any future commercialization efforts.

In any event, our existing cash and cash equivalents and investments will not be sufficient to fund all of the efforts that we plan to undertake or to fund the completion of development of any of our product candidates. Accordingly, we will be required to obtain further funding through public or private equity offerings, debt financings, collaborations and licensing arrangements or other sources. Adequate additional financing may not be available to us on acceptable terms, or at all. Our failure to raise capital when needed would have a negative impact on our financial condition and our ability to pursue our business strategy.

We believe our existing cash and cash equivalents and investments as of June 30, 2017, together with the cash received as a result of the closing of our asset sale with Vertex will enable us to fund our operating expenses and capital expenditure requirements into 2021. Our estimate as to how long we expect our cash and cash equivalents and investments to be able to continue to fund our operations is based on assumptions that may prove to be wrong, and we could use our available capital resources sooner than we currently expect. Changing circumstances could cause us to consume capital significantly faster than we currently anticipate, and we may need to spend more money than currently expected because of circumstances beyond our control. Our future funding requirements, both short-term and long-term, will depend on many factors, including:

- the progress, timing, costs and results of clinical trials of, and research and nonclinical development efforts for, our product candidates and potential product candidates, including current and future clinical trials;
- our current collaboration agreements and achievement of milestones under these agreements;
- our ability to enter into and the terms and timing of any additional collaborations, licensing, product acquisition or other arrangements that we may establish;
- the number of product candidates that we pursue and their development requirements;
- the outcome, timing and costs of seeking regulatory approvals;
- our headcount growth and associated costs as we expand our research and development and establish a commercial infrastructure;
- the costs of preparing, filing and prosecuting patent applications, maintaining and protecting our intellectual property rights and defending against intellectual property related claims; including defending against the inter partes review ("IPR") petition challenging our 9,249,149 patent which was filed with the Patent Trial and Appeal Board ("PTAB") of the U.S. Patent and Trademark Office in April 2017 and prosecuting the Post Grant Review Petition, or PGR, we filed with the PTAB against Incyte challenging their 9,662,335 patent; and
- the costs of operating as a public company.

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

Until such time, if ever, as we can generate substantial product revenues, we expect to finance our cash needs through a combination of public or private equity offerings, debt financings, additional collaborations and licensing arrangements and other sources. We do not have any committed external source of funds, other than potential milestone payments and royalties under our collaborations with Avanir, Celgene and Jazz Pharmaceuticals, each of which is subject to the achievement of development, regulatory and/or sales-based milestones with respect to our product candidates. To the extent that we raise additional capital through the sale of common stock, convertible securities or other equity securities, the ownership interests of our stockholders may be materially diluted, and the terms of these securities could include liquidation or other preferences and anti-dilution protections that could adversely affect the rights of our stockholders. In addition, debt financing, if available, would result in increased fixed payment obligations and may involve agreements that include restrictive covenants that limit our ability to take specific actions, such as incurring additional debt, making capital expenditures or declaring dividends, that could adversely impact our ability to conduct our business. For example, our debt facility with Hercules contains restrictive covenants that, among other things and subject to certain exceptions, prohibit us from transferring any of our material assets, merging with or acquiring another entity, entering into a transaction that would result in a change of control, incurring additional indebtedness, creating any lien on our property, making investments in third parties or redeeming stock or paying dividends. Future debt securities or other financing arrangements could contain similar or more restrictive negative covenants.

If we raise additional funds through collaborations or marketing, distribution or licensing arrangements with third parties, we may have to relinquish valuable rights to our technologies, future revenue streams or product candidates or grant licenses on terms that may not be favorable to us. If we are unable to raise additional funds when needed, we may be required to delay, limit, reduce or terminate our product development or future commercialization efforts or grant rights to develop and market product candidates that we would otherwise prefer to develop and market ourselves.

Our existing and any future indebtedness could adversely affect our ability to operate our business.

As of June 30, 2017, we had $29.2 million of outstanding borrowings under our Loan and Security Agreement with Hercules that we are required to repay in monthly installments starting January 1, 2019 through maturity date of June 1, 2021. We could in the future incur additional indebtedness beyond our borrowings from Hercules.

Our outstanding indebtedness combined with our other financial obligations and contractual commitments, including any additional indebtedness beyond our borrowings from Hercules, could have significant adverse consequences, including:

- requiring us to dedicate a portion of our cash resources to the payment of interest and principal, reducing money available to fund working capital, capital expenditures, product development and other general corporate purposes;
- increasing our vulnerability to adverse changes in general economic, industry and market conditions;
- subjecting us to restrictive covenants that may reduce our ability to take certain corporate actions or obtain further debt or equity financing;
- limiting our flexibility in planning for, or reacting to, changes in our business and the industry in which we compete; and
- placing us at a competitive disadvantage compared to our competitors that have less debt or better debt servicing options.

In addition, our indebtedness under the Loan and Security Agreement bears interest at a variable-rate, making us vulnerable to increases in the market rate of interest. If the market rate of interest increases substantially, unless we repay the loan, we will have to pay additional interest on this indebtedness, which would reduce cash available for our other business needs.

Failure to make payments or comply with other covenants under our existing debt instruments could result in an event of default and acceleration of amounts due. Under our Loan and Security Agreement with Hercules, the occurrence of an event that would reasonably be expected to have a material adverse effect on our business, operations, assets or condition is an event of default. If an event of default occurs and the lender accelerates the amounts due, we may not be able to make accelerated payments, and the lender could seek to enforce security interests in the collateral securing such indebtedness, which includes substantially all of our assets other than our intellectual property. In addition, the covenants under our existing debt instruments, the pledge of our assets as collateral and the negative pledge with respect to our intellectual property could limit our ability to obtain additional debt financing.

RISKS RELATED TO THE DISCOVERY, DEVELOPMENT AND COMMERCIALIZATION OF OUR PRODUCT CANDIDATES

Clinical drug development involves a lengthy and expensive process with an uncertain outcome.

Clinical testing is expensive, time-consuming and uncertain as to outcome. We cannot guarantee that any clinical trials will be conducted as planned or completed on schedule, if at all. The clinical development of our product candidates is susceptible to the risk of failure inherent at any stage of drug development, including failure to demonstrate efficacy in a clinical trial or across a broad or definable population of patients, the occurrence of severe or medically or commercially unacceptable adverse events, fraudulent conduct by clinical investigators, failure to comply with protocols, applicable regulatory requirements or other determinations made by the Food and Drug Administration, or FDA, or any comparable foreign regulatory authority that a drug product is not approvable. It is possible that even if one or more of our product candidates has a beneficial effect, that effect will not be detected during clinical evaluation as a result of one or more of a variety of factors, including the size, duration, design, measurements, conduct or analysis of our clinical trials. Conversely, as a result of the same factors, our clinical trials may indicate an apparent positive effect of a product candidate that is greater than the actual positive effect, if any. Similarly, in our clinical trials, we may fail to detect toxicity of or intolerability caused by our product candidates, or mistakenly believe that our product candidates are toxic or not well tolerated when that is not in fact the case.

While we believe that our DCE Platform may enable drug discovery and clinical development that is more efficient and less expensive than conventional small molecule drug research and development, we may not be able to realize the advantages that we expect. In addition, while a key element of our drug discovery and development strategy involves utilizing existing information regarding non-deuterated compounds to assist the discovery and development of deuterated analogs of those compounds, not all of the product candidates that we develop are based on drugs or drug candidates that progressed into advanced clinical development. Particularly in these situations, existing information regarding the corresponding non-deuterated compound may not be sufficient to mitigate drug development risks.

In addition to the risk of failure inherent in drug development, certain of the deuterated compounds that we, and our collaborators, are developing and may develop in the future may be particularly susceptible to failure to the extent they are based on compounds that others have previously studied or tested, but did not progress in development due to safety, tolerability or efficacy concerns or otherwise. Deuteration of these compounds may not be sufficient to overcome the problems experienced with the corresponding non-deuterated compound.

We may not be able to continue further clinical development of our wholly owned development programs, including CTP-543. If we are unable to develop, obtain marketing approval for or commercialize our wholly owned development programs, ourselves or through a collaboration, or experience significant delays in doing so, our business could be materially harmed.

We currently have no products approved for sale. The success of our wholly owned development programs will depend on several factors, including:

- in the case of CTP-543, our ability to safely and effectively treat moderate-to-severe alopecia areata;
- successful completion of clinical trials;
- receipt of marketing approvals from applicable regulatory authorities;
- the performance of our future collaborators, if any, for our programs;
- the extent of any required post-marketing approval commitments to applicable regulatory authorities;
- establishment of supply arrangements with third party raw materials suppliers and manufacturers;
- our ability to manufacture or arrange for the manufacture of our active pharmaceutical ingredients and drug products
- with sufficient quality, quantity, and reproducibility to support clinical trials and potential future commercialization;
- establishment of arrangements with third party manufacturers to obtain finished drug products that are appropriately packaged for sale;
- obtaining and maintaining patent, trade secret protection, regulatory exclusivity, and freedom to operate, both in the United States and internationally;
- amount of commercial sales, if and when approved;
- a continued acceptable safety profile of our programs following any marketing approval; and
- agreement by third party payors to reimburse patients for the costs of treatment with our products, and the terms of such reimbursement.

If we are unable to successfully develop, receive marketing approval for, and commercialize our wholly owned development programs, or experience delays as a result of any of these factors or otherwise, our business could be materially harmed.

If clinical trials of our product candidates fail to satisfactorily demonstrate safety and efficacy to the FDA and other regulators, we, or our collaborators, may incur additional costs or experience delays in completing, or ultimately be unable to complete, the development and commercialization of these product candidates.

We, or our collaborators, must complete nonclinical development and then conduct extensive clinical trials to demonstrate the safety and efficacy of our product candidates in humans in order to obtain marketing approval from regulatory authorities for the sale of our product candidates. Clinical testing is expensive, difficult to design and implement, can take many years to complete and is inherently uncertain as to outcome. Further, the outcome of nonclinical studies and early clinical trials may not be predictive of the success of later clinical trials, and interim results of a clinical trial do not necessarily predict final results. Moreover, nonclinical and clinical data are often susceptible to varying interpretations and analyses. Many companies in the pharmaceutical and biotechnology industries have suffered significant setbacks in late-stage clinical trials after achieving positive results in earlier development, and we cannot be certain that we will not face similar setbacks.

Any inability to successfully complete nonclinical and clinical development could result in additional costs to us, or our collaborators, and impair our ability to generate revenues from product sales, regulatory and commercialization milestones and royalties. In addition, if (1) we, or our collaborators, are required to conduct additional clinical trials or other testing of our product candidates beyond the trials and testing that we, or they, contemplate, (2) we, or our collaborators, are unable to successfully complete clinical trials of our product candidates or other testing, (3) the results of these trials or tests are unfavorable, uncertain or are only modestly favorable, or (4) there are unacceptable safety concerns associated with our product candidates, we, or our collaborators, in addition to incurring additional costs, may:

- be delayed in obtaining marketing approval for our product candidates;
- not obtain marketing approval at all;
- obtain approval for indications or patient populations that are not as broad as intended or desired;
- obtain approval with labeling that includes significant use or distribution restrictions or significant safety warnings, including boxed warnings;
- be subject to additional post-marketing testing or other requirements; or
- be required to remove the product from the market after obtaining marketing approval.

Even if we, or our collaborators, believe that the results of clinical trials for our product candidates warrant marketing approval, the FDA or comparable foreign regulatory authorities may disagree and may not grant marketing approval of our product candidates.

If we, or our collaborators, experience any of a number of possible unforeseen events in connection with clinical trials of our product candidates, potential marketing approval or commercialization of our product candidates could be delayed or prevented.

We, or our collaborators, may experience numerous unforeseen events during, or as a result of, clinical trials that could delay or prevent marketing approval of our product candidates, including:

- toxicity or serious adverse effects may be observed in our nonclinical studies causing us to delay or abandon clinical trials;
- clinical trials of our product candidates may produce unfavorable or inconclusive results;
- we, or our collaborators, may decide, or regulators may require us or them, to conduct additional clinical trials or abandon product development programs;
- the number of patients required for clinical trials of our product candidates may be larger than we, or our collaborators, anticipate, patient enrollment in these clinical trials may be slower than we, or our collaborators, anticipate or participants may drop out of these clinical trials at a higher rate than we, or our collaborators, anticipate;
- our third party contractors or those of our collaborators, including those manufacturing our product candidates or components or ingredients thereof or conducting clinical trials on our behalf or on behalf of our collaborators, may fail to comply with regulatory requirements or meet their contractual obligations to us or our collaborators in a timely manner or at all;
- regulators or institutional review boards may not authorize us, our collaborators or our or their investigators to commence a clinical trial or conduct a clinical trial at a prospective trial site;
- we, or our collaborators, may have delays in reaching or fail to reach agreement on acceptable clinical trial contracts or clinical trial protocols with prospective trial sites;
- patients that enroll in a clinical trial may misrepresent their eligibility to do so or may otherwise not comply with the clinical trial protocol, resulting in the need to drop the patients or the sites from the clinical trial, increase the needed enrollment size for the clinical trial, extend the clinical trial's duration or cause spurious results;

- investigators may provide inaccurate or false data, resulting in spurious clinical results, an inadequate data set or regulators' unwillingness to approve a product;
- regulators or institutional review boards may require that we, or our collaborators, or our or their investigators suspend or terminate clinical research for various reasons, including noncompliance with regulatory requirements or their standards of conduct, a finding that the participants are being exposed to unacceptable health risks, undesirable side effects or other unexpected characteristics of the product candidate or findings of undesirable effects caused by a chemically or mechanistically similar drug or drug candidate;
- the FDA or comparable foreign regulatory authorities may disagree with our or our collaborators' clinical trial design or our or their interpretation of data from nonclinical studies and clinical trials;
- the FDA or comparable foreign regulatory authorities may change their requirements for approvability for a given product or for an indication after we have initiated work based on their previous guidance;
- the supply or quality of raw materials or manufactured product candidates or other materials necessary to conduct clinical trials of our product candidates may be insufficient, inadequate or not available at an acceptable cost, or we may experience interruptions in supply;
- we, or our manufacturing vendors, may not produce, or may not consistently produce material that meets necessary specifications for commercialization;
- the FDA or comparable foreign regulatory authorities may determine that our, or our manufacturing vendors, manufacturing or quality control processes fail to meet their specifications or guidelines; and
- the approval policies or regulations of the FDA or comparable foreign regulatory authorities may significantly change in a manner rendering our clinical data insufficient to obtain marketing approval.

