Xenon Pharmaceuticals Inc.
Form 10-Q
November 06, 2018

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 September 30, 2018

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: 001-36687

XENON PHARMACEUTICALS INC.

(Exact name of Registrant as Specified in its Charter)

Canada	98-0661854
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)
200-3650 Gilmore Way Burnaby, British Columbia, Canada	V5G 4W8
(Address of principal executive offices)	(Zip Code)

Registrant’s telephone number, including area code: (604) 484-3300

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

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§ 232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes No

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, or a non-accelerated filer, 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	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

As of November 2, 2018, the registrant had 25,240,348 common shares, without par value, outstanding.

XENON PHARMACEUTICALS INC.

QUARTERLY REPORT ON FORM 10-Q

FOR THE QUARTER ENDED SEPTEMBER 30, 2018

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In this Quarterly Report on Form 10-Q, “we,” “our,” “us,” “Xenon,” and “the Company” refer to Xenon Pharmaceuticals Inc. a its subsidiary. “Xenon” and the Xenon logo are the property of Xenon Pharmaceuticals Inc. and are registered in the United States and used or registered in various other jurisdictions. This report contains references to our trademarks and to trademarks belonging to other entities. Solely for convenience, trademarks and trade names referred to in this report may appear without the ® or ™ symbols, but such references are not intended to indicate, in any way, that their respective owners will not assert, to the fullest extent under applicable law, their rights thereto. We do not intend our use or display of other companies’ trade names or trademarks to imply a relationship with, or endorsement or sponsorship of us by, any other companies.

PART I. FINANCIAL INFORMATION

Item 1. Financial Statements

XENON PHARMACEUTICALS INC.

Consolidated Balance Sheets

(Unaudited)

(Expressed in thousands of U.S. dollars except share amounts)

	September 30, 2018	December 31, 2017
Assets		
Current assets:		
Cash and cash equivalents	$ 87,962	$ 20,486
Marketable securities	39,166	23,181
Accounts receivable	180	438
Prepaid expenses and other current assets	2,185	716
	129,493	44,821
Prepaid expenses, long term	—	230
Property, plant and equipment, net	962	1,070
Total assets	$ 130,455	$ 46,121
Liabilities and shareholders' equity		
Current liabilities:		
Accounts payable and accrued expenses (note 7)	4,413	3,383
Loan payable, current portion (note 8)	—	700
	4,413	4,083
Loan payable, long-term (note 8)	14,886	6,104
	$ 19,299	$ 10,187
Shareholders' equity:		
Preferred shares, without par value; unlimited shares authorized; issued and outstanding: 1,568,000 (December 31, 2017 - nil) (note 9b)	11,932	—
Common shares, without par value; unlimited shares authorized; issued and outstanding: 25,187,441 (December 31, 2017 - 17,998,420) (note 9)	261,655	173,841
Additional paid-in capital	37,886	36,471
Accumulated deficit	(199,327)	(173,388)
Accumulated other comprehensive loss	(990)	(990)
	$ 111,156	$ 35,934
Total liabilities and shareholders' equity	$ 130,455	$ 46,121
Commitments and contingencies (note 10)		

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

XENON PHARMACEUTICALS INC.

Consolidated Statements of Operations and Comprehensive Loss

(Unaudited)

(Expressed in thousands of U.S. dollars except share and per share amounts)

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2018	2017	2018	2017
Revenue:				
Collaboration revenue	$ —	$ 264	$ —	$ 295
Operating expenses:				
Research and development	6,240	7,164	17,228	19,176
General and administrative	1,938	1,744	6,354	5,643
Buy-out of future milestones and royalties (note 10c)	6,000	—	6,000	—
	14,178	8,908	29,582	24,819
Loss from operations	(14,178)	(8,644)	(29,582)	(24,524)
Other income (expense):				
Interest income	325	124	558	382
Interest expense	(678)	—	(1,037)	—
Foreign exchange gain (loss)	148	778	(276)	1,503
Gain on termination of collaboration agreement (note 9c)	—	—	4,398	—
Net loss and comprehensive loss	(14,383)	(7,742)	(25,939)	(22,639)
Net loss attributable to preferred shareholders	(1,621)	—	(2,506)	—
Net loss attributable to common shareholders	$ (12,762)	$ (7,742)	$ (23,433)	$ (22,639)
Net loss per common share (note 5):				
Basic	$ (0.63)	$ (0.43)	$ (1.34)	$ (1.26)
Diluted	$ (0.63)	$ (0.43)	$ (1.34)	$ (1.27)
Weighted-average common shares outstanding (note 5):				
Basic	20,306,298	17,998,420	17,472,403	17,980,608
Diluted	20,306,298	18,009,979	17,472,403	18,000,066

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

XENON PHARMACEUTICALS INC.

Consolidated Statement of Shareholders' Equity

(Unaudited)

(Expressed in thousands of U.S. dollars except share amounts)

	Convertible preferred shares		Common shares		Additional paid-in capital	Accumulated deficit	Accumulated other comprehensive loss[1]	Total shareholders' equity
	Shares	Amount	Shares	Amount				
Balance as of December 31, 2016	—	$—	17,930,590	$173,246	$34,326	$ (142,681)	$ (990)	$ 63,901
Net loss for the year						(30,704)		(30,704)
Stock-based compensation expense					2,460			2,460
Issued pursuant to exercise of stock options			67,830	595	(415)	(3)		177
Issuance of warrants					100			100
Balance as of December 31, 2017	—	$—	17,998,420	$173,841	$36,471	$ (173,388)	$ (990)	$ 35,934
Net loss for the period						(25,939)		(25,939)
Issuance of common shares, net of issuance costs (note 9a)			9,540,000	$102,842				102,842
Issued (cancelled) pursuant to exchange agreement (note	2,868,000	21,825	(2,868,000)	(21,825)				—

9b)								
Conversion of preferred shares to common shares (note 9b)	(1,300,000)	(9,893)	1,300,000	9,893				—
Cancelled pursuant to termination of collaboration agreement (note 9c)			(1,000,000)	(4,470)				(4,470)
Stock-based compensation expense					1,989			1,989
Issued pursuant to exercise of stock options and warrants			217,021	1,374	(1,112)			262
Issuance of warrants					538			538
Balance as of September 30, 2018	1,568,000	$11,932	25,187,441	$261,655	$37,886	$ (199,327)	$ (990)	$ 111,156

(1) Our accumulated other comprehensive loss is entirely related to historical cumulative translation adjustments from the application of U.S. dollar reporting when the functional currency of the Company was the Canadian dollar.

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

XENON PHARMACEUTICALS INC.

Consolidated Statements of Cash Flows

(Unaudited)

(Expressed in thousands of U.S. dollars)

	Nine Months Ended September 30,	
	2018	2017
Operating activities:		
Net loss	$ (25,939)	$ (22,639)
Items not involving cash:		
Depreciation	445	502
Amortization of discount on term loan	156	—
Stock-based compensation	2,050	1,643
Unrealized foreign exchange (gain) loss	269	(1,585)
Gain on termination of collaboration agreement (note 9c)	(4,398)	—
Changes in operating assets and liabilities:		
Accounts receivable	255	77
Prepaid expenses, and other current assets	(1,469)	243
Prepaid expenses, long term	230	190
Accounts payable and accrued expenses	919	(319)
Net cash used in operating activities	(27,482)	(21,888)
Investing activities:		
Purchases of property, plant and equipment	(337)	(252)
Purchase of marketable securities	(50,130)	(22,281)
Proceeds from marketable securities	34,036	41,024
Net cash provided by (used in) investing activities	(16,431)	18,491
Financing activities:		
Proceeds from issuance of refinanced term loan, net of issuance costs (note 8)	8,453	—
Issuance of common shares, net of issuance costs (note 9a)	102,842	—
Issuance of common shares pursuant to exercise of stock options	262	177
Net cash provided by financing activities	111,557	177
Effect of exchange rate changes on cash and cash equivalents	(168)	813
Increase (decrease) in cash and cash equivalents	67,476	(2,407)
Cash and cash equivalents, beginning of period	20,486	17,095
Cash and cash equivalents, end of period	$ 87,962	$ 14,688

Supplemental disclosures:		
Interest paid	$ 338	$ —
Interest received	518	544
Supplemental disclosures of non-cash transactions:		
Fair value of stock options and warrants exercised on a cashless basis	1,112	25
Issuance of preferred shares in exchange for common shares (note 9b)	21,825	—
Conversion of preferred shares to common shares (note 9b)	9,893	—
Termination of Teva agreement through cancellation of common shares (note 9c)	4,470	—

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

XENON PHARMACEUTICALS INC.

Notes to Consolidated Financial Statements

(Unaudited)

(Expressed in thousands of U.S. dollars except share and per share amounts)

1. Nature of the business:
Xenon Pharmaceuticals Inc. (the "Company"), incorporated in 1996 under the British Columbia Business Corporations Act and continued federally in 2000 under the Canada Business Corporation Act, is a clinical stage biopharmaceutical company focused on developing innovative therapeutics to improve the lives of patients with neurological disorders. Building upon its extensive knowledge of human genetics and diseases caused by mutations in ion channels, known as channelopathies, the Company is advancing a novel product pipeline of neurology therapies to address areas of high unmet medical need, such as epilepsy, migraine and pain.

The Company has incurred significant operating losses since inception. As of September 30, 2018, the Company had an accumulated deficit of $199,327 and a $25,939 net loss for the nine months ended September 30, 2018. Management expects to continue to incur significant expenses in excess of revenue and to incur operating losses for the foreseeable future. To date, the Company has financed its operations primarily through funding received from collaboration and license agreements, private placements of common and preferred shares, public offerings of common shares, debt financing, and government funding.

Until such time as the Company can generate substantial product revenue, if ever, management expects to finance the Company's cash needs through a combination of collaboration agreements and equity or debt financings. The continuation of the research and development activities and the future commercialization of its products are dependent on the Company's ability to successfully raise additional funds when needed. It is not possible to predict either the outcome of future research and development programs or the Company's ability to continue to fund these programs in the future.

2. Basis of presentation:
These consolidated financial statements are presented in U.S. dollars.

The Company has one wholly-owned subsidiary as of September 30, 2018, Xenon Pharmaceuticals USA Inc., which was incorporated in Delaware on December 2, 2016.

These unaudited interim consolidated financial statements include the accounts of the Company and its wholly-owned subsidiary. All intercompany transactions and balances have been eliminated on consolidation.

The accompanying unaudited interim consolidated financial statements have been prepared in accordance with United States generally accepted accounting principles ("U.S. GAAP") and pursuant to the rules and regulations of the United States Securities and Exchange Commission ("SEC") for interim financial information. Accordingly, these consolidated financial statements do not include all of the information and footnotes required for complete consolidated financial statements and should be read in conjunction with the audited consolidated financial statements and notes for the year ended December 31, 2017 and included in the Company's 2017 Annual Report on Form 10-K filed with the SEC and with the securities commissions in British Columbia, Alberta and Ontario on March 7, 2018.

These unaudited interim consolidated financial statements reflect all adjustments, consisting of normal recurring adjustments, which, in the opinion of management, are necessary for a fair presentation of results for the interim

periods presented. The results of operations for the three and nine month periods ended September 30, 2018 and 2017 are not necessarily indicative of results that can be expected for a full year. These unaudited interim consolidated financial statements follow the same significant accounting policies as those described in the notes to the audited consolidated financial statements of the Company included in the Company's 2017 Annual Report on Form 10-K for the year ended December 31, 2017, with the exception of the policy described in note 3 below.

3. Changes in significant accounting policies:

The new revenue standard (Accounting Standards Codification "ASC" 606) became effective for the Company on January 1, 2018, and was adopted using the modified retrospective method under which previously presented financial statements are not restated and the cumulative effect of adopting the new revenue standard on contracts in process is recognized by an adjustment to retained earnings at the effective date. The adoption of the new revenue standard did not change the Company's recognized revenue under its one ongoing significant collaborative research and license agreement with Genentech, a member of the Roche Group, described in note 11b to the audited consolidated financial statements of the Company included in the Company's 2017 Annual Report on Form 10-K for the year ended December 31, 2017 and no cumulative effect adjustment was required.

The new guidance in ASC 606 requires an entity to recognize the amount of revenue to which it expects to be entitled for the transfer of promised goods or services to customers under a five-step model: (i) identify contract(s) with a customer; (ii) identify the performance obligations in the contract; (iii) determine the transaction price; (iv) allocate the transaction price to the performance obligations in the contract; and (v) recognize revenue when or as a performance obligation is satisfied.

The Company generates revenue primarily through collaboration agreements. Such agreements may require the Company to deliver various rights and/or services, including intellectual property rights or licenses and research and development services. Under such collaboration agreements, the Company is generally eligible to receive non-refundable upfront payments, funding for research and development services, milestone payments, and royalties.

In contracts where the Company has more than one performance obligation to provide its customer with goods or services, each performance obligation is evaluated to determine whether it is distinct based on whether (i) the customer can benefit from the good or service either on its own or together with other resources that are readily available and (ii) the good or service is separately identifiable from other promises in the contract. The consideration under the contract is then allocated between the distinct performance obligations based on their respective relative stand-alone selling prices. The estimated stand-alone selling price of each deliverable reflects the Company's best estimate of what the selling price would be if the deliverable was regularly sold on a stand-alone basis and is determined by reference to market rates for the good or service when sold to others or by using an adjusted market assessment approach if selling price on a stand-alone basis is not available.

The consideration allocated to each distinct performance obligation is recognized as revenue when control is transferred to the customer for the related goods or services. Consideration associated with at-risk substantive performance milestones, including sales-based milestones, is recognized as revenue when it is probable that a significant reversal of the cumulative revenue recognized will not occur. Sales-based royalties received in connection with licenses of intellectual property are subject to a specific exception in the revenue standards, whereby the consideration is not included in the transaction price and recognized in revenue until the customer's subsequent sales or usages occur.

4. Future changes in accounting policies:

In February 2016, the FASB issued Accounting Standards Update ("ASU") 2016-02, Leases (Topic 842): Recognition and Measurement of Financial Assets and Financial Liabilities. The update requires the recognition of lease assets and lease liabilities by lessees for those leases classified as operating leases under previous U.S. GAAP. The new guidance retains a distinction between finance leases and operating leases, with cash payments from operating leases classified within operating activities in the statement of cash flows. These amendments will be effective for public entities for fiscal years and interim periods within those years, beginning after December 15, 2018. The Company plans to adopt the standard on January 1, 2019 and can elect to record a cumulative-effect adjustment as of the beginning of the year of adoption or apply a modified retrospective transition approach. The Company has identified one operating lease for its premises which will be subject to the new guidance and will be recognized as an operating lease liability and right-of-use asset upon adoption.

5. Net income (loss) per common and preferred share:

Basic net income (loss) per common share is calculated using the two-class method required for participating securities which includes the convertible preferred shares as a separate class. The preferred shares entitle the holders to participate in dividends and in earnings and losses of the Company on an equivalent basis as common shares. Accordingly, undistributed earnings (losses) are allocated to common shares and participating preferred shares based on the weighted-average shares of each class outstanding during the period.

The treasury stock method is used to compute the dilutive effect of the Company's stock options and warrants. Under this method, the incremental number of common shares used in computing diluted net income (loss) per common share is the difference between the number of common shares assumed issued and purchased using assumed proceeds.

The if-converted method is used to compute the dilutive effect of the Company's convertible preferred shares. Under the if-converted method, dividends on the preferred shares, if applicable, are added back to earnings attributable to common shareholders, and the preferred shares and paid-in kind dividends are assumed to have been converted at the share price applicable at the end of the period. The if-converted method is applied only if the effect is dilutive.

For the three and nine month periods ended September 30, 2018, all stock options, warrants and convertible preferred shares were anti-dilutive and were excluded from the diluted weighted average common shares outstanding for the period. For the three and nine months ended September 30, 2017, 2,214,110 and 2,128,751 stock options, respectively, were excluded from the calculation of diluted net loss per common share as their inclusion would be anti-dilutive. No warrants or convertible preferred shares were outstanding during the three and nine months ended September 30, 2017.