Product development costs for us, or our collaborators, will increase if we, or they, experience delays in testing or pursuing marketing approvals and we, or they, may be required to obtain additional funds to complete clinical trials and prepare for possible commercialization of our product candidates. We, and our collaborators, do not know whether any nonclinical tests or clinical trials will begin as planned, will need to be restructured or will be completed on schedule, or at all. Significant nonclinical or clinical trial delays also could shorten any periods during which we, or our collaborators, may have the exclusive right to commercialize our product candidates or allow our competitors, or the competitors of our collaborators, to bring products to market before we, or our collaborators, do and impair our ability, or the ability of our collaborators, to successfully commercialize our product candidates and may harm our business and results of operations. In addition, many of the factors that cause, or lead to, clinical trial delays may ultimately lead to the denial of marketing approval of any of our product candidates.

If we, or our collaborators, experience delays or difficulties in the enrollment of patients in clinical trials, our, or their, receipt of necessary regulatory approvals could be delayed or prevented.

We, or our collaborators, may not be able to initiate or continue clinical trials for any of our product candidates if we, or they, are unable to locate and enroll a sufficient number of eligible patients to participate in clinical trials as required by the FDA or comparable foreign regulatory authorities, such as the European Medicines Agency. Patient enrollment is a significant factor in the timing of clinical trials, and is affected by many factors, including:

- the size and nature of the patient population;
- the severity of the disease under investigation;
- the proximity of patients to clinical sites;
- the eligibility criteria for the trial;
- the design of the clinical trial, including any requirement to halt current treatment in connection with the trial;
- access to relevant clinical trial sites;
- efforts to facilitate timely enrollment;
- competing clinical trials;
- support by relevant industry or patient organizations with influence over clinical trial sites; and
- clinicians' and patients' perceptions as to the potential advantages and risks of the drug being studied in relation to other available therapies, including any new drugs that may be approved for the indications we are investigating.

Our inability, or the inability of our collaborators, to enroll a sufficient number of patients for our, or their, clinical trials could result in significant delays or may require us or them to abandon one or more clinical trials altogether. Enrollment delays in our, or their, clinical trials may result in increased development costs for our product candidates, delay or halt the development of and approval processes for our product candidates and jeopardize our, or our collaborators', ability to commence sales of and generate revenues from our product candidates, which could cause the value of our Company to decline and limit our ability to obtain additional financing, if needed.

We, or our collaborators, may attempt to, and in some instances may be able to, secure clearances from the FDA or comparable foreign regulatory authorities to use expedited development pathways, including a 505(b)(2) regulatory pathway. However, if we or our collaborators are unable to obtain such clearances, we, or they, may be required to conduct additional nonclinical studies or clinical trials beyond those that we, or they, contemplate, which could increase the expense of obtaining, and/or delay the receipt of, necessary marketing approvals relative to an expedited pathway.

The deuterated compounds that we produce and seek to develop can have similar pharmacological properties as their corresponding non-deuterated compounds. Therefore, we believe that we, or our collaborators, may, in some instances, be able to obtain clearance from the FDA or comparable foreign regulatory authorities to follow expedited development programs for some deuterated compounds that reference and rely on findings previously obtained from prior nonclinical studies or clinical trials of the corresponding non-deuterated compounds.

While we anticipate that following an expedited development pathway may be possible for some of our current and future product candidates, we cannot be certain that we, or our collaborators, will be able to secure clearance to follow such expedited development pathways on a regular basis from the FDA, or from comparable foreign regulatory authorities at all. In addition, if we follow, or one of our collaborators follows, such an expedited regulatory pathway and the FDA or comparable foreign regulatory authorities are not satisfied with the results of our having done so, such as might be the case if a deuterated compound is found to have undesirable side effects or other undesirable properties that were not anticipated based on the corresponding non-deuterated compound, the FDA or foreign regulatory authorities may be unwilling to grant clearance to follow expedited development pathways for other deuterated compounds.

In addition, emerging nonclinical or clinical data may indicate that reliance on data for the non-deuterated product can no longer be scientifically justified.

Consequently, we, or our collaborators, may be required to pursue full development programs with respect to any product candidates that we, or they, previously anticipated would be able to follow an expedited development pathway, including conducting a full range of nonclinical and clinical studies to attempt to establish the safety and efficacy of these product candidates. A need to conduct a full range of development activities would significantly increase the costs of development and length of time required before we, or our collaborators, could seek marketing approval of such a product candidate as compared to the costs and timing that we or they anticipate.

Serious adverse events, undesirable side effects or other unexpected properties of our product candidates, including those that we have licensed to collaborators, may be identified during development that could delay or prevent the product candidate's marketing approval.

All of our product candidates are in nonclinical and clinical development stages and their risk of failure is high. Serious adverse events or undesirable side effects caused by, or other unexpected properties of, our product candidates could cause us, one of our collaborators, an institutional review board or regulatory authorities to interrupt, delay or halt clinical trials of one or more of our product candidates and could result in a more restrictive label or the delay or denial of marketing approval by the FDA or comparable foreign regulatory authorities. A dose of a deuterated compound could, in comparison to an equal dose of the corresponding non-deuterated compound, result in altered exposure levels, distribution and half-life in the body and alter the levels of particular metabolites that are present in the body. These changes may cause serious adverse events or undesirable side effects that we or our collaborators did not anticipate, whether based on the characteristics of the corresponding non-deuterated compound or otherwise. If any of our product candidates is associated with serious adverse events or undesirable side effects or have properties that are unexpected, we, or our collaborators, may need to abandon development or limit development of that product candidate to certain uses or subpopulations in which the undesirable side effects or other characteristics are less prevalent, less severe or more acceptable from a risk-benefit perspective. Many compounds that initially showed promise in clinical or earlier stage testing have later been found to cause undesirable or unexpected side effects that prevented further development of the compound. In addition, unexpected adverse clinical effects of a deuterated product candidate, including either those identified by us or deuterated analogs of approved drugs being developed by any third parties, may create general concerns regarding deuteration technology that could delay the development of our product candidates.

Even if one of our product candidates receives marketing approval, it may fail to achieve the degree of market acceptance by physicians, patients, third party payors and others in the medical community necessary for commercial success and the market opportunity for the product candidate may be smaller than we estimate.

Even if one of our product candidates, including those licensed to our collaborators, is approved by the appropriate regulatory authorities for marketing and sale, it may nonetheless fail to gain sufficient market acceptance by physicians, patients, third party payors and others in the medical or patient communities. For example, physicians are often reluctant to switch their

patients from existing therapies even when new and potentially more effective or convenient treatments enter the market. Further, patients often acclimate to the therapy that they are currently taking and do not want to switch unless their physicians recommend switching products or they are required to switch therapies due to lack of reimbursement for existing therapies. If any of our product candidates receive negative publicity, patients may choose not to request them even if approved, or may not comply with taking them as prescribed.

Efforts to educate the medical community and third party payors on the benefits of our product candidates may require significant resources and may not be successful. If any of our product candidates is approved but does not achieve an adequate level of market acceptance, we may not generate significant revenues and we may not become profitable. The degree of market acceptance of our product candidates, including those licensed to our collaborators, if approved for commercial sale, will depend on a number of factors, including:

- the efficacy and safety of the product;
- the potential advantages of the product compared to alternative treatments;
- the prevalence and severity of any side effects;
- the clinical indications for which the product is approved;
- whether the product is designated under physician treatment guidelines as a first-line therapy or as a second- or third-line therapy;
- limitations or warnings, including distribution or use restrictions or burdensome prescription requirements contained in the product's approved labeling;
- our ability, or the ability of our collaborators, to offer the product for sale at commercially acceptable prices;
- the product's convenience and ease of administration compared to alternative treatments;
- the willingness of the target patient population to try, and of physicians to prescribe, the product;
- the strength of sales, marketing and distribution support;
- the approval of other new products for the same indications;
- the extent and success of counter-detailing efforts by our competitors;
- changes in the standard of care for the targeted indications for the product;
- the timing of market introduction of our approved products as well as competitive products; and
- availability and amount of reimbursement from government payors, managed care plans and other third party payors.

The potential market opportunities for our product candidates are difficult to precisely estimate. Our estimates of the potential market opportunities are predicated on many assumptions including industry knowledge and publications, third party research reports and other surveys. While we believe that our internal assumptions are reasonable, these assumptions involve the exercise of significant judgment on the part of our management, are inherently uncertain and the reasonableness of these assumptions has not been assessed by an independent source. If any of the assumptions proves to be inaccurate, the actual markets for our product candidates could be smaller than our estimates of the potential market opportunities.

If any of our product candidates receives marketing approval and we, or others, later discover that the drug is less effective than previously believed or causes undesirable side effects that were not previously identified, our ability to market the drug, or that of our collaborators, could be compromised.

Clinical trials of our product candidates are conducted in carefully defined subsets of patients who have agreed to enter into clinical trials. Consequently, it is possible that these individuals are not representative of the actual patient population or that our clinical trials may indicate an apparent positive effect of a product candidate that is greater than the actual positive effect, if any, or alternatively fail to identify undesirable side effects. If, following approval of a product candidate, we, or others, discover that the drug is less effective than previously believed or causes undesirable side effects that were not previously identified, any of the following adverse events could occur:

- regulatory authorities may withdraw their approval of the drug and/or seize the drug;
- we, or our collaborators, may be required to recall the drug or change the way the drug is administered;
- additional restrictions may be imposed on the marketing of, or the manufacturing processes for, the particular drug, including the addition of labeling statements, such as a "black box" warning or a contraindication;
- we may be subject to fines, injunctions or the imposition of civil or criminal penalties;
- we, or our collaborators, may be required to create a Medication Guide outlining the risks of the previously unidentified side effects for distribution to patients;
- we, or our collaborators, could be sued and held liable for harm caused to patients; and
- the drug may become less competitive.

Any of these events could have a material and adverse effect on our operations and business and could adversely impact our stock price.

If we are unable to establish sales, marketing and distribution capabilities or enter into sales, marketing and distribution arrangements with third parties, we may not be successful in commercializing any product candidates that we develop if and when those product candidates are approved.

We do not have a sales, marketing or distribution infrastructure and have no experience in the sale, marketing or distribution of pharmaceutical products. To achieve commercial success for any approved product, we must either develop a sales and marketing organization or outsource these functions to third parties. We expect to use a combination of third party collaboration, licensing and distribution arrangements and a focused in-house commercialization capability to sell any products that receive marketing approval.

We generally plan to seek to retain full commercialization rights for the United States for products that we can commercialize with a specialized sales force and to retain co-promotion or similar rights for the United States when feasible in indications requiring a larger commercial infrastructure. The development of sales, marketing and distribution capabilities will require substantial resources, will be time-consuming and could delay any product launch. If the commercial launch of a product candidate for which we recruit a sales force and establish marketing and distribution capabilities is delayed or does not occur for any reason, we could have prematurely or unnecessarily incurred these commercialization costs. This may be costly, and our investment could be lost if we cannot retain or reposition our sales and marketing personnel. In addition, we may not be able to hire or retain a sales force in the United States that is sufficient in size or has adequate expertise in the medical markets that we plan to target. If we are unable to establish or retain a sales force and marketing and distribution capabilities, our operating results may be adversely affected. If a potential partner has development or commercialization expertise that we believe is particularly relevant to one of our products, then we may seek to collaborate with that potential partner even if we believe we could otherwise develop and commercialize the product independently.

We currently expect to collaborate with third parties for commercialization in the United States of any products that require a large sales, marketing and product distribution infrastructure. We also expect to commercialize our product candidates outside the United States through collaboration, licensing and distribution arrangements with third parties. As a result of entering into arrangements with third parties to perform sales, marketing and distribution services, our product revenues or the profitability of these product revenues may be lower, perhaps substantially lower, than if we were to directly market and sell products in those markets. Furthermore, we may be unsuccessful in entering into the necessary arrangements with third parties or may be unable to do so on terms that are favorable to us. In addition, we may have little or no control over such third parties, and any of them may fail to devote the necessary resources and attention to sell and market our products effectively.

If we do not establish sales and marketing capabilities, either on our own or in collaboration with third parties, we will not be successful in commercializing any of our product candidates that receive marketing approval.

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

The development and commercialization of new drug products is highly competitive. We expect that we, and our collaborators, will face significant competition from major pharmaceutical companies, specialty pharmaceutical companies and biotechnology companies worldwide with respect to our product candidates that we, or they, may seek to develop or commercialize in the future. Specifically, there are a number of large pharmaceutical and biotechnology companies that currently market and sell products or are pursuing the development of product candidates for the treatment of neurologic disorders, autoimmune disorders and inflammation, which are key indications for our development programs. Our competitors may succeed in developing, acquiring or licensing technologies and drug products that are more effective, simpler to use, have fewer or more tolerable side effects or are less costly than any product candidates that we are currently developing or that we may develop or acquire, which could render our product candidates obsolete and noncompetitive.

Avanir is developing AVP-786 for the treatment of agitation associated with Alzheimer's Disease and other neurologic or psychological disorders. There are competing marketed drugs and product candidates in clinical development for each indication. Intra-Cellular Therapies and Axsome Therapeutics are developing treatments for agitation in patients with Alzheimer's Disease.

We are developing CTP-543 as an oral agent for the treatment of moderate-to-severe alopecia areata. If CTP-543 receives marketing approval for this indication, it may face competition from a number of other product candidates that are being studied for alopecia areata. Ruxolitinib is a Janus kinase, or JAK, inhibitor. A number of companies are pursuing development of JAK inhibitors with a range of subtype selectivities for the treatment of alopecia areata, including Aclaris Therapeutics, LEO Pharma and Pfizer.

JZP-386 is being developed for the treatment of excessive daytime sleepiness and cataplexy in patients with narcolepsy. The current standard of care is sodium oxybate. Avadel Pharmaceuticals is developing an extended release formulation of sodium oxybate for the treatment of narcolepsy. Hikma Pharmaceuticals PLC developed a generic version of Xyrem® for the treatment of narcolepsy, which was approved by the FDA in January 2017 but will not be marketed until 2023, or earlier under certain circumstances.

CTP-730 is a phosphodiesterase 4, or PDE4, inhibitor that has potential for the treatment of various inflammatory diseases. The non-deuterated drug apremilast is marketed for certain types of psoriasis and psoriatic arthritis. It is also being evaluated for efficacy in other chronic inflammatory diseases. If CTP-730 receives marketing approval, the competition it may face will depend on the particular inflammatory disease for which it receives approval.

Our commercial opportunity could be reduced or eliminated if our competitors develop and commercialize products that are safer, more effective, have fewer or less severe side effects, are more convenient or are less expensive than any products that we, or our collaborators, may develop. Our competitors also may obtain FDA or other marketing approval for their products before we, or our collaborators, are able to obtain approval for ours, which could reduce our ability to utilize expedited regulatory pathways and could result in our competitors establishing a strong market position before we, or our collaborators, are able to enter the market.

Many of our existing and potential future competitors have significantly greater financial resources and expertise in research and development, manufacturing, nonclinical testing, conducting clinical trials, obtaining marketing approvals and marketing approved products than we do. Mergers and acquisitions in the pharmaceutical and biotechnology industries may result in even more resources being concentrated among a smaller number of our competitors. Smaller or early stage companies may also prove to be significant competitors, particularly through collaborative arrangements with large and established companies. These competitors also compete with us in recruiting and retaining qualified scientific and management personnel and establishing clinical trial sites and patient registration for clinical trials, as well as in acquiring technologies complementary to, or necessary for, our programs.

We also face competition in the development of deuterated compounds.

Many pharmaceutical and biotechnology companies have begun to cover deuterated analogs of their product candidates in patent applications and may develop these deuterated compounds. Some of these pharmaceutical and biotechnology companies may have significantly greater financial resources and expertise in research and development, manufacturing, nonclinical testing, conducting clinical trials, obtaining marketing approvals and marketing approved products than we do. In addition, other companies are broadly utilizing deuterium substitution for drug development, including Teva Pharmaceutical Industries Ltd. and DeuteRx LLC. In some cases, these competitors may be interested in developing deuterated compounds that we may be interested in developing for ourselves. In addition, these competitors may enter into collaborative arrangements or business combinations that result in their ability to research and develop deuterated compounds more effectively than us. Our potential competitors also include academic institutions, government agencies and other public and private research organizations.

If our competitors in the development of deuterated compounds are able to grow their intellectual property estates and create new and successful deuterated compounds more effectively than us, our ability to identify additional compounds for nonclinical and clinical development and obtain product revenues in future periods could be compromised, which could result in significant harm to our operations and financial position.

If the FDA or comparable foreign regulatory authorities approve generic versions of any of our products that receive marketing approval, or such authorities do not grant our products appropriate periods of data exclusivity before approving generic versions of our products, the sales of our products could be adversely affected.

Once an NDA is approved, the product covered thereby becomes a "reference listed drug" in the FDA's publication, "Approved Drug Products with Therapeutic Equivalence Evaluations." Manufacturers may seek approval of generic versions of reference listed drugs through submission of abbreviated new drug applications, or ANDAs, in the United States. In support of an ANDA, a generic manufacturer need not conduct clinical studies. Rather, the applicant generally must show that its product has the same active ingredient(s), dosage form, strength, route of administration and conditions of use or labeling as the reference listed

drug and that the generic version is bioequivalent to the reference listed drug, meaning it is absorbed in the body at the same rate and to the same extent. Generic products may be significantly less costly to bring to market than the reference listed drug and companies that produce generic products are generally able to offer them at lower prices. Thus, following the introduction of a generic drug, a significant percentage of the sales of any branded product or reference listed drug is typically lost to the generic product.

The FDA may not approve an ANDA for a generic product until any applicable period of non-patent exclusivity for the reference listed drug has expired. The Federal Food, Drug, and Cosmetic Act, or FDCA, provides a period of five years of non-patent exclusivity for a new drug containing a new chemical entity. Specifically, in cases where such exclusivity has been granted, an ANDA may not be filed with the FDA until the expiration of five years unless the submission is accompanied by a Paragraph IV certification that a patent covering the reference listed drug is either invalid or will not be infringed by the generic product, in which case the applicant may submit its application four years following approval of the reference listed drug. While we believe that our product candidates contain active ingredients that would be treated as new chemical entities by the FDA and, therefore, if approved, should be afforded five years of data exclusivity, the FDA may disagree with that conclusion and may approve generic products after a period that is less than five years. Manufacturers may seek to launch these generic products following the expiration of the applicable marketing exclusivity period, even if we still have patent protection for our product.

Competition that our products may face from generic versions of our products could materially and adversely impact our future revenue, profitability and cash flows and substantially limit our ability to obtain a return on the investments we have made in those product candidates.

To the extent we, or our collaborators, market products that are deuterated analogs of generic drugs that are approved or will be approved while we market our products, our products may compete against these generic products and the sales of our products could be adversely affected.

We anticipate that some of the products that we, or our collaborators, may develop will be deuterated analogs of approved drugs that are or will then be available on a generic basis. In addition, if we develop a product that is a deuterated analog of a non-generic approved drug, the FDA or comparable foreign regulatory authorities may also approve generic versions of the corresponding non-deuterated drug. If approved, we expect that our deuterated products will compete against these generic non-deuterated compounds if they are used in the same indications. Even if the approved indications are different for the deuterated and non-deuterated drugs, the generic non-deuterated drug may be used off-label, negatively affecting sales of our product. Efforts to educate the medical community and third party payors on the benefits of any product that we develop as compared to the corresponding non-deuterated compound, or generic versions of it, may require significant resources and may not be successful. If physicians, rightly or wrongly, do not believe that a product that we, or our collaborators, develop offers substantial advantages over the corresponding non-deuterated compound, or generic versions of the corresponding non-deuterated compound, or that the advantages offered by our product as compared to the corresponding non-deuterated compound, or its generic versions, are not sufficient to merit the increased price over the corresponding non-deuterated compound, or its generic versions, that we, or our collaborators, would seek, physicians might not prescribe that product. In addition, third party payors may refuse to provide reimbursement for a product that we, or our collaborators, develop when the corresponding non-deuterated compound, or generic versions of the corresponding non-deuterated compound, offer a cheaper alternative therapy in the same indication, or may otherwise encourage use of the corresponding non-deuterated compound, or generic versions of the corresponding non-deuterated compound, over our product, even if our product possesses favorable pharmaceutical properties or is labeled for a different indication.

Competition that our product candidates may face from any generic non-deuterated product on which our product candidate is based or a later-approved generic version of a branded non-deuterated product on which our product is based, could materially and adversely impact our future revenue, profitability and cash flows and substantially limit our ability to obtain a return on the investments we have made in those product candidates.

If we develop a deuterated analog of a drug with orphan disease exclusivity, we may be prevented from marketing our compound prior to the expiration of that exclusivity unless we can show that the deuterated analog is not the same drug for the same indication or that it provides a large clinical advantage over the non-deuterated drug.

Under the Orphan Drug Act, if the FDA has granted a drug orphan disease exclusivity with respect to an orphan indication, which is generally defined as a disease or condition with a patient population of less than 200,000 patients in the United States annually, the FDA cannot approve a new drug application for the same drug and for the same orphan indication until the end of the exclusivity period of seven years following approval of the orphan drug unless the new product can demonstrate clinical superiority. If one of our deuterium-modified analogs is deemed by the FDA to be the same drug for the same indication as a

corresponding non-deuterium modified drug that has orphan drug exclusivity, we may be prevented from marketing our drug during the exclusivity period.

Even if we, or our collaborators, are able to commercialize any product candidate that we, or they, develop, the product may become subject to unfavorable pricing regulations, third party payor reimbursement practices or healthcare reform initiatives that could harm our business.

The commercial success of our product candidates will depend substantially, both domestically and abroad, on the extent to which the costs of our product candidates will be paid by health maintenance, managed care, pharmacy benefit and similar healthcare management organizations, or reimbursed by government health administration authorities, private health coverage insurers and other third party payors. Government authorities and third party payors, such as private health insurers and health maintenance organizations, decide which medications they will cover and establish reimbursement levels. The healthcare industry is acutely focused on cost containment, both in the United States and elsewhere. Government authorities and third party payors have attempted to control costs by limiting coverage and the amount of reimbursement for particular medications, which could affect our ability or that of our collaborators to sell our product candidates profitably. These payors may not view our products, if any, as cost-effective, and coverage and reimbursement may not be available to our customers, or those of our collaborators, or may not be sufficient to allow our products, if any, to be marketed on a competitive basis. Cost-control initiatives could cause us, or our collaborators, to decrease the price we, or they, might establish for products, which could result in lower than anticipated product revenues. If reimbursement is not available, or is available only to limited levels, we, or our collaborators, may not be able to successfully commercialize our product candidates. Even if coverage is provided, the approved reimbursement amount may not be high enough to allow us, or our collaborators, to establish or maintain pricing sufficient to realize a sufficient return on our or their investments.

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

Third party payor coverage of newly approved drugs may be more limited than the indications for which the drugs are approved by the FDA or comparable foreign regulatory authorities. Moreover, eligibility for reimbursement does not imply that any drug will be paid for in all cases or at a rate that covers our costs, including research, development, manufacture, sale and distribution. Reimbursement rates may vary, by way of example, according to the use of the drug and the clinical setting in which it is used. Reimbursement rates may also be based on reimbursement levels already set for lower cost drugs or may be incorporated into existing payments for other services.

In addition, increasingly, third party payors are requiring higher levels of evidence of the benefits and clinical outcomes of new technologies, requiring burdensome comparison studies with currently approved drugs and challenging the prices charged. We, and our collaborators, cannot be sure that coverage will be available for any product candidate that we, or they, commercialize and, if available, that the reimbursement rates will be adequate. Further, the net reimbursement for drug products may be subject to additional reductions if there are changes to laws that presently restrict imports of drugs from countries where they may be sold at lower prices than in the United States. An inability to promptly obtain coverage and adequate payment rates from both government-funded and private payors for any our product candidates for which we, or our collaborators, obtain marketing approval could have a material adverse effect on our operating results, our ability to raise capital needed to commercialize products and our overall financial condition.

We may not be successful in our efforts to identify or discover additional potential product candidates.

A significant portion of our research involves the development of new deuterated compounds using our DCE Platform. These efforts may not be successful in creating compounds that have commercial value or therapeutic utility beyond the corresponding non-deuterated compound, or at all. Our research programs may initially show promise in creating potential product candidates, yet fail to yield viable product candidates for clinical development for a number of reasons, including:

- deuterated analogs of existing non-deuterated compounds or newly designed deuterated compounds may not demonstrate satisfactory efficacy or other benefits, such as convenience of dosing, increased tolerability, enhanced formation of desirable active metabolites or reduced formation of toxic metabolites;
- potential product candidates may, on further study, be shown to have harmful side effects or other characteristics that indicate that they are unlikely to be products that will receive marketing approval and achieve market acceptance; and
- pharmaceutical and biotechnology companies have begun to claim deuterated analogs of their compounds in patent filings, resulting in otherwise promising deuterated product candidates already being covered by patents or patent applications.

If we are unable to identify suitable additional compounds for nonclinical and clinical development, our ability to develop product candidates and obtain product revenues in future periods could be compromised, which could result in significant harm to our financial position and adversely impact our stock price.

Product liability lawsuits against us could divert our resources, cause us to incur substantial liabilities and limit commercialization of any products that we may develop.