The following table sets out the computation of basic and diluted net loss per common and preferred share:

	Three Months Ended September 30,				Nine Months Ended September 30,			
	2018		2017		2018		2017	
Numerator:	Common Shares	Preferred Shares	Common Shares	Preferred Shares	Common Shares	Preferred Shares	Common Shares	Preferred Shares
Allocation of loss attributed to shareholders								
Basic	$(12,762)	$(1,621)	$(7,742)	$ —	$(23,433)	$(2,506)	$(22,639)	$ —
Adjustment for change in fair value of liability classified stock options	—	—	(20)	—	—	—	(182)	—
Diluted	$(12,762)	$(1,621)	$(7,762)	$ —	$(23,433)	$(2,506)	$(22,821)	$ —
Denominator:								
Weighted average number of shares:								
Basic	20,306,298	2,579,111	17,998,420	—	17,472,403	1,868,815	17,980,608	—
Adjustment for dilutive effect of stock options	—	—	11,559	—	—	—	19,458	—
Diluted	20,306,298	2,579,111	18,009,979	—	17,472,403	1,868,815	18,000,066	—
Net loss attributable to shareholders per share - basic	$(0.63)	$(0.63)	$(0.43)	$ —	$(1.34)	$(1.34)	$(1.26)	$ —
Net loss attributable to shareholders per share - diluted	$(0.63)	$(0.63)	$(0.43)	$ —	$(1.34)	$(1.34)	$(1.27)	$ —

6. Fair value of financial instruments:

Certain financial instruments and other items are measured at fair value.

To determine the fair value, the Company uses the fair value hierarchy for inputs used to measure fair value of financial assets and liabilities. This hierarchy prioritizes the inputs to valuation techniques used to measure fair value into three levels: Level 1 (highest priority), Level 2, and Level 3 (lowest priority).

- Level 1 - Unadjusted quoted prices in active markets for identical instruments.
- Level 2 - Inputs other than quoted prices included within Level 1 that are observable for the asset or liability, either directly or indirectly. Level 2 inputs include quoted prices for similar assets or liabilities in active markets, quoted prices for identical or similar assets or liabilities in markets that are not active, inputs other than quoted prices that are observable for the asset or liability (i.e., interest rates, yield curves, etc.), and inputs that are derived principally from or corroborated by observable market data by correlation or other means (market corroborated inputs).
- Level 3 - Inputs are unobservable and reflect the Company's assumptions as to what market participants would use in pricing the asset or liability. The Company develops these inputs based on the best information available.

Assets and liabilities are classified based on the lowest level of input that is significant to the fair value measurements. Changes in the observability of valuation inputs may result in a reclassification of levels for certain securities within the fair value hierarchy.

The Company's Level 1 assets include cash and cash equivalents and marketable securities with quoted prices in active markets. The carrying amount of accounts receivables, accounts payable and accrued expenses approximates fair value due to the nature and short-term of those instruments. The Company's term loan bears interest at a rate that approximates prevailing market rates for instruments with similar characteristics and, accordingly, the carrying value of the loan approximates fair value.

7. Accounts payable and accrued expenses:

Accounts payable and accrued expenses consisted of the following:

	September 30, 2018	December 31, 2017
Trade payables	$ 959	$ 1,253
Employee compensation, benefits, and related accruals	1,180	1,017
Consulting and contracted research	1,797	817
Professional fees	415	252
Other	62	44
Total	$ 4,413	$ 3,383

8. Term loan:

In December 2017, the Company entered into a Loan and Security Agreement (the "Loan Agreement") with Silicon Valley Bank (the "Bank") under which the Company was funded an initial tranche of $7,000. In June 2018, the Company entered into a First Loan Modification Amendment (the "Modification") to the Loan Agreement (together, the "Modified Loan Agreement"), pursuant to which the Bank accelerated the availability of a second tranche of $5,000 which was funded on the date of the Modification. Amounts funded under the Modified Loan Agreement were interest-only until September 30, 2018 or, subject to the achievement of certain clinical milestones (the "Interest-Only Milestone"), March 31, 2019. Following the expiration of the interest-only period, the first tranche was payable in 30 equal monthly installments or, if the Interest-Only Milestone was achieved, 24 equal monthly installments of principal plus interest, maturing on March 31, 2021. The second tranche was payable in 24 equal monthly installments or, if the Interest-Only Milestone was achieved, 18 equal monthly installments of principal plus interest, maturing on September 30, 2020. The interest and payment terms of the third and final tranche, if borrowed, remained unchanged from the Loan Agreement. The Modification did not amend the Loan Agreement's interest provisions.

In August 2018, the Company entered into an Amended and Restated Loan and Security Agreement (the "Amended and Restated Loan Agreement") with the Bank, pursuant to which the Bank agreed to extend a term loan to the Company with a principal amount of $15,500 (the "Term Loan"). The Term Loan was used to repay in full outstanding borrowings of $12,000 under the Modified Loan Agreement and a payment of $485, which represented the current portion of the final payment fee due under the Modified Loan Agreement, as well as for working capital and other general corporate purposes, including the advancement of the Company's clinical development programs. The Term Loan accrues interest at a floating per annum rate of 0.5% above the prime rate, which is payable monthly commencing in September 2018. The Term Loan is interest-only until March 31, 2020, followed by 30 equal monthly installments of principal plus interest, maturing on September 1, 2022. In addition, the Company is required to pay a final payment fee of 6.5% of the Term Loan on the date on which the term loan is prepaid, paid or becomes due and payable in full.

The Company may prepay all, but not less than all, of the Term Loan subject to a prepayment fee of $295, which represents the deferred portion of the final payment fee due under the Modified Loan Agreement, plus 3.0% if prepaid prior to the first anniversary of the effective date of the Amended and Restated Loan Agreement, 2.0% if prepaid on or after the first anniversary, but prior to the second anniversary, or 1.0%, if prepaid on or after the second anniversary but prior to the maturity date. As security for its obligations under the Amended and Restated Loan Agreement, the Company granted the Bank a first priority security interest on substantially all of the Company's assets except its intellectual property and subject to certain other exceptions.

At September 30, 2018, the Company determined the effective interest rate on the Amended and Restated Loan Agreement with the Bank to be 9.29% (December 31, 2017 – 9.25%). Amortization of the debt discount was a recovery of $8 and expense of $156 for the three and nine months ended September 30, 2018, respectively. Interest payments are made monthly.

Interest expense was $678 and $1,037 for the three and nine months ended September 30, 2018, respectively.

The outstanding loan and unamortized debt discount balances as of September 30, 2018 in accordance with the repayment terms under Amended and Restated Loan Agreement are as follows:

	September 30, 2018
Term loan	$ 15,500
Less: unamortized discount on loan	(657)
Less: current portion	—
Accrued portion of final payment fee	43
Loan payable, long-term	$ 14,886

Scheduled principal payments on outstanding debt, excluding the final payment fee of $1,008, as of September 30, 2018 in accordance with the repayment terms under Amended and Restated Loan Agreement, are as follows:

2018	$—
2019	—
2020	5,167
2021	6,200
2022	4,133
Total	$15,500

The Amended and Restated Loan Agreement contains customary representations and warranties, events of default (including an event of default upon the occurrence of a material impairment on the Bank's security interest over the collateral, and a material adverse change of the Company) and affirmative and negative covenants, including, among others, covenants that limit or restrict the Company's ability to incur indebtedness, grant liens, merge or consolidate, dispose of assets, make investments, make acquisitions, enter into certain transactions with affiliates, engage in any new line of business, pay dividends or make distributions, or repurchase stock, in each case subject to certain exceptions. Upon the occurrence and during the continuance of an event of default, a default interest rate will apply that is 5.0% above the otherwise applicable interest rate. The Company is in compliance with these covenants at September 30, 2018.

In connection with the Modification, the number of common shares exercisable pursuant to the warrant issued to the Bank in December 2017 under the Loan Agreement (the "December 2017 Warrant") increased by 36,008 common shares. The relative fair value of the additional common shares exercisable pursuant to the December 2017 Warrant was $247 and was classified in equity. With this increase, the December 2017 Warrant allowed the Bank to purchase a total of 86,419 of the Company's common shares at a price per common share of $2.43. The December 2017 Warrant was immediately exercisable, had a 10-year term, and contained a cashless exercise provision. In connection with the entry into the Amended and Restated Loan Agreement, the final tranche under the Modified Loan Agreement would not be advanced and the maximum number of common shares exercisable pursuant to the December 2017 Warrant was fixed at 86,419 at a price per common share of $2.43. In September 2018, the Company issued 72,325 common shares for the cashless exercise of the December 2017 Warrant.

In connection with the Amended and Restated Loan Agreement, the Company issued a new warrant to the Bank to purchase 40,000 of the Company's common shares at a price per common share of $9.79. The warrant is immediately exercisable, has a 10-year term and contains a cashless exercise provision.

9. Share capital:

(a) Financing:

In May 2018, the Company entered into an at-the-market equity offering sales agreement with Stifel Nicolaus & Company, Incorporated ("Stifel") to sell common shares of the Company having aggregate gross proceeds of up to $30,000, from time to time, through an "at-the-market" equity offering program under which Stifel would act as sales agent. As of September 30, 2018, the Company had sold 3,440,000 common shares under the sales agreement for proceeds of approximately $29,200, net of commissions paid, but excluding estimated transaction expenses.

In July 2018, the Company entered into an at-the-market equity offering sales agreement with Jefferies LLC ("Jefferies") and Stifel, to sell common shares of the Company having aggregate gross proceeds of up to $50,000, from time to time, through an "at-the-market" equity offering program under which Jefferies and Stifel would act as sales agent. As of September 30, 2018, the Company had sold 1,600,000 common shares under the sales agreement for proceeds of approximately $14,820, net of commissions paid, but excluding estimated transaction expenses. In

connection with the Company's entry into the July 2018 sales agreement with Jefferies and Stifel, the May 2018 sales agreement was mutually terminated by the Company and Stifel.

In September 2018, the Company entered into an underwriting agreement with Jefferies and Stifel, relating to an underwritten public offering of 4,500,000 common shares sold by the Company at a public offering price of $14.00 per common share. The Company received net proceeds of $59,220, net of underwriting discounts and commissions, but before offering expenses. In connection with the Company's entry into the September 2018 underwriting agreement with Jefferies and Stifel, the July 2018 sales agreement was mutually terminated by the Company, Jefferies and Stifel.

(b) Exchange agreement with certain funds affiliated with BVF Partners L.P. (collectively, "BVF"):
In March 2018, the Company and BVF entered into an exchange agreement pursuant to which the Company issued to BVF 2,868,000 Series 1 Preferred Shares in exchange for 2,868,000 common shares which were subsequently cancelled by the Company.

The Company filed articles of amendment creating an unlimited number of Series 1 Preferred Shares. The Series 1 Preferred Shares are convertible into common shares on a one-for-one basis subject to the holder, together with its affiliates, beneficially owning no more than 9.99% of the total number of common shares issued and outstanding immediately after giving effect to such conversion (the "Beneficial Ownership Limitation"). The holder may reset the Beneficial Ownership Limitation to a higher or lower number, not to exceed 19.99% of the total number of common shares issued and outstanding immediately after giving effect to such conversion, upon providing written notice to the Company which will be effective 61 days after delivery of such notice. Each Series 1 Preferred Share is also convertible into one common share at any time at the Company's option without payment of additional consideration, provided that prior to any such conversion, the holder, together with its affiliates, beneficially owns less than 5.00% of the total number of common shares issued and outstanding and such conversion will not result in the holder, together with its affiliates, beneficially holding more than 5.00% of the total number of common shares issued and outstanding immediately after giving effect to such conversion. In the event of a change of control, holders of Series 1 Preferred Shares shall be issued one common share for each outstanding Series 1 Preferred Share held immediately prior to the change of control (without regard to the Beneficial Ownership Limitation), and following such conversion, will be entitled to receive the same kind and amount of securities, cash or property that a holder of common shares is entitled to receive in connection with such change of control.

The Series 1 Preferred Shares rank equally to the common shares in the event of liquidation, dissolution or winding up or other distribution of the assets of the Company among its shareholders and the holders of the Series 1 Preferred Shares are entitled to vote together with the common shares on an as-converted basis and as a single class, subject in the case of each holder of the Series 1 Preferred Shares to the Beneficial Ownership Limitation. Any Series 1 Preferred Shares that are ineligible to be converted into common shares due to the Beneficial Ownership Limitation, measured as of a given record date that applies for a shareholder meeting or ability to act by written consent, shall be deemed to be non-voting securities of the Company. Holders of Series 1 Preferred Shares are entitled to receive dividends (without regard to the Beneficial Ownership Limitation) on the same basis as the holders of common shares. The Company may not redeem the Series 1 Preferred Shares.

The Company recorded the issuance of Series 1 Preferred Shares and corresponding cancellation of common shares at $7.61 per share, the estimated weighted average cost at which BVF acquired the common shares. The Series 1 Preferred Shares are recorded wholly as equity under ASC 480, with no bifurcation of conversion feature from the host contract, given that the Series 1 Preferred Shares cannot be cash settled and have no redemption features.

In September 2018, BVF converted 1,300,000 Series 1 Preferred Shares in exchange for an equal number of common shares of the Company.

(c) Termination of collaboration agreement with Teva Pharmaceuticals International GmbH and Teva Canada Limited (together, "Teva"):

In March 2018, the Company and Teva, entered into a termination agreement terminating by mutual agreement the collaborative development and license agreement dated December 7, 2012, as amended. In connection with the termination, Teva returned and the Company cancelled 1,000,000 common shares that were owned by Teva. Pursuant to the terms of the termination agreement, Teva also agreed to return, license or assign to the Company certain intellectual property, including certain patent rights and will transfer regulatory filings related to TV-45070 to the Company. The termination agreement requires the Company to pay a low single-digit percentage royalty to Teva based on net sales of approved products, if any, resulting from any continued development and commercialization of TV-45070 by the Company during the period that assigned or licensed patents cover such products. To date, no such sales have occurred.

The Company recorded a gain on the termination of the collaboration agreement of $4,398, net of direct costs incurred in connection with the termination and cancellation of 1,000,000 common shares, based on the estimated fair value

represented by the market price of the common shares prior to the closing of the transaction.

(d) Stock-based compensation:

The following table presents stock option activity for the period:

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2018	2017	2018	2017
Outstanding, beginning of period	2,831,985	2,276,897	2,339,905	1,910,823
Granted	12,000	1,050	698,450	447,550
Exercised[1]	(119,129)	—	(237,848)	(71,006)
Forfeited, cancelled or expired	(42,593)	(70,567)	(118,244)	(79,987)
Outstanding, end of period	2,682,263	2,207,380	2,682,263	2,207,380
Exercisable, end of period	1,471,329	1,417,660	1,471,329	1,417,660

(1) During the nine months ended September 30, 2018, 41,507 stock options were exercised for the same number of common shares for cash (nine months ended September 30, 2017 – 63,425). In the same period, the Company issued 103,189 common shares (nine months ended September 30, 2017 – 4,405) for the cashless exercise of 196,341 stock options (nine months ended September 30, 2017 – 7,581).

The fair value of each stock option granted is estimated using the Black-Scholes option-pricing model with the following weighted-average assumptions:

	Three Months Ended September 30,				Nine Months Ended September 30,			
	2018		2017		2018		2017	
Average risk-free interest rate	2.81	%	1.99	%	2.79	%	2.41	%
Expected volatility	76	%	81	%	75	%	81	%
Average expected term (in years)	6.27		6.50		7.39		7.48	
Expected dividend yield	0	%	0	%	0	%	0	%
Weighted average fair value of stock options granted	$ 8.75		$ 2.01		$ 3.70		$ 6.10	

10. Commitments and contingencies:

(a) Priority access agreement with Medpace Inc. (“Medpace”):

In August 2015, the Company entered into a priority access agreement with Medpace for the provision of certain clinical development services. Under the terms of the agreement, the Company has committed to using Medpace non-exclusively for clinical development services over the five year term of the agreement. In consideration for priority access to Medpace resources and preferred service rates, the Company has committed to $7,000 of services over the term of the agreement, $3,000 of which was paid in the year ended December 31, 2015.