We face an inherent risk of product liability claims as a result of the clinical testing of our product candidates despite obtaining appropriate informed consents from our clinical trial participants. We will face an even greater risk if we or our collaborators commercially sell any product that we may or they may develop. If we cannot successfully defend ourselves against product liability claims, we may incur substantial liabilities or be required to limit commercialization of our product candidates. Regardless of the merits or eventual outcome, liability claims may result in:

- decreased demand for our product candidates or products that we may develop;
- injury to our reputation and significant negative media attention;
- withdrawal of clinical trial participants;
- significant costs to defend litigation;
- distraction to our management diverting focus from business operations and strategy;
- initiation of investigations by regulators;
- product recalls, withdrawals or labeling, marketing or promotional restrictions;
- substantial monetary awards to trial participants or patients;
- loss of revenue; and
- the inability to commercialize any products that we may develop.

Although we maintain product liability insurance coverage, it may not fully cover potential liabilities that we may incur. The cost of any product liability litigation or other proceeding, even if resolved in our favor, could be substantial. We will need to increase our insurance coverage if and when we begin selling any product candidate that receives marketing approval. In addition, insurance coverage is becoming increasingly expensive. If we are unable to obtain or maintain sufficient insurance coverage at an acceptable cost or to otherwise protect against potential product liability claims, it could prevent or inhibit the development and commercial production and sale of our product candidates, which could adversely affect our business, financial condition, results of operations and prospects.

JZP-386 is a deuterated analog of a Schedule I controlled substance and the active pharmaceutical ingredient will likely be classified as a Schedule I controlled substance and the drug product will likely be classified as a Schedule III controlled substance, which could substantially limit our, or our collaborator's, ability to obtain the quantities of JZP-386 needed to conduct clinical trials and the ability of our collaborator to market and sell JZP-386 if it receives marketing approval.

The placement of drugs or other substances into schedules under the Controlled Substances Act of 1970, or CSA, is based upon the substance's medical use, potential for abuse and safety or dependence liability. Under the CSA, every person who manufactures, distributes, dispenses, imports or exports any controlled substance must register with the U.S. Drug Enforcement Agency, or DEA, unless exempt. Our product candidate JZP-386, which we have licensed to Jazz Pharmaceuticals, is a deuterated sodium oxybate analog. Sodium oxybate is regulated as a chemical by the DEA as a Schedule I controlled substance. Because of the Schedule I classification of sodium oxybate, JZP-386 is regulated by the DEA as a Schedule I controlled substance. As a result, we or Jazz Pharmaceuticals will be required to obtain a license to ship the chemical intermediate that we are using as the precursor to JZP-386, which may delay or prevent the manufacturing of JZP-386 for clinical trials.

Specifically, the DEA limits the quantity of certain Schedule I controlled substances that may be produced in the United States in any year through a quota system. If our contract manufacturers for JZP-386, or those for Jazz Pharmaceuticals, manufacture JZP-386 in the United States, they will be required to obtain separate DEA quotas to supply us or Jazz Pharmaceuticals with

JZP-386 for the conduct of clinical trials. Different, but potentially no less burdensome regulations, may apply if we or Jazz Pharmaceuticals choose to contract for the manufacture of JZP-386 outside of the United States.

The process of obtaining the quotas needed to conduct the planned clinical trials of JZP-386 may involve lengthy legal and other efforts and we or Jazz Pharmaceuticals, or suppliers or manufacturers for us or Jazz Pharmaceuticals, may not be able to obtain sufficient quotas from the DEA. If we or Jazz Pharmaceuticals, or suppliers or manufacturers for us or Jazz Pharmaceuticals, cannot obtain the quotas that are needed on a timely basis, or at all, we and Jazz Pharmaceuticals may not be able to conduct, on a timely basis or at all, the clinical trials of JZP-386 that are planned, and our business, financial condition, results of operations and growth prospects could be adversely affected.

If JZP-386 is approved for marketing in the United States, we believe that the commercial drug containing JZP-386 will remain subject to the CSA as a Schedule III controlled substance. Those restrictions could limit the marketing and distribution of the commercial drug containing JZP-386.

In addition, failure to maintain compliance with applicable requirements under the CSA, particularly as manifested in loss or diversion of regulated substances, can result in enforcement action that could include civil penalties, refusal to renew registrations or quotas, revocation of registrations or quotas or criminal proceedings, any of which could have a material adverse effect on our business, results of operations and financial condition. Individual states also regulate controlled substances, and we and Jazz Pharmaceuticals, and contract manufacturers for us and Jazz Pharmaceuticals, will be subject to state regulation on distribution of these products.

RISKS RELATED TO OUR DEPENDENCE ON THIRD PARTIES

We depend on collaborations with third parties for the development and commercialization of some of our product candidates and expect to continue to do so in the future. Our prospects with respect to those product candidates will depend in significant part on the success of those collaborations.

We have entered into collaborations with Avanir, Celgene and Jazz Pharmaceuticals for the development and commercialization of certain of our product candidates and expect to enter into additional collaborations in the future. We have limited control over the amount and timing of resources that our collaborators dedicate to the development or commercialization of our product candidates and our ability to generate revenues from these arrangements will depend on our collaborators' abilities to successfully perform the functions assigned to them in these arrangements. In addition, our collaborators have the right to abandon research or development projects and terminate applicable agreements, including funding obligations, prior to or upon the expiration of the agreed upon terms.

Collaborations involving our product candidates pose a number of risks, including:

- collaborators have significant discretion in determining the efforts and resources that they will apply to these collaborations;
- collaborators may not perform their obligations as expected;
- collaborators may not pursue development and commercialization of our product candidates or may elect not to continue or renew development or commercialization programs, based on clinical trial results, changes in the collaborators' strategic focus or available funding or external factors, such as an acquisition, that divert resources or create competing priorities;
- collaborators may delay clinical trials, provide insufficient funding for a clinical trial program, stop a clinical trial or abandon a product candidate, repeat or conduct new clinical trials or require a new formulation of a product candidate for clinical testing;
- product candidates developed in collaboration with us, including in particular product candidates based on deuteration of a collaborator's marketed drugs or advanced clinical candidates, may be viewed by our collaborators as competitive with their own product candidates or products, which may cause collaborators to cease to devote resources to the commercialization of our product candidates;
- a collaborator with marketing and distribution rights to one or more products may not commit sufficient resources to the marketing and distribution of such product or products;
- disagreements with collaborators, including disagreements over proprietary rights, contract interpretation or the preferred course of development, might cause delays or termination of the research, development or commercialization of product candidates, might lead to additional responsibilities for us with respect to product candidates, or might result in litigation or arbitration, any of which would be time-consuming and expensive;

- collaborators may not properly maintain or defend our intellectual property rights or may use our proprietary information in such a way as to invite litigation that could jeopardize or invalidate our intellectual property or proprietary information or expose us to potential litigation;
- collaborators may infringe the intellectual property rights of third parties, which may expose us to litigation and potential liability; and
- collaborations may be terminated and, if terminated, may result in a need for additional capital to pursue further development or commercialization of the applicable product candidates.

Collaboration agreements may not lead to development or commercialization of product candidates in the most efficient manner or at all. If a collaborator of ours is involved in a business combination, it could decide to delay, diminish or terminate the development or commercialization of any product candidate licensed to it by us.

We expect to seek to establish additional collaborations, and if we are not able to establish them on commercially reasonable terms, we may have to alter our development and commercialization plans.

Our drug development programs and the potential commercialization of our product candidates will require substantial additional cash to fund expenses. We are seeking a collaborator for CTP-499, and we may seek one or more collaborators for the development and commercialization of one or more of our product candidates. We do not currently intend to conduct further clinical development of CTP-499 for the treatment of diabetic nephropathy absent such a collaboration.

We face significant competition in seeking appropriate collaborators. Whether we reach a definitive agreement for collaboration will depend, among other things, upon our assessment of the collaborator's resources and expertise, the terms and conditions of the proposed collaboration and the proposed collaborator's evaluation of a number of factors. Those factors may include the potential differentiation of our product candidate from its corresponding non-deuterated analog, design or results of clinical trials, the likelihood of approval by the FDA or comparable foreign regulatory authorities and the regulatory pathway for any such approval, the potential market for the product candidate, the proposed collaborator's perception of our freedom to operate in a particular market or markets without challenge, the costs and complexities of manufacturing and delivering the product to patients and the potential of competing products. The collaborator may also consider alternative product candidates or technologies that may be available for collaboration and whether such collaboration could be more attractive than the one with us for our product candidate.

Collaborations are complex and time-consuming to negotiate and document. In addition, there have been a significant number of recent business combinations among large pharmaceutical companies that have resulted in a reduced number of potential future collaborators. We are also restricted under the terms of certain of our existing collaboration agreements from entering into collaborations regarding or otherwise developing specified compounds that are similar to the compounds that are subject to those agreements and collaboration agreements that we enter into in the future may contain further restrictions on our ability to enter into potential collaborations or to otherwise develop specified compounds.

We may not be able to negotiate collaborations for our product candidates on a timely basis, on acceptable terms, or at all. If we are unable to do so, we may have to limit the development of the product candidate for which we are seeking to collaborate, reduce or delay its development program or one or more of our other development programs, delay its potential commercialization or reduce the scope of any sales or marketing activities, or increase our expenditures and undertake development or commercialization activities at our own expense. If we elect to increase our expenditures to fund development or commercialization activities on our own, we may need to obtain additional capital, which may not be available to us on acceptable terms or at all. If we do not have sufficient funds, we may not be able to further develop our product candidates or bring them to market and generate product revenue. In cases where we seek a collaborator for a product compound that is a deuterated analog of a compound that has been previously developed, failure to enter into a collaboration with the developer of the corresponding non-deuterated compound may result in a loss of the potential to obtain clearance from the FDA to follow expedited development programs that reference and rely on findings previously obtained from the developer's prior nonclinical or clinical studies of the corresponding non-deuterated compound.

We rely on third parties to conduct our clinical trials and some aspects of our research and nonclinical testing. If they terminate their relationships with us or do not perform satisfactorily, our business may be materially harmed.

We do not independently conduct clinical trials of any of our product candidates. We rely on third parties, such as contract research organizations, clinical data management organizations, medical institutions and clinical investigators, to conduct these clinical trials and expect to rely on these third parties to conduct clinical trials of any other product candidate that we develop. We also rely on third parties to conduct some aspects of our research and nonclinical testing and expect to rely on these third parties in the future. Any of these third parties may terminate their engagements with us under certain circumstances. If any of

our relationships with these third parties terminate, we may not be able to enter into arrangements with alternative third parties on commercially reasonable terms, or at all. Switching to or adding additional third parties would involve additional cost and require management time and focus. In addition, there is a natural transition period when a new third party commences work, which could result in delays in our product development activities. Although we seek to carefully manage our relationships with our contract research organizations, any such challenges or delays could have a material adverse impact on our business, financial condition and prospects.

Our reliance on these third parties for clinical development activities limits our control over these activities but we remain responsible for ensuring that each of our studies is conducted in accordance with the applicable protocol, legal, regulatory and scientific standards. For example, notwithstanding the obligations of a contract research organization for a trial of one of our product candidates, we remain responsible for ensuring that each of our clinical trials is conducted in accordance with the general investigational plan and protocols for the trial. Moreover, the FDA requires us to comply with standards, commonly referred to as current Good Clinical Practices, or GCPs, for conducting, recording and reporting the results of clinical trials to assure that data and reported results are credible and accurate and that the rights, integrity and confidentiality of trial participants are protected. The FDA enforces these GCPs through periodic inspections of trial sponsors, principal investigators, clinical trial sites and institutional review boards. If we or our third party contractors fail to comply with applicable GCPs, the clinical data generated in our clinical trials may be deemed unreliable and the FDA may require us to perform additional clinical trials before approving our product candidates, which would delay the marketing approval process. We cannot be certain that, upon inspection, the FDA will determine that any of our clinical trials comply with GCPs.

Furthermore, these third parties are not our employees, and except for remedies available to us under our agreements with such contractors, we cannot control whether or not they devote sufficient time, skill and resources to our ongoing development programs. These contractors may also have relationships with other commercial entities, including our competitors, which could impede their ability to devote appropriate time to our clinical programs. If these third parties do not successfully carry out their contractual duties, meet expected deadlines or conduct their services in accordance with our contracts, regulatory requirements or our stated protocols, we may not be able to obtain, or may be delayed in obtaining, marketing approvals for our product candidates. If that occurs, we will not be able to, or may be delayed in our efforts to, successfully commercialize our product candidates. In such an event, our financial results and the commercial prospects for any product candidates that we seek to develop could be harmed, our costs could increase and our ability to generate revenues could be delayed, impaired or foreclosed.

We also rely on other third parties to store, label and distribute drug supplies for our clinical trials. Any performance failure on the part of our distributors could delay clinical development or marketing approval of our product candidates or commercialization of any resulting products, producing additional losses and depriving us of potential product revenue.

We are also required to register clinical trials and post the results of completed clinical trials on a government-sponsored database, such as ClinicalTrials.gov, within certain timeframes. Failure to do so can result in the inability to report our clinical results in certain publications, fines, adverse publicity and civil and criminal sanctions.

Because there are limited sources of deuterium, we, and our collaborators, are exposed to a number of risks and uncertainties associated with our deuterium supply.

We believe that all of the deuterium that we use in manufacturing our product candidates is currently derived, directly or indirectly, from deuterium oxide. For most of our deuterium supply, we rely on bulk supplies of deuterium oxide which we currently source from multiple suppliers, including two located in North America, one of which is in the United States.

In order to internationally transport any deuterium oxide that we purchase from our current or potential future foreign suppliers, we, or our suppliers, may be required to obtain an export license from the country of origin and we may be required to obtain an International Import Certificate or other governmental approvals or assurances from the country of destination. We are also required to obtain an export license from the Nuclear Regulatory Commission before shipping deuterium oxide from the United States to any contract manufacturer in another country. Export licenses and certain other required documents may specify the maximum amount of deuterium oxide that we, or our suppliers, are permitted to either import or export. In order for us to obtain supplies of deuterium oxide from foreign suppliers, they may be required to obtain an export license from the country of origin and we may be required to obtain domestic governmental approvals or assurances. In addition, our current U.S. export licenses may be insufficient to meet our future requirements. We, or our suppliers, may not be able to obtain such licenses, approvals or assurances in a timely manner or at all.

Certain of our manufacturing processes for our product candidates incorporate deuterium by using deuterated chemical intermediates or reagents that are derived from deuterium oxide. For the deuterated chemical intermediates and reagents, we are

not subject to the license requirements applicable to deuterium oxide; however the manufacturer of the deuterated chemical intermediate or reagent may themselves be required to obtain deuterium oxide under applicable licensing requirements. Most of the manufacturers of these deuterated chemical intermediates and reagents are not located in countries that produce bulk quantities of deuterium oxide. Therefore, our ability to source these deuterated chemical intermediates will depend on the ability of these manufacturers to obtain deuterium oxide from other countries. In the future we may arrange for supplies of deuterated chemical intermediates or reagents from manufacturers located in countries from which they can source deuterium oxide in bulk. However, contract manufacturers in these countries may not represent a viable alternative to our current suppliers. We do not have long-term agreements with our suppliers of deuterated chemical intermediates or reagents and we obtain some of these deuterated chemical intermediates or reagents from single sources, putting us at risk of uncontrolled cost increases or supply interruptions if we cannot establish alternative sourcing arrangements. Deuterated chemical intermediates may be expensive or difficult to obtain or may be produced by specialized techniques that are not widely practiced and we may not be able to enter into arrangements for larger scale supply of deuterated chemical intermediates on acceptable terms, or at all.

We estimate that our current sources of deuterium oxide will be sufficient to meet our anticipated requirements; however, we do not have long-term agreements with our current suppliers. If we are not able to establish or maintain supply arrangements, or any relevant foreign governments decide to withhold authorizations for the export of deuterium oxide that we seek, we may be unable to secure alternative sources. If we are unable to obtain sufficient supplies of deuterium oxide from our current suppliers or our potential future foreign supplier, we would be forced to either seek alternative suppliers of deuterium oxide, likely in other countries, or alternative sources of deuterium. Such alternative supplies may not be available to us on acceptable terms, or at all.

If we are unable to obtain sufficient supplies of deuterium, our ability to produce our product candidates would be impeded and our business, financial condition and prospects could be harmed. In particular, certain of our manufacturing processes are projected to require particularly large quantities of deuterium for late-stage clinical trials and for commercialization. Consequently, any adverse impact on our ability to obtain deuterium oxide from our current suppliers, import deuterium oxide into the United States or export deuterium oxide to our contract manufacturers could have a particularly severe impact on our ability to develop or commercialize those product candidates.

Similarly, to develop and commercialize any of our licensed product candidates, our collaborators will need to obtain supplies of deuterium and will be subject to risks and requirements in connection with sourcing deuterium that are similar to the ones that we face. In addition, if any of our product candidates is approved by the FDA, then the FDA will also have regulatory jurisdiction over the manufacture and use of deuterium oxide and deuterated chemical intermediates or reagents in such products. Any adverse impact on our, or our collaborators', ability to obtain deuterium could delay or prevent the development or commercialization of our product candidates, which could have a material adverse effect on our business.

We contract with third parties for the manufacture and distribution of our product candidates for nonclinical and clinical testing and expect to continue to do so in connection with our future development and commercialization efforts. This reliance on third parties increases the risk that we will not have sufficient quantities of our product candidates or such quantities at an acceptable cost, which could delay, prevent or impair our development or commercialization efforts.

We currently rely, and expect to continue to rely, on third party contractors to manufacture nonclinical and clinical supplies of our product candidates and to package, label and ship these supplies. We expect to rely on third party contractors to manufacture, formulate, package, label and distribute commercial quantities of any product candidate that we commercialize following approval for marketing by applicable regulatory authorities. Reliance on such third party contractors entails risks, including:

- manufacturing delays, including if our third party contractors give greater priority to the supply of other products over our product candidates or if they otherwise do not satisfactorily perform according to the terms of the agreements between us and them;
- the possible termination or nonrenewal of agreements by our third party contractors at a time that is costly or inconvenient for us;
- potentially limited numbers of available contractors due to the need for uncommon equipment or expertise, or pre-existing conflicts of interest;
- the possible breach by the third party contractors of our agreements with them;
- possible theft of intellectual property or trade secrets;
- possible theft of our materials, including starting materials, intermediates, active pharmaceutical ingredients, or drug products;
- the failure of third party contractors to comply with applicable regulatory requirements;

- the possible mislabeling of clinical supplies, potentially resulting in the wrong dose amounts being supplied or active drug or placebo not being properly identified;
- possible contamination, or nonconformance with product or packaging specifications, of our product during or after its manufacture;
- possible interruptions in our contractors' operations, including departure of key personnel, disruption due to merger and acquisitions activities or supply chain disruptions;
- the possibility of clinical supplies not being delivered to clinical sites on time, leading to clinical trial interruptions, or of drug supplies not being distributed to commercial vendors in a timely manner, resulting in lost sales; and
- the possible misappropriation of our proprietary information, including our trade secrets and know-how.

If any of our product candidates are approved by any regulatory agency, we plan to enter into agreements with third party contract manufacturers for the commercial production and distribution of those products. It may be difficult for us to reach agreement with a contract manufacturer on satisfactory terms or in a timely manner, especially if the manufacturer believes it is uniquely suited to use our deuterium chemistry manufacturing processes or otherwise has unusual market power, or that our deuterium chemistry manufacturing processes bear greater production risks than manufacture of non-deuterated compounds. In addition, we may face competition for access to manufacturing facilities as there are a limited number of contract manufacturers operating under current good manufacturing practices, or cGMPs, that are capable of manufacturing our product candidates. Consequently, we may not be able to reach agreement with third party manufacturers on satisfactory terms, which could delay our commercialization efforts.

Third party manufacturers are required to comply with cGMPs and similar regulatory requirements outside the United States. Facilities used by our third party manufacturers must be approved by the FDA after we submit an NDA and before potential approval of the product candidate. Similar regulations apply to manufacturers of our product candidates for use or sale in foreign countries. We do not directly control the manufacturing process and are completely dependent on our third party manufacturers for compliance with the applicable regulatory requirements for the manufacture of our product candidates. If our manufacturers fail to consistently manufacture material that conforms to the strict regulatory requirements of the FDA and any applicable foreign regulatory authority, they will not be able to secure the applicable approval for their manufacturing facilities. If these facilities are not approved for commercial manufacture, we may need to find alternative manufacturing facilities, which could result in delays in obtaining approval for the applicable product candidate.

In addition, our manufacturers are subject to ongoing periodic inspections by the FDA and corresponding state and foreign agencies for compliance with cGMPs and similar regulatory requirements both prior to and following the receipt of marketing approval for any of our product candidates. Some of these inspections may be unannounced. Failure by any of our manufacturers to comply with applicable cGMPs or other regulatory requirements could result in sanctions being imposed on us, including fines, injunctions, civil penalties, delays, suspensions or withdrawals of approvals, operating restrictions, interruptions in supply and criminal prosecutions, any of which could significantly and adversely affect supplies of our product candidates and have a material adverse impact on our business, financial condition and results of operations.

Our current and anticipated future dependence upon others for the manufacture of our product candidates may adversely affect our future profit margins and our ability to commercialize any products that receive marketing approval on a timely and competitive basis.

RISKS RELATED TO OUR INTELLECTUAL PROPERTY

If we are unable to obtain and maintain sufficient patent protection for our product candidates, or if the scope of the patent protection is not sufficiently broad, our competitors could develop and commercialize products similar or identical to ours, and our ability to successfully commercialize our product candidates may be adversely affected.

Our success depends in large part on our ability to obtain and maintain patent protection in the United States and other countries with respect to our proprietary product candidates. If we do not adequately protect our intellectual property, competitors may be able to erode or negate any competitive advantage we may have, which could harm our business and ability to achieve profitability. To protect our proprietary position, we file patent applications in the United States and abroad related to our novel product candidates that are important to our business. The patent application and approval process is expensive, uncertain and time-consuming. We may not be able to file and prosecute all necessary or desirable patent applications at a reasonable cost or in a timely manner. Neither deuterium itself, nor the general concept of selective substitution of deuterium for hydrogen in existing pharmaceutical compounds, is patentable; therefore we usually seek patents on a compound-by-compound basis or on a relatively narrow genus of compounds. We are not guaranteed that patents will issue protecting any particular deuterated compound for which we seek patent protection. We also cannot guarantee that another company will not

be able to find a different pattern of deuterium substitution that is equally or more effective in improving the characteristics of a non-deuterated compound, then patenting that deuterated compound and competing with us.

Our ability to obtain and maintain patent protection for our product candidates may be limited if disclosures of non-deuterated compounds are held to anticipate or make obvious claims of deuterated analogs of the same or similar compounds in any given territory. In addition, several large pharmaceutical and biotechnology companies have begun to pursue patent protection for deuterated analogs of their products and product candidates, and may in the future obtain patent protection that covers deuterated analogs of those product candidates. If patents directed primarily to non-deuterated compounds are deemed to protect deuterated analogs of those compounds or patent claims on deuterated analogs of compounds become common in the biotechnology and pharmaceutical industries, these factors may limit, in part or in whole, our ability to seek and obtain patent protection for new product candidates based on deuterium modification of compounds. It may also limit in part or in whole, our ability to develop new product candidates based on deuterium modification of such compounds without obtaining a license from those patent holders.

The patent position of biotechnology and pharmaceutical companies generally is highly uncertain. No consistent policy regarding the breadth of claims allowed in biotechnology and pharmaceutical patents has emerged to date in the United States or in many foreign jurisdictions. In addition, the determination of patent rights with respect to pharmaceutical compounds commonly involves complex legal and factual questions, which has in recent years been the subject of much litigation. As a result, the issuance, scope, validity, enforceability and commercial value of our patent rights are highly uncertain.

Assuming the other requirements for patentability are met, currently, the first to file a patent application is generally entitled to the patent. However, prior to March 16, 2013, in the United States, the first to invent was entitled to the patent. Publications of discoveries in the scientific literature often lag behind the actual discoveries, and patent applications in the United States and other jurisdictions are typically not published until 18 months after filing, or in some cases not at all. Therefore we cannot be certain that we were the first to make the inventions claimed in our patents or pending patent applications, or that we were the first to file for patent protection of such inventions.

On June 27, 2017, we filed a PGR with the PTAB seeking to invalidate all claims of Incyte Corporation's U.S. Patent No. 9,662,335, which includes claims relating to deuterated ruxolitinib analogs. On April 7, 2017, Incyte Corporation filed an inter parties review, or IPR, petition with the PTAB, of the U.S. PTO, challenging the validity of U.S. Patent No. 9,249,149, which claims deuterium-modified versions of ruxolitinib, including CTP-543. We intend to take necessary actions to vigorously defend the patent. We may also become involved in other opposition, derivation, reexamination, post grant review, inter partes review or interference proceedings, in the United States or elsewhere, challenging our patent rights or the patent rights of others. An adverse determination in any such submission, proceeding or litigation could reduce the scope of, or invalidate, our patent rights, allow third parties to commercialize our technology or product candidates and compete directly with us, without payment to us, or result in our inability to manufacture or commercialize products without infringing third party patent rights.

Our pending and future patent applications may not result in patents being issued which protect our product candidates, in whole or in part, or which effectively prevent others from commercializing competitive products. Changes in either the patent laws or interpretation of the patent laws in the United States and other countries may diminish the value of our patents or narrow the scope of our patent protection. In addition, the laws of foreign countries may not protect our rights to the same extent or in the same manner as the laws of the United States. For example, European patent law restricts the patentability of methods of treatment of the human body more than United States law does.

Even if our patent applications issue as patents, they may not issue in a form that will provide us with any meaningful protection, prevent competitors from competing with us or otherwise provide us with any competitive advantage. Our competitors may be able to circumvent our patents by developing similar or alternative technologies or products in a non-infringing manner. Our competitors may also seek approval to market their own products similar to or otherwise competitive with our products. Alternatively, our competitors may seek to market generic versions of any approved products by submitting ANDAs to the FDA in which they claim that patents owned or licensed by us are invalid, unenforceable or not infringed. In these circumstances, we may need to defend or assert our patents, or both, including by filing lawsuits alleging patent infringement. In any of these types of proceedings, a court or other agency with jurisdiction may find our patents invalid or unenforceable, or that our competitors are competing in a non-infringing manner. In certain territories, losses to an infringing product may not be sufficiently great to justify the costs of challenging the infringer and asserting our rights. In some situations, governments have allowed or enabled the sale of competing products that infringe a company's intellectual property. Thus, even if we have valid and nominally enforceable patents, these patents still may not provide protection against competing products or processes sufficient to achieve our business objectives.

The issuance of a patent is not conclusive as to its inventorship, scope, validity or enforceability, and our owned and licensed patents may be challenged in the courts or patent offices in the United States and abroad, including challenges through the U.S. Patent and Trademark Office post-grant review procedures. Such challenges may result in loss of exclusivity or in patent claims being narrowed, invalidated or held unenforceable, in whole or in part, which could limit our ability to stop others from using or commercializing similar or identical technology and products, or limit the duration of the patent protection of our technology and products. In addition, given the amount of time required for the development, testing and regulatory review of new product candidates, patents protecting such candidates might expire before or shortly after such candidates are commercialized.