(b) License, manufacture and supply agreement:

In March 2017, the Company entered into a license, manufacture and supply agreement with a pharmaceutical contract manufacturing organization for the access and use of certain regulatory documents as well as for the manufacture and supply of clinical and commercial drug product to support the development of XEN007. Under the terms of the agreement, the Company paid an upfront fee of $500 CAD and will be required to pay a low single-digit percentage royalty on net sales of any products developed and commercialized under the agreement.

(c) Asset purchase agreement with 1st Order Pharmaceuticals, Inc. (“1st Order”):

In April 2017, the Company acquired XEN1101 (previously known as 1OP2198) from 1st Order pursuant to an asset purchase agreement. 1st Order previously acquired 1OP2198 from Valeant Pharmaceuticals Luxembourg S.a.r.l., an indirect subsidiary of Bausch Health Companies Inc. (together with Valeant Pharmaceuticals Ireland Limited, “Bausch Health”) and the Company has assumed certain financial responsibilities under that agreement. Under the terms of the agreement, the Company paid an upfront fee of $350 and milestone payments in 2017 totaling $700, which were expensed as research and development.

In September 2018, the Company entered into a milestone and royalty buy-out agreement with Bausch Health under which all potential clinical development, regulatory and sales-based milestones and royalties on commercial sales with respect to XEN1101 that may become owed to Bausch Health under the asset purchase agreement were terminated in exchange for a one-time payment of $6,000 which was expensed in the period.

Future potential payments to 1st Order include $500 in clinical development milestones, up to $6,000 in regulatory milestones, and $1,500 in other milestones, which may be payable pre-commercially. There are no royalty obligations to 1st Order.

(d) License agreement

In July 2017, the Company entered into a license agreement with a pharmaceutical company for the access and use of certain regulatory documents to support the development of XEN007. Under the terms of the agreement, the Company paid an upfront fee of $1,000, which was expensed as research and development. Future potential payments include $2,000 in clinical development milestones, up to $7,000 in regulatory milestones, plus a low-to-mid single-digit percentage royalty on net sales of any products developed and commercialized under the agreement.

(e) Guarantees and indemnifications:

The Company has entered into license and research agreements with third parties that include indemnification provisions that are customary in the industry. These indemnification provisions generally require the Company to compensate the other party for certain damages and costs incurred as a result of third party claims or damages arising from these transactions.

The maximum amount of potential future indemnification is unlimited; however, the Company currently holds commercial and product liability insurance. This insurance limits the Company's exposure and may enable it to recover a portion of any future amounts paid. Historically, the Company has not made any indemnification payments under such agreements and the Company believes that the fair value of these indemnification obligations is minimal. Accordingly, the Company has not recognized any liabilities relating to these obligations for any period presented.

11. Related parties:

(a) Exchange agreement with BVF:

In March 2018, the Company and BVF entered into an exchange agreement pursuant to which the Company issued 2,868,000 Series 1 Preferred Shares in exchange for 2,868,000 common shares which were subsequently cancelled by the Company. Prior to the closing of the transactions contemplated in the exchange agreement, BVF held a number of common shares representing approximately 19.9% of the Company's then outstanding common shares. For additional information regarding the Series 1 Preferred Shares, refer to note 9b.

(b) Termination of collaboration agreement with Teva:

In March 2018, the Company and Teva, entered into a termination agreement terminating by mutual agreement the collaborative development and license agreement dated December 7, 2012, as amended. In connection with the termination, the Company cancelled 1,000,000 common shares that were owned by Teva. Prior to the share cancellation, Teva owned more than 5% of the Company's outstanding common shares. For additional information regarding the termination agreement and the share cancellation, refer to note 9c.

ITEM 2. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

This section should be read in conjunction with our unaudited interim consolidated financial statements and related notes included in Part I, Item 1 of this report and our audited consolidated financial statements and related notes thereto and management's discussion and analysis of financial condition and results of operations for the year ended December 31, 2017 included in our Annual Report on Form 10-K filed with the U.S. Securities and Exchange Commission on March 7, 2018 and with the securities commissions in British Columbia, Alberta and Ontario on March 7, 2018.

Forward-Looking Statements

Certain statements contained in this Quarterly Report on Form 10-Q may constitute forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended, and Canadian securities laws. The words or phrases "would be," "will allow," "intends to," "may," "believe," "plan," "will likely result," "are expected to," "will continue," "is anticipated," "estimate," "project," or similar expr or the negative of such words or phrases, are intended to identify "forward-looking statements." You should read these statements carefully because they discuss future expectations, contain projections of future results of operations or financial condition, or state other "forward-looking" information. These statements relate to our future plans, objectives, expectations, intentions and financial performance and the assumptions that underlie these statements. These forward-looking statements and supporting assumptions include, but are not limited to:

- our ability to identify additional products or product candidates either from our internal research efforts or though acquiring or in-licensing other product candidates or technologies;
- the initiation, timing, cost, progress and success of our research and development programs, pre-clinical studies, and clinical trials;
- our ability to advance product candidates into, and successfully complete, clinical trials;
- our ability to recruit sufficient numbers of patients for our current and future clinical trials for orphan or more common indications;
- our ability to achieve profitability;
- our ability to obtain funding for our operations, including research funding;
- our ability to receive milestones, royalties and sublicensing fees under our collaborations, and the timing of such payments;
- the timing and magnitude of potential milestone payments under our product acquisition and in-licensing agreements;
- the implementation of our business model and strategic plans;
- our ability to develop and commercialize product candidates for orphan and niche indications independently;
- our ability to advance XEN007, XEN496 and potentially other future product candidates directly into Phase 2 or later stage clinical trials;
- our commercialization, marketing and manufacturing capabilities and strategy;
- our ability to discover genes and drug targets;
- our ability to protect our intellectual property and operate our business without infringing upon the intellectual property rights of others;
- our expectations regarding federal, state and foreign regulatory requirements;
- the therapeutic benefits, effectiveness and safety of our product candidates;
- the accuracy of our estimates of the size and characteristics of the markets that may be addressed by our products and product candidates;
- the rate and degree of market acceptance and clinical utility of any future products;

- the timing of, and our and our collaborators' ability to obtain and maintain, regulatory approvals for our product candidates;
- our ability to maintain and establish collaborations;

- our expectations regarding market risk, including interest rate changes and foreign currency fluctuations;
- our belief in the sufficiency of our cash, cash equivalents and marketable securities to meet our needs for at least the next 12 months;
- our ability to engage and retain the employees required to grow our business;
- our future financial performance and projected expenditures;
- developments relating to our competitors and our industry, including the success of competing therapies that are or become available; and
- estimates of our expenses, future revenue, capital requirements and our needs for additional financing.

These forward-looking statements are subject to certain risks and uncertainties that could cause actual results to differ materially from those anticipated in the forward-looking statements. Factors that might cause such a difference include, but are not limited to, those discussed in this report in Part I, Item 1A — "Risk Factors," and elsewhere in this report. Forward-looking statements are based on our management's beliefs and assumptions and on information currently available to our management. These statements, like all statements in this report, speak only as of their date, and we undertake no obligation to update or revise these statements in light of future developments, except as required by law. In this report, "we," "our," "us," "Xenon," and "the Company" refer to Xenon Pharmaceuticals Inc. and its subsidiary. Unless otherwise noted, all dollar amounts in this report are expressed in United States dollars.

Overview

We are a clinical stage biopharmaceutical company focused on developing innovative therapeutics to improve the lives of patients with neurological disorders. Building upon our extensive knowledge of human genetics and diseases caused by mutations in ion channels, known as channelopathies, we are advancing a novel product pipeline of neurology therapies to address areas of high unmet medical need, such as epilepsy, migraine and pain.

To date, our pharmaceutical collaborations have generated in aggregate over $160.0 million in non-equity funding with the potential to provide us with future milestone payments, as well as royalties on product sales. Our current pharmaceutical partners include Genentech, a member of the Roche Group, and Merck & Co., Inc., or Merck (through its affiliate, Essex Chemie AG).

Our clinical development pipeline includes:

- XEN496 (active ingredient ezogabine) is a Kv7 potassium channel modulator being developed for the treatment of KCNQ2 epilepsy. Ezogabine was previously approved by the U.S. Food and Drug Administration, or FDA, as an anti-epileptic drug, or AED, as an adjunctive treatment for adults with focal seizures with or without secondary generalization. We believe published case reports where physicians have used ezogabine in infants and young children with KCNQ2 epileptic encephalopathy, or KCNQ2-EE (also known as EIEE7), indicate that XEN496 may be efficacious in this often hard-to-treat pediatric patient population. We have received orphan drug designation, or ODD, from the FDA for XEN496 as a treatment of KCNQ2-EE. After consulting with clinical experts and patient advocacy groups, we submitted a pre-IND briefing package to the FDA that outlined the proposed clinical development plans for XEN496. In response, the FDA indicated that it was acceptable to study XEN496 in infants and children up to 4 years old, and that a single pivotal trial in approximately 20 patients may be considered adequate in order to demonstrate XEN496's efficacy in KCNQ2-EE. We are currently working on a pediatric-specific formulation for XEN496 to support a Phase 3 clinical trial initiation in approximately mid-2019. We have established a steering committee made up of key opinion leaders in the pediatric and KCNQ2 epilepsy fields to help guide the clinical development of XEN496. With input from this steering committee on the proposed trial design, dosing, and endpoints, the protocol development for the XEN496 Phase 3 clinical trial is currently being finalized, and an investigational new drug application is expected to be submitted in the first half of 2019;

- XEN1101 is a Kv7 potassium channel modulator being developed for the treatment of epilepsy and potentially other neurological disorders. We have completed enrollment in a randomized, double-blind, placebo-controlled Phase 1 clinical trial to evaluate the safety, tolerability and pharmacokinetics of both single ascending doses, or SAD, and multiple ascending doses, or MAD, using a powder-in-capsule formulation of XEN1101 in healthy subjects. The XEN1101 Phase 1 clinical trial includes a pharmacodynamic read-out from a transcranial magnetic stimulation, or TMS, study, designed to assess XEN1101's ability and potency to modulate cortical excitability, thereby demonstrating activity in the target CNS tissue. Interim Phase 1 clinical trial results presented in May 2018 and August 2018 showed pharmacokinetic data confirming a half-life consistent with once daily dosing, drug exposure levels at doses tested above the EC_{50} in preclinical models, and safety data supporting further development of XEN1101.

In August 2018, we disclosed data from the completed XEN1101 Phase 1b TMS study that demonstrated XEN1101 has an ability to inhibit cortical excitability, an important CNS effect observed with certain approved AEDs. The completed Phase 1b TMS study was a double-blind, placebo-controlled, randomized cross-over study in 20 healthy male subjects and was initiated based on positive results from a Phase 1a pilot TMS study in 8 healthy subjects. Consistent with the Phase 1a TMS pilot study, in the Phase 1b TMS study, XEN1101 reduced corticospinal excitability, as demonstrated by a concentration dependent elevation in resting motor threshold, or RMT, the key TMS-EMG measure. In the TMS-EEG portion of the study, XEN1101 statistically significantly modulated TMS-evoked potentials, or TEPs, in a manner consistent with reductions in cortical excitability, potentially showing a unique "fingerprint" of activity as anticipated based on studies with other AEDs. XEN1101 has been shown to be generally well tolerated with all adverse events, or AEs, reported as mild or moderate and reversible. There were no withdrawals, serious AEs, or deaths. We plan to publish the complete XEN1101 Phase 1 clinical trial results at the upcoming American Epilepsy Society, or AES, meeting and we anticipate initiating a Phase 2 clinical trial evaluating XEN1101 as a treatment for adult focal seizures in the fourth quarter of 2018;

- XEN901 is a potent, highly selective Nav1.6 sodium channel inhibitor being developed for the treatment of epilepsy. In February 2018, we initiated a randomized, double-blind, placebo-controlled Phase 1 clinical trial to evaluate XEN901's safety, tolerability and pharmacokinetics in both SAD and MAD cohorts. Interim results disclosed in May 2018 and August 2018 demonstrate favorable pharmacokinetic data that showed dose proportionality and supported twice daily or better dosing. The multiple dose levels tested yielded drug exposure above the efficacy range required to achieve EC_{70} in pre-clinical models. Based on experience with TMS in the XEN1101 studies, we, along with our collaborators at King's College, are exploring the use of the TMS assay in a small subset of subjects in the ongoing XEN901 Phase 1 clinical trial. An update of the XEN901 Phase 1 clinical trial is anticipated in the fourth quarter of 2018 at the upcoming AES meeting, and we expect to initiate a Phase 2 clinical trial evaluating XEN901's efficacy as a treatment for adult focal seizures or for rare, pediatric forms of epilepsy as soon as feasible thereafter depending on planned discussions with regulatory agencies in the near term;
- XEN007 (active ingredient flunarizine) is a CNS-acting calcium channel inhibitor that directly modulates Cav2.1. Flunarizine has been used outside of the U.S. in the prevention of chronic migraine and in case studies, it has been reported to have clinical benefit in other neurological disorders, including hemiplegic migraine, or HM. We have received ODD from the FDA for XEN007 for the treatment of HM. In addition, we have entered into key agreements in order to access regulatory files and manufacturing support to potentially enable the accelerated clinical development of XEN007 directly into a Phase 2 clinical trial. We are currently evaluating various development strategies for XEN007, including the support of physician-sponsored clinical trials in different neurological disorders; and
- We have an ongoing collaboration with Genentech focused on developing novel, oral, selective Nav1.7 inhibitors for the treatment of pain. After completing an analysis of additional pre-clinical studies with GDC-0310 and reviewing the totality of data available, Genentech has decided to discontinue further clinical development of GDC-0310 and elected to focus its future Nav1.7 development efforts on back-up molecules.

We have funded our operations through the sale of equity securities, funding received from our licensees and collaborators, debt financing and, to a lesser extent, government funding. For the nine months ended September 30,

2018, we recognized no revenue. This compares to $0.3 million for the nine months ended September 30, 2017, consisting primarily of funding from our collaborators.

We had a net loss of $25.9 million for the nine months ended September 30, 2018 and an accumulated deficit of $199.3 million as of September 30, 2018, from expenses incurred in connection with our research programs and from general and administrative costs associated with our operations and we do not expect to have sustained profitability for the foreseeable future.

To date, our revenue has been primarily derived from collaboration and licensing agreements as well as, to a lesser extent, government funding. We have not generated any significant royalty revenue from product sales, and do not otherwise anticipate generating revenue from product sales for the foreseeable future, if ever. We expect that our revenue in the near term will be substantially dependent on our collaboration agreements. Given the uncertain nature of clinical development of our current and future product candidates and the commercialization of current and future products, we cannot predict when or whether we will receive further milestone payments under our current or future collaboration agreements or whether we will be able to report either revenue or net income in future years.

We expect to continue to incur significant expenses and operating losses for at least the next 12 to 24 months. We anticipate that our expenses will increase as we:

- continue our research and pre-clinical and clinical development of our product candidates either from our internal research efforts or through acquiring or in-licensing other product candidates or technologies;
- seek regulatory and marketing approvals for any of our product candidates that successfully complete clinical trials;
- make milestone and other payments under our in-license or other agreements;
- maintain, protect and expand our intellectual property portfolio;
- attract, hire and retain skilled personnel; and
- create additional infrastructure to support our operations and otherwise.

Recent Developments

In September 2018, we signed an agreement with Valeant Pharmaceuticals Luxembourg S.a.r.l. and Valeant Pharmaceuticals Ireland Limited, or together, Bausch Health, to buy out all future milestone payments and royalties owed to Bausch Health with respect to XEN1101, including up to $39.6 million in potential clinical development, regulatory and sales-based milestones and a mid-to-high single digit percentage royalty on commercial sales in exchange for a one-time payment of $6.0 million.