If we are unable to protect the confidentiality of our trade secrets, the value of our technology could be materially adversely affected and our business would be harmed.

While we have obtained composition of matter patents with respect to our most advanced product candidates, our DCE Platform is not patented. In seeking to develop and maintain a competitive position through our DCE Platform and as to other aspects of our business, we rely on trade secrets, including unpatented know-how, technology and other proprietary information. We seek to protect these trade secrets, in part, by entering into non-disclosure and confidentiality agreements with parties who have access to them, such as our consultants, independent contractors, advisors, corporate collaborators, outside scientific collaborators, contract manufacturers, suppliers and other third parties. We also enter into confidentiality and invention or patent assignment agreements with employees and certain consultants. Any party with whom we have executed such an agreement may breach that agreement and disclose our proprietary information, including our trade secrets, and we may not be able to obtain adequate remedies for such breaches. Enforcing a claim that a party illegally disclosed or misappropriated a trade secret is difficult, expensive and time-consuming, and the outcome is unpredictable. In addition, if any of our trade secrets were to be lawfully obtained or independently developed by a competitor, we would have no right to prevent such third party, or those to whom they communicate such technology or information, from using that technology or information to compete with us. If any of our trade secrets were to be disclosed to or independently developed by a competitor, our business and competitive position could be harmed.

Third parties may sue us alleging that we are infringing their intellectual property rights, and such litigation could be costly and time consuming and could prevent or delay us from developing or commercializing our product candidates.

Our commercial success depends, in part, on our ability to develop, manufacture, market and sell our product candidates without infringing the intellectual property and other proprietary rights of third parties. Some of our current and future product candidates are based on products that are covered by issued patents or patent applications, the holders of which may attempt to assert claims against us. To date, we are not aware of any judicial decision holding that a patent that covers a non-deuterated compound should be construed to also cover deuterated analogs thereof, absent specific claims with respect to the deuterated analogs. However, any such judicial decision, or legal proceedings asserting such claims, could increase the likelihood of potential infringement claims being asserted against us. If any third party patents or patent applications are found to cover our product candidates or their methods of use, we may not be free to manufacture or market our product candidates as planned without obtaining a license, which may not be available on commercially reasonable terms, or at all.

For example, CTP-543 is a deuterium-modified version of ruxolitinib. Ruxolitinib is marketed in the U.S. by Incyte under the name Jakafi. Incyte has patents covering ruxolitinib that may be unexpired if and when we seek marketing approval for CTP-543. In addition, Columbia University is the assignee of a patent claiming the use of ruxolitinib for the treatment of hair loss disorders, including alopecia areata, which may be unexpired if and when we seek marketing approval for CTP-543. If we have to defend ourselves in a patent infringement suit, we may incur significant expenses in doing so. Such litigation could delay our ability to market, or prevent us from marketing, CTP-543.

There is a substantial amount of intellectual property litigation in the biotechnology and pharmaceutical industries, and we may become party to, or threatened with, litigation or other adversarial proceedings regarding intellectual property rights with respect to our products candidates, including interference proceedings before the U.S. Patent and Trademark Office. Third parties may assert infringement claims against us based on existing or future intellectual property rights. The outcome of intellectual property litigation is subject to uncertainties that cannot be adequately quantified in advance. The coverage of patents is subject to interpretation by the courts, and the interpretation is not always uniform. If we are sued for patent infringement, we would need to demonstrate that our product candidates, products or methods either do not infringe the relevant patent claims or that these patent claims are invalid or unenforceable, and we may not be able to do this. Proving invalidity is difficult. For example, in the United States, proving invalidity under most circumstances requires a showing of clear and convincing evidence to overcome the presumption of validity enjoyed by issued patents. We may also assert that a patent claim for a corresponding non-deuterated compound does not cover our product. Even if we are successful in these proceedings, we may incur substantial costs and the time and attention of our management and scientific personnel could be

diverted in pursuing these proceedings, which could have a material adverse effect on us. In addition, we may not have sufficient resources to bring these actions to a successful conclusion.

If we are found to infringe a third party's intellectual property rights, we could be forced, including by court order, to cease developing, manufacturing or commercializing the infringing product candidate or product and could be required to pay potentially significant damages. Alternatively, we may be required to obtain a license from such third party in order to use the infringing technology and continue developing, manufacturing or marketing the infringing product candidate. However, we may not be able to obtain any required license on commercially reasonable terms, or at all. Even if we were able to obtain a license, it could be non-exclusive, thereby giving our competitors access to the same technologies licensed to us. In addition, we could be found liable for monetary damages, including treble damages and attorneys' fees if we are found to have willfully infringed a patent. A finding of infringement could prevent us from commercializing our product candidates or force us to cease some of our business operations, which could materially harm our business. Claims that we have misappropriated the confidential information or trade secrets of third parties could have a similar negative impact on our business.

We may become involved in lawsuits to protect or enforce our patents or other intellectual property, which could be expensive, time consuming and unsuccessful.

Competitors may infringe our patents, trademarks, copyrights or other intellectual property. To counter infringement or unauthorized use, we may be required to file infringement claims, which can be expensive and time consuming and divert the time and attention of our management and scientific personnel. In any patent infringement proceeding, there is a risk that a court will decide that a patent of ours is invalid or unenforceable, in whole or in part, and that we do not have the right to stop the other party from using the invention at issue. There is also a risk that, even if the validity and enforceability of such patents is upheld, the court will construe the patent's claims narrowly or decide that we do not have the right to stop the other party from using the invention at issue on the grounds that our patent claims do not cover the invention. An adverse outcome in a litigation or proceeding involving our patents could limit our ability to assert our patents against those parties or other competitors, and may curtail or preclude our ability to exclude third parties from making and selling similar or competitive products. Any of these occurrences could adversely affect our competitive business position, business prospects and financial condition.

Even if we establish infringement, the court may decide not to grant an injunction against further infringing activity and instead award only monetary damages, which may or may not be an adequate remedy. Furthermore, because of the substantial amount of discovery required in connection with intellectual property litigation, there is a risk that some of our confidential information could be compromised by disclosure during litigation. Moreover, there can be no assurance that we will have sufficient financial or other resources to file and pursue such infringement claims, which typically last for years before they are concluded. Even if we ultimately prevail in such claims, the monetary cost of such litigation and the diversion of the attention of our management and scientific personnel could outweigh any benefit we receive as a result of the proceedings.

RISKS RELATED TO REGULATORY APPROVAL AND OTHER LEGAL COMPLIANCE MATTERS

Even if we complete the necessary nonclinical studies and clinical trials the marketing approval process is expensive, time consuming and uncertain and we may not obtain approvals for the commercialization of some or all of our product candidates. As a result, we cannot predict when or if, and in which territories, we, or our collaborators, will obtain marketing approval to commercialize a product candidate.

The research, testing, manufacturing, labeling, approval, selling, marketing, promotion and distribution of drug products are subject to extensive regulation by the FDA and comparable foreign regulatory authorities, which regulations differ from country to country. Failure to obtain marketing approval for a product candidate in a given territory will prevent us and our collaborators from commercializing the product candidate in that territory. Our product candidates are in various stages of development and are subject to the risks of failure inherent in drug development. We, and our collaborators, have not submitted an application for or received marketing approval for any of our product candidates in the United States or in any other jurisdiction. We have limited experience in filing and supporting the applications necessary to gain marketing approvals.

The process of obtaining marketing approvals, both in the United States and abroad, is lengthy, expensive and uncertain. It may take many years, if approval is obtained at all, and can vary substantially based upon a variety of factors, including the type, complexity and novelty of the product candidates involved. This is the case even though the deuterated compounds that we produce and seek to develop can have similar pharmacological properties as their corresponding non-deuterated compounds. Even if, as a result of any such similarities, we, or our collaborators, obtain clearance from the FDA and other regulatory authorities to follow expedited development programs for some deuterated compounds that reference and rely on previous

findings for non-deuterated compounds, the review and approval of our product candidates may still take a substantial period of time.

In addition, changes in marketing approval policies during the development period, changes in or the enactment or promulgation of additional statutes, regulations or guidance or changes in regulatory review for each submitted product application, may cause delays in the approval or rejection of an application. Regulatory authorities have substantial discretion in the approval process and may refuse to accept any application or may decide that our data are insufficient for approval and require additional nonclinical, clinical or other studies. In addition, varying interpretations of the data obtained from nonclinical and clinical testing could delay, limit or prevent marketing approval of a product candidate. Any marketing approval we, or our collaborators, ultimately obtain may be limited or subject to restrictions or post-approval commitments that render the approved product not commercially viable.

Any delay in obtaining or failure to obtain required approvals could materially adversely affect our ability or that of our collaborators to generate revenue from the particular product candidate, which likely would result in significant harm to our financial position and adversely impact our stock price.

Failure to obtain marketing approval in international jurisdictions would prevent our product candidates from being marketed abroad.

In order to market and sell our products in the European Union and many other jurisdictions, we, or our collaborators, must obtain separate marketing approvals and comply with numerous and varying regulatory requirements. The approval procedure varies among countries and can involve additional testing. The time required to obtain approval may differ substantially from that required to obtain FDA approval. The marketing approval process outside the United States generally includes all of the risks associated with obtaining FDA approval. In addition, in many territories outside the United States, it is required that the product be approved for reimbursement before the product can be approved for sale in that territory. Our products may not receive commercially feasible prices in any given territory, or the price offered for our products in a territory may have an adverse effect on their prices in other territories if we were to accept. We, and our collaborators, may not obtain approvals from regulatory authorities outside the United States on a timely basis, if at all. Approval by the FDA does not ensure approval by regulatory authorities in other countries or jurisdictions, and approval by one regulatory authority outside the United States does not ensure approval by regulatory authorities in other countries or jurisdictions or by the FDA.

Even if we, or our collaborators, obtain marketing approvals for our product candidates, the terms of approvals and ongoing regulation of our products may limit how we, or they, manufacture and market our products, which could materially impair our ability to generate revenue.

Once marketing approval has been granted, an approved product and its manufacturer and marketer are subject to ongoing review and extensive regulation. We, and our collaborators, must therefore comply with requirements concerning advertising and promotion for any of our product candidates for which we or they obtain marketing approval. Promotional communications with respect to prescription drugs are subject to a variety of legal and regulatory restrictions and must be consistent with the information in the product's approved labeling. Thus, we and our collaborators will not be able to promote any products we develop for indications or uses for which they are not approved.

In addition, manufacturers of approved products and those manufacturers' facilities are required to comply with extensive FDA requirements, including ensuring that quality control and manufacturing procedures conform to cGMPs, which include requirements relating to quality control and quality assurance as well as the corresponding maintenance of records and documentation and reporting requirements. We, our contract manufacturers, our collaborators and their contract manufacturers could be subject to periodic unannounced inspections by the FDA to monitor and ensure compliance with cGMPs.

Accordingly, assuming we, or our collaborators, receive marketing approval for one or more of our product candidates, we, and our collaborators, and our and their contract manufacturers will continue to expend time, money and effort in all areas of regulatory compliance, including manufacturing, production, product surveillance and quality control.

If we, and our collaborators, are not able to comply with post-approval regulatory requirements, we, and our collaborators, could have the marketing approvals for our products withdrawn by regulatory authorities and our, or our collaborators', ability to market any future products could be limited, which could adversely affect our ability to achieve or sustain profitability. Further, the cost of compliance with post-approval regulations may have a negative effect on our operating results and financial condition.

Any of our product candidates for which we, or our collaborators, obtain marketing approval in the future could be subject to post-marketing restrictions or withdrawal from the market and we, or our collaborators, may be subject to substantial penalties if we, or they, fail to comply with regulatory requirements or if we, or they, experience unanticipated problems with our products following approval.

Any of our product candidates for which we, or our collaborators, obtain marketing approval in the future, as well as the manufacturing processes, post-approval studies and measures, labeling, advertising and promotional activities for such product, among other things, will be subject to continual requirements of and review by the FDA and other regulatory authorities. These requirements include submissions of safety and other post-marketing information and reports, registration and listing requirements, requirements relating to manufacturing, quality control, quality assurance and corresponding maintenance of records and documents, requirements regarding the distribution of samples to physicians and recordkeeping. Even if marketing approval of a product candidate is granted, the approval may be subject to limitations on the indicated uses for which the product may be marketed or to the conditions of approval, including the requirement to implement a Risk Evaluation and Mitigation Strategy, or REMS.

The FDA may also impose requirements for costly post-marketing studies or clinical trials and surveillance to monitor the safety or efficacy of a product. The FDA and other agencies, including the Department of Justice, closely regulate and monitor the post-approval marketing and promotion of products to ensure that they are manufactured, marketed and distributed only for the approved indications and in accordance with the provisions of the approved labeling. The FDA imposes stringent restrictions on manufacturers' communications regarding off-label use and if we, or our collaborators, do not market any of our product candidates for which we, or they, receive marketing approval for only their approved indications, we, or they, may be subject to warnings or enforcement action for off-label marketing. Violation of the FDCA and other statutes, including the False Claims Act, relating to the promotion and advertising of prescription drugs may lead to investigations or allegations of violations of federal and state health care fraud and abuse laws and state consumer protection laws.

In addition, later discovery of previously unknown adverse events or other problems with our products or their manufacturers or manufacturing processes, or failure to comply with regulatory requirements, may yield various results, including:

- restrictions on such products, manufacturers or manufacturing processes;
- restrictions on the indication, patient population, or other parameters for which the drug is approved;
- restrictions on the labeling or marketing of a product;
- restrictions on product distribution or use;
- requirements to conduct post-marketing studies or clinical trials;
- warning letters or untitled letters;
- withdrawal of the products from the market;
- refusal to approve pending applications or supplements to approved applications that we submit;
- recall of products;
- fines, restitution or disgorgement of profits or revenues;
- suspension or withdrawal of marketing approvals;
- refusal to permit the import or export of products;
- product seizure; or
- injunctions or the imposition of civil or criminal penalties.

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

In the United States and some foreign jurisdictions, there have been a number of legislative and regulatory changes and proposed changes regarding the healthcare system that could prevent or delay marketing approval of our product candidates, restrict or regulate post-approval activities and affect our ability, or the ability of our collaborators, to profitably sell any products for which we, or they, obtain marketing approval.

In the United States, the Medicare Prescription Drug, Improvement, and Modernization Act of 2003, or the MMA, changed the way Medicare covers and pays for pharmaceutical products. The legislation expanded Medicare coverage for drug purchases by the elderly and introduced a new reimbursement methodology based on average sales prices for physician administered drugs. In addition, this legislation provided authority for limiting the number of drugs that will be covered in any therapeutic class. Cost reduction initiatives and other provisions of this legislation could decrease the coverage and price that we receive for any approved products. While the MMA only addresses drug benefits for Medicare beneficiaries, private payors often follow Medicare coverage policy and payment limitations in setting their own reimbursement rates. Therefore, any reduction in reimbursement that results from the MMA may result in a similar reduction in payments from private payors.

In March 2010, President Obama signed into law the Patient Protection and Affordable Care Act, as amended by the Health Care and Education Affordability Reconciliation Act, or collectively the PPACA.

Among the provisions of the PPACA of potential importance to our product candidates are the following:

- an annual, non-deductible fee on any entity that manufactures or imports specified branded prescription drugs and biologic agents;
- an increase in the statutory minimum rebates a manufacturer must pay under the Medicaid Drug Rebate Program;
- expansion of healthcare fraud and abuse laws, including the False Claims Act and the Anti-Kickback Statute, new government investigative powers and enhanced penalties for noncompliance;
- a new Medicare Part D coverage gap discount program, in which manufacturers must agree to offer 50% point-of-sale discounts off negotiated prices;
- extension of manufacturers' Medicaid rebate liability;
- expansion of eligibility criteria for Medicaid programs;
- expansion of the entities eligible for discounts under the Public Health Service pharmaceutical pricing program new requirements to report financial arrangements with physicians and teaching hospitals;
- a new requirement to annually report drug samples that manufacturers and distributors provide to physicians; and
- a new Patient-Centered Outcomes Research Institute to oversee, identify priorities in, and conduct comparative clinical effectiveness research, along with funding for such research.

In addition, other legislative changes have been proposed and adopted since the PPACA was enacted. These changes included aggregate reductions to Medicare payments to providers of up to 2% per fiscal year, starting in 2013. In January 2013, President Obama signed into law the American Taxpayer Relief Act of 2012, which, among other things, reduced Medicare payments to several providers and increased the statute of limitations period for the government to recover overpayments to providers from three to five years. These new laws may result in additional reductions in Medicare and other healthcare funding.

Legislative and regulatory proposals have been made to expand post-approval requirements and restrict sales and promotional activities for pharmaceutical products. We cannot be sure whether additional legislative changes will be enacted, or whether the FDA regulations, guidance or interpretations will be changed, or what the impact of such changes on the marketing approvals of our product candidates, if any, may be. In addition, increased scrutiny by the United States Congress of the FDA's approval process may significantly delay or prevent marketing approval, as well as subject us and our collaborators to more stringent product labeling and post-marketing testing and other requirements.

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

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

- *Anti-Kickback Statute*. The federal healthcare anti-kickback statute prohibits, among other things, persons from knowingly and willfully soliciting, offering, receiving or providing remuneration, directly or indirectly, in cash or in kind, to induce or reward, or in return for, either the referral of an individual for, or the purchase, order or recommendation or arranging of, any good or service, for which payment may be made under a federal healthcare program such as Medicare and Medicaid;
- *False Claims Act*. The federal False Claims Act imposes criminal and civil penalties, including through civil whistleblower or *qui tam* actions, against individuals or entities for, among other things, knowingly presenting, or causing to be presented false or fraudulent claims for payment by a federal healthcare program or making a false statement or record material to payment of a false claim or avoiding, decreasing or concealing an obligation to pay money to the federal government, with potential liability including mandatory treble damages and significant per-claim penalties, currently set at $5,500 to $11,000 per false claim;
- *HIPAA*. The federal Health Insurance Portability and Accountability Act of 1996, or HIPAA, imposes criminal and civil liability for executing a scheme to defraud any healthcare benefit program or knowingly and willfully falsifying, concealing or covering up a material fact or making any materially false statement in connection with the delivery of or

payment for healthcare benefits, items or services, and, as amended by the Health Information Technology for Economic and Clinical Health Act and its implementing regulations, also imposes obligations, including mandatory contractual terms and technical safeguards, with respect to maintaining the privacy, security and transmission of individually identifiable health information;

- *Transparency Requirements*. Federal laws require applicable manufacturers of covered drugs to report payments and other transfers of value to physicians, other healthcare providers and teaching hospitals, as well as ownership and investment interests held by physicians and other healthcare providers and their immediate family members;
- *Controlled Substances Act*. The CSA regulates the handling of controlled substances such as JZP-386; and
- *Analogous State and Foreign Laws*. Analogous state and foreign fraud and abuse laws and regulations, such as state anti-kickback and false claims laws can apply to sales or marketing arrangements and claims involving healthcare items or services. In addition, some state laws require pharmaceutical companies to comply with the pharmaceutical industry's voluntary compliance guidelines and the relevant compliance guidance promulgated by the federal government in addition to requiring drug manufacturers to report information related to payments to physicians and other health care providers or marketing expenditures and govern the privacy and security of health information in certain circumstances, many of which differ from each other in significant ways and often are not preempted by HIPAA, thus complicating compliance efforts.

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

Efforts to ensure that our business arrangements with third parties will comply with applicable healthcare laws and regulations will involve substantial costs. It is possible that governmental authorities will conclude that our business practices may not comply with current or future statutes, regulations or case law involving applicable fraud and abuse or other healthcare laws and regulations. If our operations are found to be in violation of any of these laws or any other governmental regulations that may apply to us, we may be subject to significant civil, criminal and administrative penalties, damages, fines, imprisonment, exclusion of products from government funded healthcare programs, such as Medicare and Medicaid, and the curtailment or restructuring of our operations. If any of the physicians or other healthcare providers or entities with whom we expect to do business is found to be not in compliance with applicable laws, they may be subject to criminal, civil or administrative sanctions, including exclusions from government funded healthcare programs.

If we fail to comply with environmental, health and safety laws and regulations, we could become subject to fines or penalties or incur costs that could have a material adverse effect on our business.

We are subject to numerous environmental, health and safety laws and regulations, including those governing laboratory procedures and the handling, use, storage, treatment and disposal of hazardous materials and wastes. From time to time, our operations may involve the use of hazardous materials, including chemicals and biological materials, and may also produce hazardous waste products. Even if we contract with third parties for the disposal of these materials and waste products, we cannot completely eliminate the risk of contamination or injury resulting from these materials. In the event of contamination or injury resulting from the use or disposal of our hazardous materials, we could be held liable for any resulting damages, and any liability could exceed our resources. We also could incur significant costs associated with civil or criminal fines and penalties for failure to comply with such laws and regulations.

We maintain workers’ compensation insurance to cover us for costs and expenses we may incur due to injuries to our employees resulting from the use of hazardous materials, but this insurance may not provide adequate coverage against potential liabilities. We do not maintain insurance for environmental liability or toxic tort claims that may be asserted against us.

In addition, we may incur substantial costs in order to comply with current or future environmental, health and safety laws and regulations. Current or future environmental laws and regulations may impair our research, development or production efforts, which could adversely affect our business, financial condition, results of operations or prospects. In addition, failure to comply with these laws and regulations may result in substantial fines, penalties or other sanctions.

Governments outside the United States tend to impose strict price controls, which may adversely affect our revenues, if any.

In some countries, such as the countries of the European Union, the pricing of prescription pharmaceuticals is subject to governmental control. In these countries, pricing negotiations with governmental authorities can take considerable time after

the receipt of marketing approval for a product. To obtain reimbursement or pricing approval in some countries, we, or our collaborators, may be required to conduct a clinical trial that compares the cost-effectiveness of our product to other available therapies. If reimbursement of our products is unavailable or limited in scope or amount, or if pricing is set at unsatisfactory levels, our business could be materially harmed.

RISKS RELATED TO EMPLOYEE MATTERS AND MANAGING GROWTH

Our future success depends on our ability to retain our Chief Executive Officer and other key executives and to attract, retain and motivate qualified personnel.

Our industry has experienced a high rate of turnover of management personnel in recent years. Our ability to compete in the highly competitive biotechnology and pharmaceuticals industries depends upon our ability to attract and retain highly qualified managerial, scientific and medical personnel. We are highly dependent on the pharmaceutical research and development and business development expertise of Roger D. Tung, our President and Chief Executive Officer, as well as the other principal members of our management, scientific and development team. Although we have formal employment agreements with our executive officers, these agreements do not prevent them from terminating their employment with us at any time. In addition, although we maintain a key-man insurance policy with respect to Dr. Tung, we do not carry key-man insurance on any of our other executive officers or employees and may not carry any key-man insurance in the future.

If we lose one or more of our executive officers, our ability to implement our business strategy successfully could be seriously harmed. Furthermore, replacing executive officers may be difficult and may take an extended period of time because of the limited number of individuals in our industry with the breadth of skills and experience required to develop, gain marketing approval of and commercialize products successfully. Competition to hire from this limited pool is intense, and we may be unable to hire, train, retain or motivate these additional key personnel on acceptable terms given the competition among numerous pharmaceutical and biotechnology companies for similar personnel. We also experience competition for the hiring of scientific and clinical personnel from universities and research institutions. In addition, we rely on consultants and advisors, including scientific and clinical advisors, to assist us in formulating our research and development and commercialization strategy. Our consultants and advisors may be employed by employers other than us and may have commitments under consulting or advisory contracts with other entities that may limit their availability to us. If we are unable to continue to attract and retain high quality personnel, our ability to develop and commercialize product candidates will be limited.

We expect to grow our organization and, as a result, we may encounter difficulties in managing our growth, which could disrupt our operations.

As our pipeline grows and matures, we expect to experience significant growth in the number of our employees and the scope of our operations, including in the areas of drug manufacturing, regulatory affairs and sales, clinical development, marketing and distribution. Our management may need to divert a disproportionate amount of its attention away from our day-to-day activities to devote time to managing these growth activities. To manage these growth activities, we must continue to implement and improve our managerial, operational and financial systems, expand our facilities and continue to recruit and train additional qualified personnel. Due to our limited financial resources and the limited experience of our management team in managing a company with such anticipated growth, we may not be able to effectively manage the expansion of our operations or recruit and train additional qualified personnel. Moreover, the expected expansion of our operations may lead to significant costs and may divert our business development resources. Any inability to manage growth could delay the execution of our business plans or disrupt our operations.

RISKS RELATED TO OUR COMMON STOCK

The price of our common stock may be volatile and fluctuate substantially, which could result in substantial losses for purchasers of our common stock.

The trading price of our comment stock has been, and may continue to be, volatile and could be subject to wide fluctuations in response to various factors, some of which are beyond our control. The stock market in general and the market for smaller pharmaceutical and biotechnology companies in particular have experienced extreme volatility that has often been unrelated to the operating performance of particular companies. The market price for our common stock may be influenced by many factors, including:

- the success or failure of existing or new competitive products or technologies;
- the timing, advancement of and results of nonclinical studies and clinical trials of any of our product candidates;

- commencement or termination of collaborations for our development programs;
- failure, delays, changes to or discontinuation of any of our development programs;
- regulatory or legal developments in the United States and other countries;
- regulatory actions relating to our product candidates;
- developments or disputes concerning patent applications, issued patents or other proprietary rights;
- the recruitment or departure of key personnel;
- disclosures by our collaborators relating to our product candidates or competitive programs;
- merger or acquisition activity of our collaborators;
- the level of expenses related to any of our product candidates or clinical development programs;
- the results of our efforts to develop additional product candidates or products;
- actual or anticipated changes in estimates as to financial results, development timelines or recommendations by securities analysts;
- announcement or expectation of additional financing efforts;
- receipt or expectation of receipt of revenues such as milestones, royalties, grants and license fees;
- sales of our common stock by us, our insiders or other stockholders;
- programmed trading based on technical stock chart or other inputs;
- portfolio restructuring by large shareholders;
- addition or removal of our stock from stock indices;
- variations in our financial results or those of companies that are perceived to be similar to us;
- changes in estimates or recommendations by securities analysts that cover our stock;
- actions by short-sellers or supporters of our stock, including social media postings or reports;
- changes in the structure of healthcare payment systems;
- market conditions in the pharmaceutical and biotechnology sectors;
- legalization or the anticipation of possible legalization of drug reimportation from other countries;
- actual or anticipated changes in FDA practices;
- general economic, industry and market conditions; and
- the other factors described in this "Risk Factors" section.