Also in September 2018, we completed an underwritten public offering of 4,500,000 common shares at a public offering price of $14.00 per common share for proceeds of $59.2 million, net of underwriting discounts and commissions, but before offering expenses. In connection with our entry into the underwriting agreement, we and Jefferies LLC and Stifel, Nicolaus & Company, Incorporated, mutually terminated our July 2018 at-the-market equity offering sales agreement effective as of September 12, 2018.

Financial Operations Overview

Revenue

To date, our revenue has been primarily derived from collaboration and licensing agreements as well as, to a lesser extent, government funding. We have not generated any significant royalty revenue from product sales, and do not otherwise anticipate generating revenue from product sales for the foreseeable future, if ever.

For the three and nine months ended September 30, 2018 and 2017, we did not recognize significant revenue from our collaboration agreements.

As our internal and partnered products are in various stages of clinical and pre-clinical development, we do not expect to generate any revenue from product sales for at least the next several years. We expect that any revenue for the next several years will be derived from milestone payments under our current collaboration agreements and any additional collaboration agreements that we may enter into in the future. We cannot provide any assurance as to the extent or

timing of future milestone payments or royalty payments or that we will receive any future payments at all.

We expect that any revenue we generate will fluctuate quarter to quarter as a function of the timing and amount of milestones and other payments from our existing collaborations and any future collaborations.

As of September 30, 2018, we have recognized all deferred revenue from upfront payments received under our existing collaboration and licensing agreements.

Operating Expenses

The following table summarizes our operating expenses for the three and nine months ended September 30, 2018 and 2017 (in thousands):

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2018	2017	2018	2017
Research and development	$ 6,240	$ 7,164	$ 17,228	$ 19,176
General and administrative	1,938	1,744	6,354	5,643
Buy-out of future milestones and royalties	6,000	—	6,000	—
Total operating expenses	$ 14,178	$ 8,908	$ 29,582	$ 24,819

Research and Development Expenses

Research and development expenses represent costs incurred to conduct research and development of our proprietary product candidates, including any acquired or in-licensed product candidates or technology, as well as to support research and development on our product candidates under current and former collaboration agreements.

Research and development expenses consist of costs incurred in performing research and development activities, including salary, related benefits and stock-based compensation for employees engaged in scientific research and development, third-party contract costs relating to research, formulation, manufacturing, pre-clinical studies and clinical trial activities, third-party acquisition, license and collaboration fees, laboratory consumables and allocated facility-related and information technology costs.

Project-specific expenses reflect costs directly attributable to our clinical development candidates and our pre-clinical candidates once nominated and selected for further development, including pre-clinical and discovery costs supporting a development candidate. All remaining research and development expenses are reflected in pre-clinical, discovery and other program expenses. At any given time, we have several active early-stage research and drug discovery programs. Our personnel and infrastructure are typically deployed over multiple projects and are not directly linked to any individual internal early-stage research or drug discovery program. Therefore, we do not maintain financial information for our internal early-stage research and internal drug discovery programs on a project-specific basis.

We expense all research and development costs as incurred. We expect that our research and development expenses will increase in the future as we advance our proprietary product candidates through clinical development, advance our internal drug discovery programs into pre-clinical development and continue our early-stage research. The increase in expense will likely include added personnel and third-party contracts related to research, formulation, manufacturing, pre-clinical studies and clinical trial activities as well as third-party acquisition, license and collaboration fees and laboratory consumables.

Clinical development timelines, likelihood of regulatory approval and commercialization and associated costs are uncertain and difficult to estimate and can vary significantly. We anticipate determining which research and development projects to pursue as well as the level of funding available for each project based on the scientific research and pre-clinical and clinical results of each product candidate and related regulatory action. We expect our research and development expenses to continue to represent our largest category of operating expenses for at least the next 12 to 24 months.

General and Administrative Expenses

General and administrative expenses consist primarily of salary, related benefits and stock-based compensation of our executive, finance, legal, business development and administrative functions, travel expenses, allocated

facility-related and information technology costs not otherwise included in research and development expenses, director compensation, director's and officer's insurance premiums, investor relations costs and professional fees for auditing, tax and legal services, including legal expenses for intellectual property protection. General and administrative expenses also include fair value adjustments of certain liability classified stock option awards.

We expect that general and administrative expenses will increase in the future as we expand our operating activities to support increased research and development activities.

Buy-out of future milestones and royalties

In September 2018, we entered into a milestone and royalty buy-out agreement with Bausch Health under which all potential clinical development, regulatory and sales-based milestones and royalties on commercial sales with respect to XEN1101 that may become owed to Bausch Health were terminated in exchange for a one-time payment of $6.0 million which was expensed in the period.

Other Income (Expense)

Interest Income. Interest income consists of income earned on our cash and investment balances. Our interest income has not been significant due to the levels of cash and investment balances and low interest earned on such balances. We anticipate that our interest income will continue to fluctuate depending on our cash and investment balances and interest rates.

Interest Expense. Interest expense consists of accrual of the final payment fee, amortization of debt discounts, and interest charged on our borrowings with Silicon Valley Bank, or the Bank, which accrue interest at a floating per annum rate of 0.5% above the prime rate. During the nine months ended September 30, 2018, we also recorded a charge of $0.3 million related to the unaccrued amount of the final payment fee due in connection with entering into our amended and restated loan and security agreement. For additional information regarding our amended and restated loan and security agreement with the Bank, see "—Contractual Obligations and Commitments—Term Loan" below.

Foreign Exchange Gain (Loss). Net foreign exchange gains and losses consist of gains and losses from the impact of foreign exchange fluctuations on our monetary assets and liabilities that are denominated in currencies other than the U.S. dollar (principally the Canadian dollar). We will continue to incur substantial expenses in Canadian dollars and will remain subject to risks associated with foreign currency fluctuations. See "Quantitative and Qualitative Disclosures About Market Risk – Foreign Currency Exchange Risk" below for additional information.

Gain on Termination of Collaboration Agreement. In March 2018, we entered into a termination agreement terminating by mutual agreement the collaborative development and license agreement dated December 7, 2012, as amended, with Teva that included the cancellation of 1,000,000 of our common shares owned by Teva. We recorded a one-time gain on the termination of the collaboration agreement, net of direct costs incurred in connection with the termination and cancellation of the common shares.

Critical Accounting Policies and Significant Judgments and Estimates

Our management's discussion and analysis of our financial condition and results of operations is based on our consolidated financial statements, which have been prepared in conformity with generally accepted accounting principles in the U.S., or U.S. GAAP. The preparation of our consolidated financial statements requires us to make estimates and assumptions that affect the reported amounts of assets and liabilities and the revenue and expenses incurred during the reported periods. We base estimates on our historical experience, known trends and various other factors that we believe are reasonable under the circumstances, the results of which form the basis for making judgments about the carrying value of assets and liabilities that are not apparent from other sources. Actual results may differ from these estimates under different assumptions or conditions.

Critical accounting policies and significant judgments and estimates are those that we consider the most important to the portrayal of our financial condition and results of operations because they require our most difficult, subjective or complex judgments, often as a result of the need to make estimates about the effect of matters that are inherently uncertain. Our critical accounting policies and significant estimates include those related to:

- revenue recognition;
- research and development costs; and
- stock-based compensation.

During the nine months ended September 30, 2018, we had the following change in our critical accounting policies:

Revenue Recognition: Revenue recognition is a critical accounting estimate due to the magnitude and nature of the revenues we receive. We adopted the new revenue standard (Accounting Standards Codification, or ASC, 606), effective January 1, 2018, using the modified retrospective method under which previously presented financial statements are not restated and the cumulative effect of adopting the new revenue standard on contracts in process is recognized by an adjustment to retained earnings at the effective date. The adoption of the new revenue standard did not change our recognized revenue under our one ongoing significant collaborative research and license agreement with Genentech, a member of the Roche Group, described in note 11b to our audited consolidated financial statements included in our 2017 Annual Report on Form 10-K for the year ended December 31, 2017 and no cumulative effect adjustment was required.

Our primary sources of revenue have been derived from non-refundable upfront payments, funding for research and development services, milestone payments, and royalties under various collaboration agreements.

In contracts where we have more than one performance obligation to provide our customer with goods or services, each performance obligation is evaluated to determine whether it is distinct. The consideration under the contract is then allocated between the distinct performance obligations based on their respective relative stand-alone selling prices. The estimated stand-alone selling price of each deliverable reflects our best estimate of what the selling price would be if the deliverable was regularly sold on a stand-alone basis and is determined by reference to market rates for the good or service when sold to others or by using an adjusted market assessment approach if selling price on a stand-alone basis is not available.

The consideration allocated to each distinct performance obligation is recognized as revenue when control is transferred to our customer for the related goods or services. Consideration associated with at-risk substantive performance milestones, including sales-based milestones, is recognized as revenue when we determine it is probable that a significant reversal of the cumulative revenue recognized will not occur. Sales-based royalties received in connection with licenses of intellectual property are subject to a specific exception in the revenue standards, whereby the consideration is not included in the transaction price and recognized in revenue until the customer’s subsequent sales or usages occur.

There have been no other significant or material changes in our critical accounting policies and significant judgements and estimates during the nine months ended September 30, 2018, as compared to those disclosed in “Management’s Discussion and Analysis of Financial Conditions and Results of Operations - Critical Accounting Policies and Significant Judgments and Estimates” included in our 2017 Annual Report on Form 10-K filed with the U.S. Securities and Exchange Commission, or SEC, and with the securities commissions in British Columbia, Alberta and Ontario, or the Canadian Securities Commissions, on March 7, 2018. We believe that the accounting policies discussed in the Annual Report are critical to understanding our historical and future performance, as these policies relate to the more significant areas involving management’s judgments and estimates.

Results of Operations

Comparison of Three and Nine Months Ended September 30, 2018 and 2017

The following table summarizes the results of our operations for the three and nine months ended September 30, 2018 and 2017 together with changes in those items (in thousands):

	Three Months Ended September 30,		Change 2018 vs. 2017	Nine Months Ended September 30,		Change 2018 vs. 2017
	2018	2017	Increase/(Decrease)	2018	2017	Increase/(Decrease)
Collaboration revenue	$ —	$ 264	$ (264)	$ —	$ 295	$ (295)
Research and development expenses	6,240	7,164	(924)	17,228	19,176	(1,948)
General and administrative expenses	1,938	1,744	194	6,354	5,643	711
Buy-out of future milestones and royalties	6,000	—	6,000	6,000	—	6,000
Other:						
Interest income	325	124	201	558	382	176
Interest expense	(678)	—	(678)	(1,037)	—	(1,037)
Foreign exchange gain (loss)	148	778	(630)	(276)	1,503	(1,779)
Gain on termination of collaboration agreement	—	—	—	4,398	—	4,398
Net loss	$ (14,383)	$ (7,742)	$ (6,641)	$ (25,939)	$ (22,639)	$ (3,300)

Revenue

We did not recognize any revenue for the three and nine months ended September 30, 2018 compared to $0.3 million for the three and nine months ended September 30, 2017. The decrease as compared to the same periods in 2017 was primarily due to a $0.25 million milestone payment recognized in July 2017 under the March 2014 genetics collaborative agreement with Genentech.

Research and Development Expenses

The following table summarizes research and development expenses for the three and nine months ended September 30, 2018 and 2017 together with changes in those items (in thousands):

	Three Months Ended September 30,		Change 2018 vs. 2017 Increase/(Decrease)	Nine Months Ended September 30,		Change 2018 vs. 2017 Increase/(Decrease)
	2018	2017		2018	2017	
XEN1101 expenses	2,942	1,450	1,492	6,383	2,601	3,782
XEN901 and Nav1.6 pre-clinical and discovery expenses	2,405	2,437	(32)	8,282	8,232	50
Pre-clinical, discovery and other program expenses	889	3,264	(2,375)	2,559	6,780	(4,221)
XEN801 expenses	4	13	(9)	4	1,563	(1,559)
Total research and development expenses	$ 6,240	$ 7,164	$ (924)	$ 17,228	$ 19,176	$ (1,948)

Research and development expenses decreased by $0.9 million and $1.9 million in the three and nine months ended September 30, 2018 as compared to the three and nine months ended September 30, 2017, respectively. These decreases were primarily attributable to decreased spending on pre-clinical, discovery and other internal program expenses, and XEN801, a product candidate which is no longer being developed. These decreases were partially offset by increased spending on our XEN1101 product candidate, which was acquired in April 2017.

General and Administrative Expenses

The following table summarizes general and administrative expenses for the three and nine months ended September 30, 2018 and 2017 together with changes in those items (in thousands):

	Three Months Ended September 30,		Change 2018 vs. 2017 Increase/(Decrease)	Nine Months Ended September 30,		Change 2018 vs. 2017 Increase/(Decrease)
	2018	2017		2018	2017	
General and administrative expenses	$ 1,938	$ 1,744	$ 194	$ 6,354	$ 5,643	$ 711

General and administrative expenses increased by $0.2 million and $0.7 million in the three and nine months ended September 2018 as compared to the three and nine months ended September 30, 2017, respectively. For the three months ended September 30, 2018, the increase in general and administrative expenses was primarily attributable to increased stock-based compensation, corporate affairs and intellectual property expenses.

For the nine months ended September 30, 2018, the increase in general and administrative expenses was primarily attributable to increased stock-based compensation expense, legal and recruitment fees, partially offset by decreased costs for business development activities.

Other Operating Expenses

The following table summarizes other operating expenses for the three and nine months ended September 30, 2018 and 2017 together with changes in those items (in thousands):

	Three Months Ended September 30,		Change	Nine Months Ended September 30,		Change
	2018	2017	2018 vs. 2017 Increase/(Decrease)	2018	2017	2018 vs. 2017 Increase/(Decrease)
Buy-out of future milestones and royalties	$ 6,000	$ —	$ 6,000	$ 6,000	$ —	$ 6,000

Other operating expenses increased by $6.0 million in the three and nine months ended September 2018 as compared to the three and nine months ended September 30, 2017. The increase is due to a one-time payment of $6.0 million to Bausch Health for the buy-out of all future milestone payments and royalties owed to Bausch Health with respect to the XEN1101 program.

Other Income (Expense)

The following table summarizes our other income for the three and nine months ended September 30, 2018 and 2017 together with changes in those items (in thousands):

	Three Months Ended September 30,		Change 2018 vs. 2017	Nine Months Ended September 30,		Change 2018 vs. 2017
	2018	2017	Increase/(Decrease)	2018	2017	Increase/(Decrease)
Other income (expense):	$ (205)	$ 902	$ (1,107)	$ 3,643	$ 1,885	$ 1,758

Other income decreased by $1.1 million and increased $1.8 million in the three and nine months ended September 30, 2018 as compared to the three and nine months ended September 30, 2017, respectively. For the three months ended September 30, 2018, the decrease in other income was primarily driven by interest expense incurred on our term loan and a change in foreign exchange gains and losses arising largely from the translation of cash and cash equivalents and marketable securities denominated in Canadian dollars to U.S. dollars. During the three month periods ended September 30, 2018 and 2017, we recorded foreign exchange gains of $0.1 million and $0.8 million due to a 2% increase and 4% increase in the value of the Canadian dollar, respectively.

For the nine months ended September 30, 2018, the increase in other income was primarily driven by a $4.4 million gain on the termination of the collaboration agreement with Teva, partially offset by a change in foreign exchange gains and losses and interest expense incurred on our term loan. We recorded a foreign exchange loss of $0.3 million in the nine months ended September 30, 2018 as compared to a $1.5 million foreign exchange gain for the same period in 2017, largely due to a 3% decrease as compared to an 8% increase in the value of the Canadian dollar, respectively.

Liquidity and Capital Resources

To date, we have financed our operations primarily through funding received from collaboration and license agreements, private placements of our common and preferred shares, public offerings of our common shares, debt financing and government funding. As of September 30, 2018, we had cash and cash equivalents and marketable securities of $127.1 million. In December 2017, we entered into a loan and security agreement with the Bank pursuant to which we borrowed an aggregate principal amount of $12.0 million. In August 2018, we entered into an amended and restated loan and security agreement with the Bank providing for a term loan to us with an aggregate principal amount of $15.5 million, proceeds from which will be used in part to refinance the amounts borrowed under the December 2017 loan and security agreement. For additional information regarding our amended and restated loan and security agreement with the Bank, see “—Contractual Obligations and Commitments—Term Loan” below.

We have incurred significant operating losses since inception. We had a $25.9 million net loss for the nine months ended September 30, 2018 and an accumulated deficit of $199.3 million from inception through September 30, 2018. We expect to continue to incur significant expenses in excess of our revenue and expect to incur operating losses over the next several years. Our net losses may fluctuate significantly from quarter to quarter and year to year. We expect to continue to incur significant expenses and operating losses for the foreseeable future as we continue our research and pre-clinical and clinical development of our product candidates; expand the scope of our current studies for our product candidates; initiate additional pre-clinical, clinical or other studies for our product candidates, including under our collaboration agreements; change or add manufacturers or suppliers; seek regulatory and marketing approvals for any of our product candidates that successfully complete clinical studies; seek to identify, evaluate and validate additional product candidates; acquire or in-license other product candidates and technologies; make milestone or other payments under our product acquisition and in-license agreements, including, without limitation, payments to the Memorial University of Newfoundland, 1st Order Pharmaceuticals, Inc., and other third parties; maintain, protect and expand our intellectual property portfolio; attract and retain skilled personnel; establish a sales, marketing and distribution infrastructure to commercialize any products for which we or one of our collaborators may obtain marketing approval, and maintain commercial rights; create additional infrastructure to support our operations and our product development and planned future commercialization efforts; and experience any delays or encounter issues with any of the above.

Until such time as we can generate substantial product revenue, if ever, we expect to finance our cash needs through a combination of collaboration agreements and equity or debt financings. For example, in May 2018, we entered into a sales agreement with Stifel, to sell our common shares having aggregate gross proceeds of up to $30.0 million, from time to time, through an "at-the-market" equity offering program under which Stifel acted as sales agent. As of September 30, 2018, we had sold an aggregate of 3,440,000 common shares under the May 2018 sales agreement for proceeds of approximately $29.2 million, net of commissions paid, but excluding estimated transaction expenses. Similarly, in July 2018, we entered into a sales agreement with Jefferies and Stifel to sell our common shares having aggregate gross proceeds of up to $50.0 million, from time to time, through an "at-the-market" equity offering program under which Jefferies and Stifel acted as sales agents. As of September 30, 2018, we had sold an aggregate of 1,600,000 common shares under the July 2018 sales agreement for proceeds of approximately $14.8 million, net of commissions paid, but excluding estimated transaction expenses. In connection with the entry into the July 2018 sales agreement, we and Stifel mutually terminated the May 2018 sales agreement effective as of July 11, 2018. In September 2018, we completed an underwritten public offering of 4,500,000 of our common shares at a public offering price of $14.00 per share for net proceeds of $59.2 million, net of underwriting discounts and commissions, but before offering expenses. In connection with the entry into the September 2018 underwriting agreement, we, Jefferies and Stifel mutually terminated the July 2018 sales agreement effective as of September 12, 2018.

Except for any obligations of our collaborators to make milestone payments under our agreements with them, we do not have any committed external sources of capital. To the extent that we raise additional capital through the future sale of equity or debt, the ownership interest of our shareholders will be diluted, and the terms of these securities may include liquidation or other preferences that adversely affect the rights of our existing shareholders. If we raise additional funds through collaboration agreements in the future, 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 through equity or debt financings 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 future capital requirements are difficult to forecast and will depend on many factors, including:

- the number and characteristics of the future product candidates we pursue either from our internal research efforts or through acquiring or in-licensing other product candidates or technologies;
    - the scope, progress, results and costs of independently researching and developing any of our future product candidates, including conducting pre-clinical research and clinical trials;
    - whether our existing collaborations continue to generate substantial milestone payments and, ultimately, royalties on future approved products for us;
- the timing of, and the costs involved in, obtaining regulatory approvals for any future product candidates we develop independently;
- the timing and magnitude of potential milestone payments under our product acquisition and in-license agreements;
- the cost of commercializing any future products we develop independently that are approved for sale;
- the cost of manufacturing our future product candidates and products, if any;
- our ability to maintain existing collaborations and to establish new collaborations, licensing or other arrangements and the financial terms of such arrangements;
- the costs of preparing, filing, prosecuting, maintaining, defending and enforcing patents, including litigation costs and the outcome of such litigation; and
- the timing, receipt and amount of sales of, or royalties on our collaborators' product candidates, and our future products, if any.

Based on our research and development plans and our timing expectations related to the progress of our programs, we expect that our existing cash and cash equivalents and marketable securities as of the date of this report will enable us to fund our operating expenses and capital expenditure requirements for at least the next 12 months. We have based

this estimate on assumptions that may prove to be wrong, and we could use our capital resources sooner than we expect. Additionally, the process of testing drug candidates in clinical trials is costly, and the timing of progress in these trials remains uncertain.

Cash Flows

The following table shows a summary of our cash flows for the nine months ended September 30, 2018 and 2017 (in thousands):

	Nine Months Ended September 30,	
	2018	2017
Net cash used in operating activities	$ (27,482)	$ (21,888)
Net cash provided by (used in) investing activities	(16,431)	18,491
Net cash provided by financing activities	111,557	177

Operating Activities

For the nine months ended September 30, 2018, net cash used in operating activities totaled $27.5 million, compared to $21.9 million for the same period in 2017. The increase in cash used in operating activities was primarily related to an increase in research and development expenses and interest paid on our term loan.

Investing Activities

For the nine months ended September 30, 2018, net cash used in investing activities totaled $16.4 million, compared to net cash provided by investing activities of $18.5 million for the same period in 2017. The change in cash provided by (used in) investing activities was driven by an increase in purchases of marketable securities, net of redemptions, in the nine months ended September 30, 2018 as compared to the same period in 2017.

Financing Activities

For the nine months ended September 30, 2018, net cash provided by financing activities totaled $111.6 million, compared to $0.2 million for the same period in 2017. The increase in cash provided by financing activities was primarily related to approximately $102.8 million of net proceeds from the issuance of common shares as well as net proceeds of $8.5 million under the second tranche of our December 2017 loan and security agreement with the Bank and subsequent refinancing in August 2018.

Contractual Obligations and Commitments

Our future significant contractual obligations as of December 31, 2017 were reported in our Annual Report on Form 10-K, filed with the SEC and the Canadian Securities Commissions on March 8, 2018.

As of September 30, 2018, there have been no material changes from the contractual commitments previously disclosed in the Annual Report on Form 10-K other than the following:

In December 2017, we entered into a Loan and Security Agreement, or Loan Agreement with the Bank under which we were funded an initial tranche of $7.0 million. In June 2018, we entered into a First Loan Modification Agreement, or Modification, to the Loan Agreement, together the Modified Loan Agreement, pursuant to which the Bank accelerated the availability of a second tranche of $5.0 million which was funded in June 2018. Amounts funded under the Modified Loan Agreement were interest-only until September 30, 2018 or, subject to the achievement of certain clinical milestones, or the Interest-Only Milestone, March 31, 2019. Following the expiration of the interest-only period, the first tranche was payable in 30 equal monthly installments or, if the Interest-Only Milestone was achieved, 24 equal monthly installments of principal plus interest, maturing on March 31, 2021. The second

tranche was payable in 24 equal monthly installments or, if the Interest-Only Milestone was achieved, 18 equal monthly installments of principal plus interest, maturing on September 30, 2020. The interest and payment terms of the third and final tranche, if borrowed, remained unchanged from the Loan Agreement. The Modification did not amend the Loan Agreement's interest provisions.

On August 3, 2018, we entered into Amended and Restated Loan Agreement with the Bank, pursuant to which the Bank extended a term loan to us with a principal amount of $15.5 million (the “Term Loan”) which was used to repay in full outstanding borrowings of $12.0 million under the Modified Loan Agreement and a payment of $0.5 million, which represented the current portion of the final payment fee due under the Modified Loan Agreement, as well as for working capital and other general corporate purposes, including the advancement of our clinical development programs.

The Term Loan accrues interest at a floating per annum rate of 0.5% above the prime rate, which is payable monthly commencing in September 2018. The Term Loan is interest-only until March 31, 2020, followed by 30 equal monthly installments of principal plus interest, maturing on September 1, 2022. In addition, we are required to pay a final payment fee of 6.5% of the Term Loan on the date on which the term loan is prepaid, paid or becomes due and payable in full.

We may prepay all, but not less than all, of the Term Loan subject to a prepayment fee of $0.3 million, which represents the deferred portion of the final payment fee due under the Modified Loan Agreement, plus 3.0% if prepaid prior to the first anniversary of the effective date of the Amended and Restated Loan Agreement, 2.0% if prepaid on or after the first anniversary, but prior to the second anniversary, or 1.0%, if prepaid on or after the second anniversary but prior to the maturity date. As security for its obligations under the Amended and Restated Loan Agreement, we granted the Bank a first priority security interest on substantially all of our assets except its intellectual property and subject to certain other exceptions.

The Amended and Restated Loan Agreement contains customary representations and warranties, events of default (including an event of default upon the occurrence of a material impairment on the Bank’s security interest over the collateral, and a material adverse change in our company) and affirmative and negative covenants, including, among others, covenants that limit or restrict our ability to incur indebtedness, grant liens, merge or consolidate, dispose of assets, make investments, make acquisitions, enter into certain transactions with affiliates, engage in any new line of business, pay dividends or make distributions, or repurchase stock, in each case subject to certain exceptions. Upon the occurrence and during the continuance of an event of default, a default interest rate will apply that is 5.0% above the otherwise applicable interest rate.

In connection with the Amended and Restated Loan Agreement, we issued a warrant to the Bank to purchase 40,000 of our common shares at a price per common share of $9.79. The warrant is immediately exercisable, has a 10-year term and contains a cashless exercise provision.

Inflation

We do not believe that inflation has had a material effect on our business, financial condition or results of operations in the last three fiscal years.

Off-Balance Sheet Arrangements

We do not engage in any off-balance sheet financing activities. We do not have any interest in entities referred to as variable interest entities, which include special purposes entities and other structured finance entities.

Outstanding Share Data

As of November 2, 2018, we had 25,240,348 common shares issued and outstanding and outstanding stock options to purchase an additional 2,683,595 common shares. In addition, we had 1,516,000 Series 1 Preferred Shares issued and outstanding. The Series 1 Preferred Shares are convertible into common shares on a one-for-one basis subject to the

holder, together with its affiliates, beneficially owning no more than 9.99% of the total number of common shares issued and outstanding immediately after giving effect to such conversion, or the Beneficial Ownership Limitation. The holder may reset the Beneficial Ownership Limitation to a higher or lower number, not to exceed 19.99% of the total number of common shares issued and outstanding immediately after giving effect to such conversion, upon providing written notice to us which will be effective 61 days after delivery of such notice. The holders of the Series 1 Preferred Shares are entitled to vote together with the common shares on an as-converted basis and as a single class, subject in the case of each holder of the Series 1 Preferred Shares to the Beneficial Ownership Limitation. The Series 1 Preferred Shares may be “restricted securities” as such term is defined under applicable Canadian securities laws, as any Series 1 Preferred Shares that are ineligible to be converted into common shares due to the Beneficial Ownership Limitation, measured as of a given record date that applies for a shareholder meeting or ability to act by written consent, shall be deemed to be non-voting securities. For additional information regarding our Series 1 Preferred Shares, see note 9b to our consolidated financial statements included in Part I, Item 1 of this report.

Recent Accounting Pronouncements

In February 2016, the FASB issued Accounting Standards Update, or ASU, 2016-02, Leases (Topic 842): Recognition and Measurement of Financial Assets and Financial Liabilities. The update requires the recognition of lease assets and lease liabilities by lessees for those leases classified as operating leases under previous U.S. GAAP. The new guidance retains a distinction between finance leases and operating leases, with cash payments from operating leases classified within operating activities in the statement of cash flows. These amendments will be effective for public entities for fiscal years and interim periods within those years, beginning after December 15, 2018. We plan to adopt the standard on January 1, 2019 and can elect to record a cumulative-effect adjustment as of the beginning of the year of adoption or apply a modified retrospective transition approach. We have identified one operating lease for our premises which will be subject to the new guidance and will be recognized as an operating lease liability and right-of-use asset upon adoption.

Item 3. Quantitative and Qualitative Disclosures About Market Risk

As a smaller reporting company, we are not required to provide the information requested by this item pursuant to Item 305(e) of Regulation S-K.

Item 4. Controls and Procedures

(a) Evaluation of disclosure controls and procedures. Our management, with the participation of our Chief Executive Officer and our Chief Financial Officer, have evaluated our disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934, as amended) as of the end of the period covered by this quarterly report. Based on that evaluation, our Chief Executive Officer and our Chief Financial Officer have concluded that, as of the end of the period covered by this quarterly report, our disclosure controls and procedures were effective, in design and operation, at the reasonable assurance level.

(b) Changes in internal control over financial reporting. There were no changes in our internal control over financial reporting during the period ended September 30, 2018 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

Inherent limitation on the effectiveness of internal control.

The effectiveness of any system of internal control over financial reporting, including ours, is subject to inherent limitations, including the exercise of judgment in designing, implementing, operating, and evaluating the controls and procedures, and the inability to eliminate misconduct completely. Accordingly, any system of internal control over financial reporting, including ours, no matter how well designed and operated, can only provide reasonable, not absolute assurances. In addition, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate. We intend to continue to monitor and upgrade our internal controls as necessary or appropriate for our business, but cannot assure you that such improvements will be sufficient to provide us with effective internal control over financial reporting.

PART II. OTHER INFORMATION

Item 1. Legal Proceedings

From time to time, we may become involved in legal proceedings or be subject to claims arising in the ordinary course of our business. We are not presently a party to any legal proceedings that, in the opinion of our management, would

reasonably be expected to have a material adverse effect on our business, financial condition, operating results or cash flows if determined adversely to us. Regardless of the outcome, litigation can have an adverse impact on us because of defense and settlement costs, diversion of management resources and other factors.

Item 1A. Risk Factors

You should carefully consider the following risk factors, in addition to the other information contained in this report, including the section of this report captioned “Management’s Discussion and Analysis of Financial Condition and Results of Operations” and our financial statements and related notes. If any of the events described in the following risk factors and the risks described elsewhere in this report occurs, our business, operating results and financial condition could be seriously harmed. This report on Form 10-Q also contains forward-looking statements that involve risks and uncertainties. Our actual results could differ materially from those anticipated in the forward-looking statements as a result of factors that are described below and elsewhere in this report.

Risks Related to Our Financial Condition and Capital Requirements

We have incurred significant losses since our inception and anticipate that we will continue to incur significant losses for the foreseeable future.

We are a clinical stage biotechnology company and, other than the years ended December 31, 2014 and 2013, we have recorded net losses in each annual reporting period since inception in 1996, and we do not expect to have sustained profitability for the foreseeable future. We had net losses of $25.9 million for the nine months ended September 30, 2018 and an accumulated deficit of $199.3 million as of September 30, 2018, which were driven by expenses incurred in connection with our research and development programs and from general and administrative costs associated with our operations.

We have devoted most of our financial resources to research and development, including our clinical and pre-clinical development activities. To date, we have financed our operations through the sale of equity securities, funding received from our licensees and collaborators, debt financing and, to a lesser extent, government funding. We have not generated any significant revenue from product sales and our product candidates will require substantial additional investment before they will provide us with any revenue.

We expect to incur significant expenses and increasing operating losses for the foreseeable future as we:

- continue our research and pre-clinical and clinical development of our product candidates;
- expand the scope of our clinical studies for our current and prospective product candidates;
- initiate additional pre-clinical, clinical or other studies for our product candidates;
    - change or add additional manufacturers or suppliers;
- seek regulatory and marketing approvals for any of our product candidates that successfully complete clinical studies;
- seek to identify and validate additional product candidates;
- acquire or in-license other product candidates and technologies;
- make milestone or other payments under our in-license or other agreements, including, without limitation, payments to Memorial University of Newfoundland, 1st Order Pharmaceuticals, Inc. and other third parties;
- maintain, protect and expand our intellectual property portfolio;
- establish a sales, marketing and distribution infrastructure to commercialize any products for which we may obtain marketing approval;
- create additional infrastructure to support our operations and our product development and planned future commercialization efforts; and
- experience any delays or encounter issues with any of the above.