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

Although we have listed our common stock on The NASDAQ Global Market, an active trading market for our common stock may not be sustained. In the absence of an active trading market for our common stock, investors may not be able to sell their common stock at or above the price at which they acquired their shares or at the times that they would like to sell. An inactive trading market may also impair our ability to raise capital to continue to fund operations by selling shares and may impair our ability to acquire other companies or technologies by using our shares as consideration.

We have broad discretion in the use of our cash reserves and may not use them effectively.

Our management has broad discretion to use our cash reserves and could use our cash reserves in ways that do not improve our results of operations or enhance the value of our common stock. The failure by our management to apply these funds effectively could result in financial losses that could have a material adverse effect on our business, cause the price of our common stock to decline and delay the development of our product candidates. Pending their use, we may invest our cash reserves in a manner that does not produce income or that loses value.

We are an "emerging growth company," and the reduced disclosure requirements applicable to emerging growth companies may make our common stock less attractive to investors.

We are an "emerging growth company," as defined in the JOBS Act, and may remain an emerging growth company for up to five years from the date of our initial public offering. For so long as we remain an emerging growth company, we are permitted and plan to rely on exemptions from certain disclosure requirements that are applicable to other public companies that are not emerging growth companies. These exemptions include not being required to comply with the auditor attestation requirements of Section 404 of the Sarbanes-Oxley Act of 2002, or SOX Section 404, not being required to comply with any requirement that may be adopted by the Public Company Accounting Oversight Board regarding mandatory audit firm rotation or a supplement to the auditor's report providing additional information about the audit and the financial statements, reduced disclosure obligations regarding executive compensation and exemptions from the requirements of holding a nonbinding advisory vote on executive compensation and shareholder approval of any golden parachute payments not previously approved. We cannot predict whether investors will find our common stock less attractive if we rely on these exemptions. If some investors find our common stock less attractive as a result, there may be a less active trading market for our common stock and our stock price may be more volatile.

In addition, the JOBS Act provides that an emerging growth company can take advantage of an extended transition period for complying with new or revised accounting standards. This allows an emerging growth company to delay the adoption of certain accounting standards until those standards would otherwise apply to private companies. We have irrevocably elected not to avail ourselves of this exemption from new or revised accounting standards and, therefore, we are subject to the same new or revised accounting standards as other public companies that are not emerging growth companies.

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

As a public company, we are incurring and expect to incur additional significant legal, accounting and other expenses that we did not incur as a private company. We expect that these expenses will further increase after we are no longer an "emerging growth company." The Sarbanes-Oxley Act of 2002, or SOX, the Dodd-Frank Wall Street Reform and Consumer Protection Act, the listing requirements of The NASDAQ Global Market and other applicable securities rules and regulations impose various requirements on public companies, including establishment and maintenance of effective disclosure and financial controls and corporate governance practices. We expect that we will need to hire additional personnel to comply with the requirements of being a public company, and our management and other personnel will need to devote a substantial amount of time towards maintaining compliance with these requirements. These rules and regulations are often subject to varying interpretations, in many cases due to their lack of specificity, and, as a result, their application in practice may evolve over time as new guidance is provided by regulatory and governing bodies. This could result in continuing uncertainty regarding compliance matters and higher costs necessitated by ongoing revisions to disclosure and governance practices.

Pursuant to SOX Section 404 we are required to evaluate the effectiveness of our internal control over financial reporting as of the end of each fiscal year and to report on this evaluation in our Annual Report on Form 10-K for the year. However, while we remain an emerging growth company, we will not be required to include an attestation report on internal control over financial reporting issued by our independent registered public accounting firm. We will need to continue to dedicate internal resources, potentially engage outside consultants and adopt a detailed work plan to assess and document the adequacy of internal control over financial reporting, continue steps to improve control processes as appropriate, validate through testing that controls are functioning as documented and implement a continuous reporting and improvement process for internal control over financial reporting. Despite our efforts, there is a risk that we will not be able to conclude that our internal control over financial reporting is effective as required by SOX Section 404. If we identify one or more material weaknesses, it could result in an adverse reaction in the financial markets due to a loss of confidence in the reliability of our financial statements.

A significant portion of our total outstanding shares may be sold into the market in the near future, which could cause the market price of our common stock to decline significantly, even if our business is doing well.

Sales of a substantial number of shares of our common stock in the public market could occur at any time. These sales, or the perception in the market that the holders of a large number of shares of common stock intend to sell shares, could reduce the market price of our common stock.

In addition, as of August 4, 2017, there were 3,947,650 shares subject to outstanding options and restricted stock units under our equity compensation plans, all of which shares we have registered under the Securities Act on a registration statement on Form S-8. These shares will be able to be freely sold in the public market upon exercise, as permitted by any applicable vesting requirements, except to the extent they are held by our affiliates, in which case such shares will become eligible for sale in the public market as permitted by Rule 144 under the Securities Act. Furthermore, as of August 4, 2017, there were 132,069 shares subject to an outstanding warrant to purchase common stock. These shares will become eligible for sale in the public market, to the extent such warrant is exercised, as permitted by Rule 144 under the Securities Act. Moreover, holders of a substantial portion of our outstanding common stock have rights, subject to conditions, to require us to file registration statements covering their shares or, along with the holder of our outstanding warrant to purchase common stock, to include their shares in registration statements that we may file for ourselves or other stockholders.

We do not anticipate paying any cash dividends on our capital stock in the foreseeable future, accordingly, stockholders must rely on capital appreciation, if any, for any return on their investment.

We have never declared or paid cash dividends on our capital stock. We currently plan to retain all of our future earnings, if any, to finance the operation, development and growth of our business. Furthermore, any future debt agreements may preclude us from paying dividends. As a result, capital appreciation, if any, of our common stock will be the sole source of gain for our stockholders for the foreseeable future.

Our executive officers, directors and principal stockholders, if they choose to act together, have the ability to substantially influence all matters submitted to stockholders for approval.

As of June 30, 2017, our executive officers and directors, combined with our stockholders who owned more than 5% of our outstanding common stock, and all affiliates, in the aggregate, beneficially owned shares representing approximately 44.7% of our capital stock. As a result, if these stockholders were to choose to act together, they would be able to substantially influence all matters submitted to our stockholders for approval, as well as our management and affairs. For example, these persons, if they choose to act together, would substantially influence the election of directors and approval of any merger, consolidation or sale of all or substantially all of our assets. This concentration of ownership control may:

- delay, defer or prevent a change in control;
- entrench our management or the board of directors; or
- impede a merger, consolidation, takeover or other business combination involving us that other stockholders may desire.

Future sales of a substantial number of our common shares by our principal stockholders could depress the trading price of our common stock.

If our principal stockholders sell substantial amounts of shares of our common stock in the public market or if the market anticipates that these sales could occur, the market price of shares of our common stock could decline. These sales may make it more difficult for us to sell equity or equity-related securities in the future at a time and price that we deem appropriate, or to use equity as consideration for future acquisitions.

Provisions in our corporate charter documents and under Delaware law could make an acquisition of us, which may be beneficial to our stockholders, more difficult and may prevent attempts by our stockholders to replace or remove our current management.

Provisions in our corporate charter and our bylaws may discourage, delay or prevent a merger, acquisition or other change in control of us that stockholders may consider favorable, including transactions in which our stockholders might otherwise receive a premium for their shares. These provisions could also limit the price that investors might be willing to pay in the future for shares of our common stock, thereby depressing the market price of our common stock. In addition, because our board of directors is responsible for appointing the members of our management team, these provisions may frustrate or prevent any attempts by our stockholders to replace or remove our current management by making it more difficult for stockholders to replace members of our board of directors. Among other things, these provisions:

- establish a classified board of directors such that all members of the board are not elected at one time;
- allow the authorized number of our directors to be changed only by resolution of our board of directors;
- limit the manner in which stockholders can remove directors from the board;
- establish advance notice requirements for nominations for election to the board of directors or for proposing matters that can be acted on at stockholder meetings;
- require that stockholder actions must be effected at a duly called stockholder meeting and prohibit actions by our stockholders by written consent;
- limit who may call a special meeting of stockholders;
- authorize our board of directors to issue preferred stock without stockholder approval, which could be used to institute a “poison pill” that would work to dilute the stock ownership of a potential hostile acquirer, effectively preventing acquisitions that have not been approved by our board of directors; and
- require the approval of the holders of at least 75% of the votes that all our stockholders would be entitled to cast to amend or repeal certain provisions of our charter or bylaws.

Moreover, because we are incorporated in Delaware, we are governed by the provisions of Section 203 of the Delaware General Corporation Law, which prohibits a person who owns in excess of 15% of our outstanding voting stock from merging or combining with us for a period of three years after the date of the transaction in which the person acquired in excess of 15% of our outstanding voting stock, unless the merger or combination is approved in a prescribed manner. This could discourage, delay or prevent someone from acquiring us or merging with us, whether or not it is desired by, or beneficial to, our stockholders.

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

The trading market for our common stock depends on the research and reports that securities or industry analysts publish about us or our business. We do not have any control over these analysts. There can be no assurance that analysts will cover us, or provide favorable coverage. If one or more analysts downgrade our stock or change their opinion of our stock, our share price may decline. In addition, if one or more analysts cease coverage of our Company or fail to regularly publish reports on us, we could lose visibility in the financial markets, which could cause our share price or trading volume to decline.

RISKS RELATED TO ASSET SALE

The asset purchase agreement exposes us to contingent liabilities that could have a material adverse effect on our financial condition.

We have agreed to indemnify Vertex for damages resulting from or arising out of any inaccuracy or breach of our representations, warranties or covenants in the asset purchase agreement, any and all of our liabilities not assumed by Vertex in the asset sale and for certain other matters. Significant indemnification claims by Vertex could have a material adverse effect on our financial condition. In the event that claims for indemnification exceed certain thresholds set forth in the asset purchase agreement, we will be obligated to indemnify Vertex for any damages or loss resulting from such breach for up to $16 million, or in some cases, the entire purchase price paid to us by Vertex, including any milestone payments. Any event that results in a right for Vertex to seek indemnity from us could result in a substantial payment from us to Vertex and could adversely affect our results of operations.

Item 6. Exhibits.

The exhibits listed in the Exhibit Index to this Quarterly Report on Form 10-Q are incorporated herein by reference.

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned thereunto duly authorized.

CONCERT PHARMACEUTICALS, INC.

Date: August 8, 2017

By: /s/ Roger Tung

Roger Tung
Chief Executive Officer

Exhibit Index

Exhibit number	Description
31.1*	Chief Executive Officer — Certification pursuant to Rule 13a-14(a) of the Securities Exchange Act of 1934, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002
31.2*	Principal Financial Officer — Certification pursuant to Rule 13a-14(a) of the Securities Exchange Act of 1934, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002
32.1**	Chief Executive Officer — Certification pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002
32.2**	Principal Financial Officer — Certification pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002
101.INS*	XBRL Instance Document
101.SCH*	XBRL Taxonomy Extension Schema Document
101.CAL*	XBRL Taxonomy Extension Calculation Linkbase Document
101.DEF*	XBRL Taxonomy Extension Definition Linkbase Document
101.LAB*	XBRL Taxonomy Extension Label Linkbase Document
101.PRE*	XBRL Taxonomy Extension Presentation Linkbase Document

* Filed herewith.
** Furnished herewith.

Exhibit 31.1

**CERTIFICATION PURSUANT TO RULE 13a-14(a)
OF THE SECURITIES EXCHANGE ACT OF 1934, AS ADOPTED PURSUANT TO
SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002**

I, Roger D. Tung, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Concert Pharmaceuticals, Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

   (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

   (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

   (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

   (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

   (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

   (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: August 8, 2017

/s/ Roger D. Tung

Roger D. Tung

President and Chief Executive Officer

Exhibit 31.2

**CERTIFICATION PURSUANT TO RULE 13a-14(a)
OF THE SECURITIES EXCHANGE ACT OF 1934, AS ADOPTED PURSUANT TO
SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002**

I, Ryan Lynch, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Concert Pharmaceuticals, Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

   (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

   (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

   (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

   (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

   (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

   (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: August 8, 2017

/s/ Ryan Lynch

Ryan Lynch

Corporate Controller and Principal Financial Officer

Exhibit 32.1

CERTIFICATION PURSUANT TO 18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the Quarterly Report on Form 10-Q of Concert Pharmaceuticals, Inc. (the "Company") for the period ended June 30, 2017, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Roger D. Tung, President and Chief Executive Officer of the Company, hereby certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that, to my knowledge:

(1) The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

(2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Dated: August 8, 2017

/s/ Roger D. Tung

Roger D. Tung
President and Chief Executive Officer

A signed original of this written statement required by Section 906 has been provided to Concert Pharmaceuticals, Inc. and will be retained by Concert Pharmaceuticals, Inc. and furnished to the Securities and Exchange Commission or its staff upon request.

Exhibit 32.2

CERTIFICATION PURSUANT TO 18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the Quarterly Report on Form 10-Q of Concert Pharmaceuticals, Inc. (the "Company") for the period ended June 30, 2017, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Ryan Lynch, Principal Financial Officer of the Company, hereby certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that, to my knowledge:

(1) The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

(2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Dated: August 8, 2017

/s/ Ryan Lynch

Ryan Lynch
Corporate Controller and Principal Financial Officer

A signed original of this written statement required by Section 906 has been provided to Concert Pharmaceuticals, Inc. and will be retained by Concert Pharmaceuticals, Inc. and furnished to the Securities and Exchange Commission or its staff upon request.