Our expenses could increase beyond expectations for a variety of reasons, including if we are required by the U.S. Food and Drug Administration, or FDA, the European Medicines Agency, or EMA, or other regulatory agencies, domestic or foreign, to perform clinical and other studies in addition to those that we currently anticipate. Our prior losses, combined with expected future losses, have had and will continue to have an adverse effect on our shareholders' equity.

We have not generated any significant royalty revenue from product sales and may never become profitable on a U.S. GAAP basis.

Our ability to generate meaningful revenue and achieve profitability on a U.S. GAAP basis depends on our ability, alone or with strategic collaborators, to successfully complete the development of, and obtain the regulatory approvals necessary to commercialize, our product candidates. Substantially all of our revenue since inception has consisted of upfront and milestone payments associated with our collaboration and license agreements. Revenue from these agreements is dependent on successful development of our product candidates by us or our collaborators. We have not generated any significant royalty revenue from product sales, and do not otherwise anticipate generating revenue from product sales for the foreseeable future, if ever. If any of our product candidates fail in clinical trials or do not gain regulatory approval, or if any of our future products, if any, once approved, fail to achieve market acceptance or adequate market share, we may never become profitable. Although we were profitable for the years ended December 31, 2014 and 2013, we may not be able to sustain profitability in subsequent periods. Our ability to generate future revenue from product sales depends heavily on our success, and the success of our collaborators, in:

- completing research, pre-clinical and clinical development of our product candidates;
- seeking and obtaining regulatory and marketing approvals for product candidates for which we complete clinical studies;
- commercializing products for which we obtain regulatory and marketing approval, either with a collaborator or, if launched independently, by establishing sales, marketing and distribution infrastructure;
- negotiating favorable terms in any collaboration, licensing or other arrangements into which we may enter;
- obtaining market acceptance of products for which we obtain regulatory and marketing approval as therapies;
- addressing any competing technological and market developments;
- establishing and maintaining supply and manufacturing relationships with third parties that can provide adequate (in amount and quality) products and services to support clinical development and the market demand for any approved products in the future;
- developing sustainable, scalable, reproducible, and transferable manufacturing processes for any of our products approved in the future;
- maintaining, protecting, expanding and enforcing our portfolio of intellectual property rights, including patents, trade secrets and know-how;
- implementing additional internal systems and infrastructure, as needed; and
- attracting, hiring and retaining qualified personnel.

The scope of our future revenue will also depend upon the size of any markets in which our product candidates receive approval and the availability of insurance coverage and the availability and amount of reimbursement from third-party payers for future products, if any. If we are unable to achieve sufficient revenue to become profitable and remain so, our financial condition and operating results will be negatively impacted, and the market price of our common shares might be adversely impacted.

We will likely need to raise additional funding, which may not be available on acceptable terms, if at all. Failure to obtain this necessary capital when needed may force us to delay, limit or terminate our product development efforts or other operations.

Since our inception, we have dedicated most of our resources to the discovery and development of our proprietary pre-clinical and clinical product candidates, and we expect to continue to expend substantial resources doing so for the foreseeable future. These expenditures will include costs associated with research and development, potential milestone payments to third parties, manufacturing of product candidates and products approved for sale, conducting pre-clinical experiments and clinical trials and obtaining and maintaining regulatory approvals, as well as commercializing any products later approved for sale. During the nine months ended September 30, 2018, we incurred approximately $23.2 million of costs associated with research and development, exclusive of costs incurred by our

collaborators in developing our product candidates.

Our current cash and cash equivalents and marketable securities are not expected to be sufficient to complete clinical development of any of our product candidates and prepare for commercializing any product candidate which receives regulatory approval. Accordingly, we will likely require substantial additional capital to continue our clinical development and potential commercialization activities. Our future capital requirements depend on many factors, including but not limited to:

- the number and characteristics of the future product candidates we pursue either from our internal research efforts or through acquiring or in-licensing other product candidates or technologies;
    - the scope, progress, results and costs of independently researching and developing any of our future product candidates, including conducting pre-clinical research and clinical trials;
    - whether our existing collaborations continue to generate substantial milestone payments and, ultimately, royalties on future approved products for us;
- the timing of, and the costs involved in, obtaining regulatory approvals for any future product candidates we develop independently;
- the timing and magnitude of potential milestone payments under our product acquisition and in-license agreements;
- the cost of commercializing any future products we develop independently that are approved for sale;
- the cost of manufacturing our future product candidates and products, if any;
- our ability to maintain existing collaborations and to establish new collaborations, licensing or other arrangements and the financial terms of such agreements;
- the costs involved in preparing, filing, prosecuting, maintaining, defending and enforcing patents, including litigation costs and the outcome of such litigation; and
- the timing, receipt and amount of sales of, or royalties on, our future products, if any.

We are unable to estimate the funds we will actually require to complete research and development of our product candidates or the funds required to commercialize any resulting product in the future.

Based on our research and development plans and our timing expectations related to the progress of our programs, we expect that our existing cash and cash equivalents and marketable securities as of the date of this report will enable us to fund our operating expenses and capital expenditure requirements for at least the next 12 months.

Our operating plan may change as a result of many factors currently unknown to us, and we may need to seek additional funds sooner than planned, through public or private equity or debt financings, government or other third-party funding, marketing and distribution arrangements and other collaborations, strategic alliances and licensing arrangements or a combination of these approaches. Raising funds in the future may present additional challenges and future financing may not be available in sufficient amounts or on terms acceptable to us, if at all.

We are party to a loan and security agreement that contains operating and financial covenants that may restrict our business and financing activities and we may be required to repay the outstanding indebtedness in an event of default, which could have a materially adverse effect on our business.

In December 2017, we entered into a loan and security agreement with Silicon Valley Bank pursuant to which we borrowed an aggregate principal amount of $12 million. In August 2018, we entered into an amended and restated loan and security agreement with Silicon Valley Bank providing for a term loan to us with an aggregate principal amount of $15.5 million, which amount was funded in August 2018. Proceeds from the principal amount borrowed in August 2018 were used in part to refinance the amounts borrowed under the December 2017 loan and security agreement and pay a $0.5 million final payment fee to Silicon Valley Bank in connection with the refinancing of the December 2017 loan and security agreement.

Borrowings under our amended and restated loan and security agreement are secured by substantially all of our assets except intellectual property and subject to certain other exceptions. The loan and security agreement restricts our ability, among other things, to:

- sell, transfer or otherwise dispose of any of our business assets or property, subject to limited exceptions;
- make material changes to our business;
- enter into transactions resulting in significant changes to the voting control of our stock;
- make certain changes to our organizational structure;
- consolidate or merge with other entities or acquire other entities;
- incur additional indebtedness or create encumbrances on our assets;
- pay dividends, other than dividends paid solely in our common shares, or make distributions on and, in certain cases, repurchase our capital stock;
- enter into certain transactions with our affiliates;
- repay subordinated indebtedness; or
- make certain investments.

In addition, we are required under our amended and restated loan agreement and security agreement to comply with various affirmative covenants. The covenants and restrictions and obligations in our amended and restated loan and security agreement, as well as any future financing agreements that we may enter into, may restrict our ability to finance our operations, engage in business activities or expand or fully pursue our business strategies. Our ability to comply with these covenants may be affected by events beyond our control, and we may not be able to meet those covenants. A breach of any of these covenants could result in a default under the amended and restated loan and security agreement, which could cause all of the outstanding indebtedness under the facility to become immediately due and payable.

If we are unable to generate sufficient cash available to repay our debt obligations when they become due and payable, either when they mature, or in the event of a default, we may not be able to obtain additional debt or equity financing on favorable terms, if at all, which may negatively impact our business operations and financial condition.

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

The terms of any financing arrangements we enter into may adversely affect the holdings or the rights of our shareholders and the issuance of additional securities, whether equity or debt, by us, or the possibility of such issuance, may cause the market price of our common shares to decline. The sale of additional equity or convertible securities also would dilute all of our shareholders. For example, in May 2018, we entered into a sales agreement with Stifel, Nicolaus & Company, Incorporated to sell up to $30.0 million of our common shares, from time to time, through an "at-the-market" equity offering program under which Stifel, Nicolaus & Company, Incorporated acted as sales agent. As of September 30, 2018, we had sold an aggregate of 3,440,000 common shares under the May 2018 sales agreement for proceeds of approximately $29.2 million, net of commissions paid, but excluding estimated transaction expenses. We and Stifel, Nicolaus & Company, Incorporated mutually terminated the May 2018 sales agreement, effective as of July 11, 2018, in connection with our entry into the July 2018 sales agreement with Jefferies LLC and Stifel, Nicolaus & Company, Incorporated on the same date. Pursuant to the July 2018 sales agreement, Jefferies LLC and Stifel, Nicolaus & Company, Incorporated acted as sales agents to sell our common shares having aggregate gross proceeds of up to $50.0 million. As of September 30, 2018, we had sold an aggregate of 1,600,000 common shares under the July 2018 sales agreement for proceeds of approximately $14.8 million, net of commissions paid, but excluding estimated transaction expenses. Effective September 12, 2018, we, Jefferies LLC and Stifel, Nicolaus & Company, Incorporated, agreed to mutually terminate the July 2018 sales agreement. In September 2018, we completed an underwritten public offering of 4,500,000 of our common shares at a public offering price of $14.00 per share for net proceeds of $59.2 million, net of underwriting discounts and commissions, but before other offering expenses. We are also party to an amended and restated loan and security agreement with Silicon Valley Bank pursuant to which we have borrowed an aggregate principal amount of $15.5 million. Our loan pursuant to the amended and restated loan and security agreement is secured by substantially all of our assets except intellectual property and the agreement requires us to comply with various affirmative and negative covenants. The incurrence of additional indebtedness would result in increased fixed payment obligations and, potentially, the imposition of additional restrictive covenants. Such additional covenants could include limitations on our ability to incur additional debt, limitations on our ability to acquire, sell or license intellectual property rights and other operating restrictions that could adversely impact our ability to conduct our business. We could also be required to seek funds through arrangements with collaborators or otherwise at an earlier stage than otherwise would be desirable resulting in the loss of rights to some of our product candidates or other unfavorable terms, any of which may have a material adverse effect on our business, operating results and prospects. In addition, any additional fundraising efforts may divert our management from their day-to-day activities, which may adversely affect our ability to develop and commercialize our product candidates.

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

Global credit and financial markets experienced extreme disruptions at various points over the last decade, characterized by diminished liquidity and credit availability, declines in consumer confidence, declines in economic growth, increases in unemployment rates, and uncertainty about economic stability. If another such disruption in credit and financial markets and deterioration of confidence in economic conditions occurs, our business may be adversely affected. If the equity and credit markets were to deteriorate significantly in the future, it may make any necessary debt or equity financing more difficult to complete, more costly, and more dilutive. Failure to secure any necessary financing in a timely manner and on favorable terms could have a material adverse effect on our growth strategy, financial performance and the market price of our common shares could require us to delay or abandon development or commercialization plans. In addition, there is a risk that one or more of our current collaborators, service providers, manufacturers and other partners would not survive or be able to meet their commitments to us under such circumstances, which could directly affect our ability to attain our operating goals on schedule and on

budget.

We are subject to risks associated with currency fluctuations which could impact our results of operations.

As of September 30, 2018, approximately 10% of our cash and cash equivalents and marketable securities were denominated in Canadian dollars. We incur significant expenses in Canadian dollars in connection with our operations in Canada. We do not engage in foreign currency hedging arrangements for our Canadian dollar expenditures, and, consequently, foreign currency fluctuations may adversely affect our earnings. From time to time, we may engage in exchange rate hedging activities in an effort to mitigate the impact of exchange rate fluctuations. Any hedging technique we implement may fail to be effective. If our hedging activities are not effective, changes in currency exchange rates may have a more significant impact on the market price of our common shares.

Risks Related to Our Business

We, or our collaborators, may fail to successfully develop our product candidates.

Our clinical product candidates, which include XEN1101 and XEN901, along with clinical product candidates we expect to enter clinical development, which include XEN496 and XEN007, and our pre-clinical compounds, are in varying stages of development and will require substantial clinical development, testing and regulatory approval prior to commercialization. It may be several more years before these product candidates or any of our other product candidates receive marketing approval, if ever. If any of our product candidates fail to become approved products, our business, growth prospects, operating results and financial condition may be adversely affected and a decline in the market price of our common shares could result.

We and our collaborators face substantial competition in the markets for our product candidates, which may result in others discovering, developing or commercializing products before us or doing so more successfully than we or our collaborators do.

The biotechnology and pharmaceutical industries are characterized by rapidly advancing technologies, intense competition and a strong emphasis on proprietary products. We face potential competition in target discovery and product development from many different approaches and sources, including major pharmaceutical, specialty pharmaceutical and biotechnology companies, academic institutions, governmental agencies, as well as public and private research institutions. Any product candidates that we or our collaborators successfully develop and commercialize will compete with existing products and any new products that may become available in the future.

The key competitive factors affecting the success of all of our product candidates, if approved, are likely to be their efficacy, safety, convenience and price; the effectiveness and safety of alternative products; the level of generic competition; and the availability of coverage and adequate reimbursement from government and other third-party payers.

Many of the companies against which we are competing or against which we may compete in the future have significantly greater financial resources and expertise in research and development, manufacturing, pre-clinical testing, conducting clinical trials, obtaining regulatory approvals and marketing approved products than we, or our collaborators, 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 collaboration arrangements with large and established companies.

Our commercial opportunities could be reduced or eliminated if our competitors develop and commercialize products or therapies that are safer, more effective, have fewer or less severe side effects, are more convenient or are less expensive than any products that we may develop. Our competitors also may obtain FDA, EMA or other regulatory approval for their products more rapidly than we may obtain approval for ours, which could result in our competitors establishing a strong market position before we are able to enter the market. In addition, our ability to compete may be affected by decisions made by insurers or other third-party payers.

To the extent that we are unable to compete effectively against one or more of our competitors in these areas, our business will not grow and our financial condition, results of operations and the market price of our common shares may suffer.

If XEN496, XEN1101 or XEN901 were approved for the treatment of epilepsy, we anticipate that they could potentially compete with each other and other anti-epileptic drugs, or AEDs. Commonly used AEDs include

phenytoin, levetiracetam, carbamazepine, clobazam, lamotrigine, valproate, oxcarbazepine, topiramate, lacosamide and perampanel, among others. There are currently no FDA-approved treatments indicated for KCNQ2 epileptic encephalopathy (otherwise known as KCNQ2-EE or EIEE7) or for EIEE13, an early infantile epileptic encephalopathy due to gain-of-function mutations in the SCN8A gene that encodes the Nav1.6 sodium channel. We are not aware of other companies that are developing selective Nav1.6 inhibitors for the treatment of epilepsy. There are other AEDs in development that could potentially compete with XEN496, XEN1101 or XEN901, including products in development from UCB, Inc., Zogenix, Inc., GW Pharmaceuticals, Sage Therapeutics, Marinus Pharmaceuticals, Inc., SciFluor Lifesciences, Inc., Knopp Biosciences LLC, and Upsher-Smith Laboratories, Inc.

Drug discovery and development for various pain applications is intensely competitive. There are a large number of approved products for neuropathic pain, inflammatory pain and other pain indications. These approved products include capsaicin, celecoxib, lidocaine, narcotic analgesics, gabapentin, and pregabalin. We are also aware of development programs at several pharmaceutical and biotechnology companies that are developing Nav1.7 inhibitors or other sodium channel inhibitors for the treatment of pain, including Amgen Inc., AstraZeneca PLC, Biogen Inc., Dainippon Sumitomo Co., Ltd., Eli Lilly and Company, Merck, NeuroQuest Inc., Vertex Pharmaceuticals Inc., Voyager Therapeutics, Inc. and Chromocell Corporation in collaboration with its partner Astellas Pharma Inc. Moreover, we are aware of various other product candidates in development that target other mechanisms of action to treat various pain indications, including calcium channel inhibitors, nerve growth factor inhibitors, and Nav1.8 inhibitors.

We have no marketed proprietary products and have not yet advanced a product candidate beyond Phase 2 clinical trials, which makes it difficult to assess our ability to develop our future product candidates and commercialize any resulting products independently.

We have no experience in Phase 3 and later stage clinical development, and related regulatory requirements or the commercialization of products. We have not yet demonstrated our ability to independently and repeatedly conduct clinical development after Phase 2, obtain regulatory approval, and commercialize therapeutic products. We will need to develop such abilities if we are to execute on our business strategy to develop and independently commercialize product candidates for orphan and niche indications. To execute on our business plan for the development of independent programs, we will need to successfully:

- execute our clinical development plans for later-stage product candidates;
- obtain required regulatory approvals in each jurisdiction in which we will seek to commercialize products;
- build and maintain appropriate sales, distribution and marketing capabilities;
- gain market acceptance for our future products, if any; and
- manage our spending as costs and expenses increase due to clinical trials, regulatory approvals and commercialization activities.

If we are unsuccessful in accomplishing these objectives, we would not be able to develop and commercialize any future orphan and niche disease product candidates independently and could fail to realize the potential advantages of doing so.

If we are not successful in discovering, acquiring or in-licensing product candidates in addition to XEN496, XEN1101, XEN901, and XEN007, our ability to expand our business and achieve our strategic objectives may be impaired.

We have built a product development pipeline by identifying product candidates either from our internal research efforts or though acquiring or in-licensing other product candidates. To date, our internal discovery efforts have yielded multiple development candidates, including XEN901. Both our internal discovery efforts and our assessment of potential acquisition or in-licensing opportunities require substantial technical, financial and human resources, regardless of whether we identify any viable product candidates.

If we are unable to identify additional product candidates suitable for clinical development and commercialization either from our internal research efforts or though acquiring or in-licensing other product candidates or technologies, we may not be able to obtain product revenue in future periods, which likely would result in significant harm to our financial position and adversely impact the market price of our common shares.

Our approach to drug discovery is unproven, and we do not know whether we will be able to develop any products of commercial value.

Our approach to drug discovery may not reproducibly or cost-effectively result in the discovery of product candidates and development of commercially viable products that safely and effectively treat human disease.

Our drug discovery efforts may initially show promise in identifying additional potential product candidates yet fail to yield viable product candidates for clinical development or commercialization. Such failure may occur for many reasons, including the following: any product candidate may, on further study, be shown to have serious or unexpected side effects or other characteristics that indicate it is unlikely to be safe or otherwise does not meet applicable regulatory criteria; and any product candidate may not be capable of being produced in commercial quantities at an acceptable cost, or at all.

If our discovery activities fail to identify novel targets for drug discovery, or such targets prove to be unsuitable for treating human disease, or we are unable to develop product candidates with specificity and selectivity for such targets, we will fail to develop viable products. If we fail to develop and commercialize viable products, we will not achieve commercial success.

If we fail to attract and retain senior management and key personnel, we may be unable to successfully develop our product candidates, perform our obligations under our collaboration agreements, conduct our clinical trials and commercialize our product candidates.

Our success depends in part on our continued ability to attract, retain and motivate highly qualified management, clinical and scientific personnel.

We could experience difficulties attracting and retaining qualified employees as competition for qualified personnel in the biotechnology and pharmaceutical field is intense. We are highly dependent upon our senior management, particularly Dr. Simon Pimstone, our Chief Executive Officer, and Mr. Ian Mortimer, our President and Chief Financial Officer, as well as other employees. The loss of services of either of these individuals or one or more of our other members of senior management could materially delay or even prevent the successful development of our product candidates.

In addition, we will need to hire additional personnel as we expand our clinical development activities and develop commercial capabilities, including a sales infrastructure to support our independent commercialization efforts. We may not be able to attract and retain personnel on acceptable terms given the competition among numerous pharmaceutical and biotechnology companies for individuals with similar skill sets. The inability to recruit or loss of the services of any executive or key employee may impede the progress of our research, development and commercialization objectives.

Our employees, collaborators and other personnel may engage in misconduct or other improper activities, including non-compliance with regulatory standards and requirements and insider trading.

We are exposed to the risk of fraud or other misconduct by our employees, collaborators, vendors, principal investigators, consultants and commercial partners. Misconduct by these parties could include intentional failures to comply with the regulations of the FDA, EMA and other regulators, provide accurate information to the FDA, EMA and other regulators, comply with data privacy and security and healthcare fraud and abuse laws and regulations in the U.S. and abroad, report financial information or data accurately or disclose unauthorized activities to us. In particular, sales, marketing and business arrangements in the healthcare industry are subject to extensive laws and regulations intended to prevent fraud, misconduct, kickbacks, self-dealing and other abusive practices. Additionally, laws regarding data privacy and security, including the federal Health Insurance Portability and Accountability Act of 1996, or HIPAA, as amended by the Health Information Technology for Economic and Clinical Health Act of 2009, or HITECH, as well as comparable laws in non-U.S. jurisdictions, may impose obligations with respect to safeguarding the privacy, use, security and transmission of individually identifiable health information such as genetic material or information we obtain through our direct-to-patient web-based recruitment approach for identifying patients with rare or extreme phenotypes or patients identified for clinical trials.

Various laws and regulations may restrict or prohibit a wide range of pricing, discounting, marketing and promotion, sales commission, customer incentive programs and other business arrangements. Any misconduct could also involve the improper use of information obtained in the course of clinical studies, which could result in regulatory sanctions and cause serious harm to our reputation. We have adopted a code of conduct applicable to all of our employees, officers, directors, agents and representatives, including consultants, but it is not always possible to identify and deter misconduct, and the precautions we take to detect and prevent misconduct may not be effective in controlling

unknown or unmanaged risks or losses or in protecting us from governmental investigations or other actions or lawsuits stemming from a failure to comply with these laws and regulations. If any such actions are instituted against us, and we are not successful in defending ourselves or asserting our rights, those actions could have a significant impact on our business, including the imposition of significant fines or other sanctions, exclusion from participation in government healthcare programs, or the curtailment or restructuring of our operations.

We may encounter difficulties in managing our growth, including headcount, and expanding our operations successfully.

Our business strategy involves continued development and, where development is successful, commercialization of select product candidates for orphan and niche indications. In order to execute on this strategy, we will need to build out a regulatory, sales, manufacturing, distribution and marketing infrastructure and expand our development capabilities or contract with third parties to provide these capabilities and infrastructure for us. To achieve this, we will need to identify, hire and integrate personnel who have not worked together as a group previously.

As our operations expand, we expect that we will need to manage additional relationships with various strategic collaborators, suppliers and other third parties.

Dr. Simon Pimstone devotes a small amount of his time to clinical work outside of his duties at our company, conducting, generally, two to three outpatient clinics per month on average. Future growth will impose significant added responsibilities on members of management, and our management may need to divert a disproportionate amount of its attention away from our day-to-day activities and devote a substantial amount of time to managing these growth activities.

If we are unable to effectively manage our growth, our expenses may increase more than expected, our ability to generate and grow revenue could be reduced, and we may not be able to implement our business strategy. Our future financial performance and our ability to commercialize product candidates and compete effectively will depend, in part, on our ability to effectively manage any future growth.

Our business and operations could suffer in the event of system failures.

Computer system, network or telecommunications failures due to events such as damage from malware, unauthorized access, terrorism, war, or natural disasters could interrupt our internal or partner operations. For example, the loss of pre-clinical trial data, data from completed or ongoing clinical trials for our product candidates or other confidential information could result in delays in our regulatory filings and development efforts, significantly increase our costs and result in other adverse impacts to our business. To the extent that any disruption or cybersecurity breach were to result in a loss of or damage to our data, or inappropriate disclosure of confidential or proprietary information, we could incur liability and other remediation costs, and the development of our product candidates could be delayed. While we have implemented security measures and, to date, have not detected a cybersecurity breach of our systems nor experienced a material system failure, our internal computer systems and the external systems and services used by our contractors, consultants, directors and partners remain potentially vulnerable to damage from these events.

A variety of risks associated with international operations could materially adversely affect our business.

If we engage in significant cross-border activities, we will be subject to risks related to international operations, including:

- different regulatory requirements for initiating clinical trials and maintaining approval of drugs in foreign countries;
- reduced protection for intellectual property rights in certain countries;
- unexpected changes in tariffs, trade barriers and regulatory requirements;
- economic weakness, including inflation, political instability or open conflict in particular foreign economies and markets;
- differing and multiple payor reimbursement regimes, government payors or patient self-pay systems;
- compliance with tax, employment, immigration and labor laws for employees living or traveling abroad;
- foreign currency fluctuations, which could result in increased operating expenses and reduced revenue, and other obligations of doing business in another country;
- workforce uncertainty in countries where labor unrest is more common than in North America;
- likelihood of potential or actual violations of domestic and international anti-corruption laws, such as the U.S. Foreign Corrupt Practices Act and the U.K. Bribery Act, or of U.S. and international export control and sanctions regulations, which likelihood may increase with an increase of operations in foreign jurisdictions;
- tighter restrictions on privacy and the collection and use of data, including clinical data and genetic material, may apply in jurisdictions outside of North America; and
- business interruptions resulting from geopolitical actions, including war and terrorism, or natural disasters including earthquakes, typhoons, floods and fires.

If any of these issues were to occur, our business could be materially harmed.

U.S. holders of our common shares may suffer adverse tax consequences if we are characterized as a passive foreign investment company.

Generally, for any taxable year in which 75% or more of our gross income is passive income, or at least 50% of the average quarterly value of our assets (which may be determined in part by the market value of our common shares, which is subject to change) are held for the production of, or produce, passive income, we would be characterized as a passive foreign investment company, or PFIC, for U.S. federal income tax purposes. Based on the price of our common shares and the composition of our gross assets, we believe that we may be deemed a PFIC for the taxable year ended December 31, 2017, and we could be a PFIC for the calendar year ending December 31, 2018 or in subsequent years. Based on the composition of our gross income and gross assets, we do not believe that we were a PFIC for the taxable years ended December 31, 2016 and 2015. Our status as a PFIC is a fact-intensive determination made on an annual basis, and we cannot provide any assurance regarding our PFIC status for the taxable year ending December 31, 2018 or for future taxable years.

If we are a PFIC for any year, U.S. holders of our common shares may suffer adverse tax consequences. Gains realized by non-corporate U.S. holders on the sale of our common shares would be taxed as ordinary income, rather than as capital gain, and the preferential tax rate applicable to dividends received on our common shares would be lost. Interest charges would also be added to taxes on gains and dividends realized by all U.S. holders. U.S. holders should consult their own tax advisors with respect to their particular circumstances.

A U.S. holder may avoid these adverse tax consequences by timely making a qualified electing fund election. For each year that we would meet the PFIC gross income or asset test, an electing U.S. holder would be required to include in gross income its pro rata share of our net ordinary income and net capital gains, if any. A U.S. holder may make a qualified electing fund election only if we commit to provide U.S. holders with their pro rata share of our net ordinary income and net capital gains. We will provide upon request, our U.S. holders with the information that is necessary in order for them to make a qualified electing fund election and to report their common shares of ordinary earnings and net capital gains for each year for which we may be a PFIC. U.S. holders should consult their own tax advisors with respect to making this election and the related reporting requirements.

A U.S. holder may also mitigate the adverse tax consequences by timely making a mark-to-market election. Generally, for each year that we meet the PFIC gross income or asset test, an electing U.S. holder would include in gross income the increase in the value of its common shares during each of its taxable years and deduct from gross income the decrease in the value of such shares during each of its taxable years. A mark-to-market election may be made and maintained only if our common shares are regularly traded on a qualified exchange, including The Nasdaq Global Market, or Nasdaq. Whether our common shares are regularly traded on a qualified exchange is an annual determination based on facts that, in part, are beyond our control. Accordingly, a U.S. holder might not be eligible to make a mark-to-market election to mitigate the adverse tax consequences if we are characterized as a PFIC. U.S. holders should consult their own tax advisors with respect to the possibility of making this election. In addition, our PFIC status may deter certain U.S. investors from purchasing our common shares, which could have an adverse impact on the market price of our common shares.

We may become subject to income tax in jurisdictions in which we are organized or operate, which would reduce our future earnings.

There is a risk that we may become subject to income tax in jurisdictions outside of Canada and the United States, if under the laws of any such jurisdiction, we are considered to be carrying on a trade or business there or earn income that is considered to be sourced there and we do not qualify for an exemption. In jurisdictions where we do not believe we are subject to tax, we can provide no certainty that tax authorities in those jurisdictions will not subject one or more tax years to examination. Tax examinations are often complex as tax authorities may disagree with the treatment

of items reported by us, the result of which could have a material adverse effect on our operating results and financial condition.

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

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

- disruption in our relationships with collaborators or suppliers as a result of such a transaction;
- unanticipated liabilities related to acquired companies;
- difficulties integrating acquired personnel, technologies and operations into our existing business;

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

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

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

Risks Related to Development, Clinical Testing and Regulatory Approval of Our Product Candidates

The regulatory approval processes of the FDA, EMA and regulators in other jurisdictions are lengthy, time-consuming and inherently unpredictable. If we, or our collaborators, are unable to obtain timely regulatory approval for our product candidates, our business will be substantially harmed.

The regulatory approval process is expensive and the time required to obtain approval from the FDA, EMA or other regulatory authorities in other jurisdictions to sell any product is uncertain and may take years. Whether regulatory approval will be granted is unpredictable and depends upon numerous factors, including the substantial discretion of the regulatory authorities. Approval policies, regulations, or the type and amount of pre-clinical and clinical data necessary to gain approval may change during the course of a product candidate's clinical development and may vary among jurisdictions. It is possible that none of our existing product candidates or any of our future product candidates will ever obtain regulatory approval, even if we expend substantial time and resources seeking such approval.

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

- the FDA, EMA or other regulatory authorities may disagree with the design or implementation of our or our collaborators' clinical trials;
- we or our collaborators may be unable to demonstrate to the satisfaction of the FDA, EMA or other regulatory authorities that a product candidate is safe and effective for its proposed indication;
- the results of clinical trials may not meet the level of statistical significance required by the FDA, EMA or other regulatory authorities for approval;
- we, or our collaborators, may be unable to demonstrate that a product candidate's clinical and other benefits outweigh its safety risks;
- the FDA, EMA or other regulatory authorities may disagree with our or our collaborators' interpretation of data from pre-clinical studies or clinical trials;
- the data collected from clinical trials of our product candidates may not be sufficient to support the submission of a New Drug Application, or NDA, or other submission or to obtain regulatory approval in the U.S. or elsewhere;
- the FDA, EMA or other regulatory authorities may fail to approve the manufacturing processes or facilities of third-party manufacturers with which we or our collaborators contract for clinical and commercial supplies; and
- the approval policies or regulations of the FDA, EMA or other regulatory authorities outside of the U.S. may significantly change in a manner rendering our or our collaborators' clinical data insufficient for approval.

Even if we, or our collaborators, obtain approval for a particular product, regulatory authorities may grant approval contingent on the performance of costly post-approval clinical trials, or may approve a product with a label that does not include the labeling claims necessary or desirable for the successful commercialization of that product.

Clinical drug development involves a lengthy and expensive process with uncertain timelines and uncertain outcomes. If clinical trials are prolonged or delayed, we, or our collaborators, may be unable to commercialize our product candidates on a timely basis.

Clinical testing of product candidates is expensive and, depending on the stage of development, can take a substantial period of time to complete. Clinical trial outcomes are inherently uncertain, and failure can occur at any time during the clinical development process.

Clinical trials can be halted or delayed for a variety of reasons, including those related to:

- side effects or adverse events in study participants presenting an unacceptable safety risk;
- inability to reach agreement with prospective contract research organizations, or CROs, and clinical trial sites, or the breach of such agreements;
- failure of third-party contractors, such as CROs, or investigators to comply with regulatory requirements;
- delay or failure in obtaining the necessary approvals from regulators or institutional review boards, or IRBs, in order to commence a clinical trial at a prospective trial site, or their suspension or termination of a clinical trial once commenced;
- a requirement to undertake and complete additional pre-clinical studies to generate data required to support the continued clinical development of a product candidate or submission of an NDA;
- inability to enroll sufficient patients to complete a protocol, particularly in orphan diseases;
- difficulty in having patients complete a trial or return for post-treatment follow-up;
    - clinical sites deviating from trial protocol or dropping out of a trial;
- problems with drug product or drug substance storage and distribution;
- our inability to add new or additional clinical trial sites;
- our inability to manufacture, or obtain from third parties, adequate supply of drug substance or drug product sufficient to complete our pre-clinical studies and clinical trials; and
- governmental or regulatory delays and changes in regulatory requirements, policy and guidelines.

The results of any Phase 3 or other pivotal clinical trial may not be adequate to support marketing approval. These clinical trials are lengthy and, with respect to non-orphan indications, usually involve many hundreds to thousands of patients. In addition, if the FDA, EMA or another applicable regulator disagrees with our or our collaborator's choice of the key testing criterion, or primary endpoint, or the results for the primary endpoint are not robust or significant relative to the control group of patients not receiving the experimental therapy, such regulator may refuse to approve our product candidate in the region in which it has jurisdiction. The FDA, EMA or other applicable non-U.S. regulators also may require additional clinical trials as a condition for approving any of these product candidates.

We could also encounter delays if a clinical trial is suspended or terminated by us, by our collaborators, by the IRBs of the institutions in which such trial is being conducted, by any Data Safety Monitoring Board for such trial, or by the FDA, EMA or other regulatory authorities. Such authorities may impose such a suspension or termination due to a number of factors, including failure to conduct the clinical trial in accordance with regulatory requirements or our clinical protocols, inspection of the clinical trial operations or trial site by the FDA, EMA or other regulatory authorities resulting in the imposition of a clinical hold, product candidate manufacturing problems, unforeseen safety issues or adverse side effects, failure to demonstrate a benefit from using a drug, changes in governmental regulations or administrative actions or lack of adequate funding to continue the clinical trial. In addition, delays can occur due to safety concerns arising from trials or other clinical data regarding another company's product candidate in the same

compound class as one of ours.

If we or our collaborators experience delays in the completion of, or termination of, any clinical trial of one of our product candidates, the commercial prospects of the product candidate will be harmed, could shorten the period during which we may have the exclusive right to commercialize our products under patent protection and our or our collaborators' ability to commence product sales and generate product revenue from the product will be delayed. In addition, any delays in completing our clinical trials will increase our costs and slow down our product candidate development and approval process. Any of these occurrences may harm our business, financial condition and prospects significantly. In addition, many of the factors that cause, or lead to, a delay in the commencement or completion of clinical trials may also ultimately lead to the denial of regulatory approval of our product candidates.

Our product candidates – including XEN1101 and XEN901 for the treatment of epilepsy– target novel molecular mechanisms. Regulatory authorities may require more extensive studies of the long-term effects of such product candidates for regulatory approval, which could delay development of our product candidates or our future product candidates based on novel mechanisms.

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

Before obtaining regulatory approvals for the commercial sale of our products, we must demonstrate through lengthy, complex and expensive pre-clinical testing and clinical trials that the product candidate is both safe and effective for use in each target indication. Clinical trials often fail to demonstrate safety and efficacy of the product candidate studied for the target indication. Most product candidates that commence clinical trials are never approved as products.

In the case of some of our product candidates, we are seeking to develop treatments for diseases for which there is relatively limited clinical experience, and our clinical trials may use novel end points and measurement methodologies or subjective patient feedback, which adds a layer of complexity to our clinical trials and may delay regulatory approval. In addition, our focus on orphan and niche markets may cause us to select target indications that are in more challenging therapeutic areas. Related to our collaboration with Genentech, clinical trials for pain are inherently difficult to conduct. The primary measure of pain is based on subjective patient feedback, which can be influenced by factors outside of our control and can vary widely from day to day for a particular patient, from patient to patient, and from site to site within a clinical study. The placebo effect also tends to have a more significant impact in pain trials.

If our product candidates are not shown to be both safe and effective in clinical trials, we will not be able to obtain regulatory approval or commercialize these product candidates and products. In such case, we would need to develop other compounds and conduct associated pre-clinical testing and clinical trials, as well as potentially seek additional financing, all of which would have a material adverse effect on our business, growth prospects, operating results, financial condition and results of operations.

We may find it difficult to enroll patients in our clinical studies, including for orphan or niche indications, which could delay or prevent clinical studies of our product candidates.

We may not be able to identify, recruit and enroll a sufficient number of patients, or those with required or desired characteristics to achieve diversity in a study, to complete our clinical studies in a timely manner. Patient enrollment for clinical trials for orphan and niche indications and for more prevalent conditions is affected by factors including:

- severity of the disease under investigation;
- design of the study protocol;
- size of the patient population;
- eligibility criteria for the study in question;

- perceived risks and benefits of the product candidate under study;
- proximity and availability of clinical study sites for prospective patients;
- availability of competing therapies and clinical studies;
- efforts to facilitate timely enrollment in clinical studies; and
- patient referral practices of physicians.

The limited patient populations in orphan and niche indications, such as KCNQ2-EE, EIEE13, and other early infantile epileptic encephalopathies, or EIEEs, present significant recruitment challenges for clinical trials and a full understanding of the size of these populations is still relatively unknown. Many of these patients may not be suitable or available for clinical trials. This means that we or our collaborators generally will have to run multi-site and potentially multi-national trials, which can be expensive and require close coordination and supervision. If we experience delays in completing our clinical trials, such delays could result in increased costs, delays in advancing our product development, delays in testing the effectiveness of our product candidates or termination of the clinical studies altogether.

If we fail to obtain or maintain orphan drug designation or other regulatory exclusivity for some of our product candidates, our competitive position would be harmed.

A product candidate that receives orphan drug designation can benefit from a streamlined regulatory process as well as potential commercial benefits following approval. Currently, this designation provides market exclusivity in the U.S. and the EU for seven years and ten years, respectively, if a product is the first such product approved for such orphan indication. This market exclusivity does not, however, pertain to indications other than those for which the drug was specifically designated in the approval, nor does it prevent other types of drugs from receiving orphan designations or approvals in these same indications. Further, even after an orphan drug is approved, the FDA can subsequently approve a drug with similar chemical structure for the same condition if the FDA concludes that the new drug is clinically superior to the orphan product or a market shortage occurs.

In the EU, orphan exclusivity may be reduced to six years if the drug no longer satisfies the original designation criteria or can be lost altogether if the marketing authorization holder consents to a second orphan drug application or cannot supply enough drug, or when a second applicant demonstrates its drug is “clinically superior” to the original orphan drug. XEN007, a drug we are evaluating for the potential treatment of hemiplegic migraine, has received orphan drug designation from the FDA. We have also received orphan drug designation from the FDA for XEN496, a drug we are evaluating for the treatment of KCNQ2-EE. If we seek orphan drug designations for other indications or in other jurisdictions, we may fail to receive such orphan drug designations and, even if we succeed, such orphan drug designations may fail to result in or maintain orphan drug exclusivity upon approval, which would harm our competitive position.

Results of earlier clinical trials may not be predictive of the results of later-stage clinical trials.

The results of pre-clinical studies and early clinical trials of our product candidates may not be predictive of the results of later-stage clinical trials. Interpretation of results from early, usually smaller, studies that suggest a clinically meaningful response in some patients, requires caution. Results from later stages of clinical trials enrolling more patients may fail to show the desired safety and efficacy results or otherwise fail to be consistent with the results of earlier trials of the same product candidate. Later clinical trial results may not replicate earlier clinical trials for a variety of reasons, including differences in trial design, different trial endpoints (or lack of trial endpoints in exploratory studies), patient population, number of patients, patient selection criteria, trial duration, drug dosage and formulation and lack of statistical power in the earlier studies. These uncertainties are enhanced where the diseases under study lack established clinical endpoints and validated measures of efficacy, as is often the case with orphan diseases for which no drugs have been developed previously.

Changes in methods of product candidate manufacturing or formulation may result in additional costs or delay.

As product candidates are developed through pre-clinical to late stage clinical trials towards approval and commercialization, it is common that various aspects of the development program, such as manufacturing methods and formulation, are altered along the way in an effort to optimize processes and results. Such changes carry the risk

that they will not achieve these intended objectives. Any of these changes could cause our product candidates to perform differently and affect the results of planned clinical trials or other future clinical trials conducted with the altered materials. This could delay completion of clinical trials, require the conduct of bridging clinical trials or the repetition of one or more clinical trials, increase clinical trial costs, delay approval of our product candidates and/or jeopardize our or our collaborators' ability to commence product sales and generate revenue.

Even if we obtain and maintain approval for our product candidates from one jurisdiction, we may never obtain approval for our product candidates in other jurisdictions, which would limit our market opportunities and adversely affect our business.

Sales of our approved products, if any, will be subject to the regulatory requirements governing marketing approval in the countries in which we obtain regulatory approval, and we plan to seek regulatory approval to commercialize our product candidates in North America, the EU and in additional foreign countries. Clinical trials conducted in one country may not be accepted by regulatory authorities in other countries and regulatory approval in one country does not ensure approval in any other country, while a failure or delay in obtaining regulatory approval in one country may have a negative effect on the regulatory approval process in others. For example, approval in the U.S. by the FDA does not ensure approval by regulatory authorities in other countries or jurisdictions, and approval by one foreign regulatory authority does not ensure approval by the FDA or regulatory authorities in other countries. Approval procedures vary among jurisdictions and can be lengthy and expensive, and involve requirements and administrative review periods different from, and greater than, those in the U.S., including additional pre-clinical studies or clinical trials. Even if our product candidates are approved, regulatory approval for any product may be withdrawn by the regulatory authorities in a particular jurisdiction.

Even if a product is approved, the FDA, the EMA or another applicable regulatory authority, as the case may be, may limit the indications for which the product may be marketed, require extensive warnings on the product labeling or require expensive and time-consuming clinical trials or reporting as conditions of approval. In many countries outside the U.S., a product candidate must be approved for reimbursement before it can be approved for sale in that country. In some cases, the price that we intend to charge for a product is also subject to approval.

Regulatory authorities in countries outside of the U.S. and the EU also have their own requirements for approval of product candidates with which we must comply prior to marketing in those countries. Obtaining foreign regulatory approvals and compliance with such foreign regulatory requirements could result in significant delays, difficulties and costs for us and could delay or prevent the introduction of our current and any future products, in certain countries.

If we fail to receive applicable marketing approvals or comply with the regulatory requirements in international markets, our target market will be reduced and our ability to realize the full market potential of our product candidates will be harmed and our business will be adversely affected.

We work with outside scientists and their institutions in executing our business strategy of developing product candidates. These scientists may have other commitments or conflicts of interest, which could limit our access to their expertise and harm our ability to develop viable product candidates.

We work with scientific advisors and collaborators at academic institutions and other research institutions. These scientists and collaborators are not our employees; rather, they serve as either independent contractors or the primary investigators under research collaboration agreements that we have with their sponsoring academic or research institution. Such scientists and collaborators may have other commitments that would limit their availability to us. Although our scientific advisors generally agree not to do competing work, if an actual or potential conflict of interest between their work for us and their work for another entity arises, we may lose their services. It is also possible that some of our valuable proprietary knowledge may become publicly known through these scientific advisors if they breach their confidentiality agreements with us, which would cause competitive harm to our business.

Risks Related to Commercialization

If, in the future, we are unable to establish our own sales, marketing and distribution capabilities or enter into licensing or collaboration agreements for these purposes, we may not be successful in independently commercializing

any future products.

We do not have a sales or marketing infrastructure and, as a company, have no sales, marketing or distribution experience. Our strategy involves, in part, building our own commercial infrastructure to selectively commercialize future products in niche or orphan indications. Where we believe such involvement would advance our business, we seek to retain the right to participate in the future development and commercialization of such products.

To develop internal sales, distribution and marketing capabilities, we will have to invest significant amounts of financial and management resources, some of which will need to be committed prior to any confirmation that any of our proprietary product candidates will be approved. For any future products for which we decide to perform sales, marketing and distribution functions ourselves, we could face a number of additional risks, including:

- our inability to recruit and retain adequate numbers of qualified sales and marketing personnel or develop alternative sales channels;
- the inability of sales personnel to obtain access to physicians or an inadequate numbers of physicians to prescribe any future products;
- the lack of complementary products to be offered by sales personnel, which may put us at a competitive disadvantage relative to companies with more extensive product lines; and
- unforeseen costs and expenses associated with creating and maintaining an independent sales and marketing organization.

Where and when appropriate, we may elect to utilize contract sales forces or distribution partners to assist in the commercialization of our product candidates. If we enter into arrangements with third parties to perform sales, marketing and distribution services for a product, the resulting revenue or the profitability from this revenue to us is likely to be lower than if we had sold, marketed and distributed that product ourselves. In addition, we may not be successful in entering into arrangements with third parties to sell, market, and distribute our product candidates or may be unable to do so on terms that are favorable to us. We likely will have little control over such third parties, and any of these third parties may fail to devote the necessary resources and attention to sell, market, and distribute our current or any future products effectively.

Even if we receive regulatory approval to commercialize any of the product candidates that we develop independently, we will be subject to ongoing regulatory obligations and continued regulatory review, which may result in significant additional expense.

Any regulatory approvals that we receive for our product candidates we commercialize will be subject to limitations on the approved indicated uses for which the product may be marketed or subject to certain conditions of approval and may contain requirements for potentially costly post-approval trials, including Phase 4 clinical trials, and surveillance to monitor the safety and efficacy of the marketed product.

For any approved product, we will need to ensure continued compliance with extensive regulations and requirements regarding the manufacturing processes, labeling, packaging, distribution, adverse event reporting, storage, advertising, promotion and recordkeeping for the product. These requirements include submissions of safety and other post-approval information and reports, as well as continued compliance with current good manufacturing practices, or cGMP, and current good clinical practices, or cGCP, for any clinical trials that we or our collaborators conduct post-approval. Later discovery of previously unknown problems with a product, including adverse events of unanticipated severity or frequency, or with third-party manufacturers or manufacturing processes, or failure to comply with regulatory requirements, may result in, among other things:

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

Occurrence of any of the foregoing could have a material and adverse effect on our business and results of operations.

If the market opportunities for any product that we or our collaborators develop are smaller than we believe they are, our revenue may be adversely affected and our business may suffer.

We intend to focus some of our independent product development on treatments for rare diseases. Our projections of both the number of people who have these diseases, as well as the subset of people with these diseases who have the potential to benefit from treatment with our product candidates, are based on estimates. Currently, most reported estimates of the prevalence of these diseases are based on studies of small subsets of the population in specific geographic areas, which are then extrapolated to estimate the prevalence of the diseases in the U.S. or elsewhere. If the prevalence of such diseases is smaller than we have projected, then, even if our products are approved, we may not be able to successfully commercialize them.

Even if we or our collaborators receive approval to commercialize our products, unfavorable pricing regulations and challenging third-party coverage and reimbursement practices could harm our business.

Our or any collaborators' ability to commercialize any products successfully will depend, in part, on the extent to which coverage and reimbursement for these products and related treatments will be available from government healthcare programs, private health insurers, managed care plans, and other organizations. Government authorities and third-party payers, such as private health insurers and health maintenance organizations, decide which medications they will pay for and establish reimbursement levels. A primary trend in the U.S. healthcare industry is cost containment. Government authorities and third-party payers have attempted to control costs by limiting coverage and the amount of reimbursement for particular medications. Increasingly, third-party payers are requiring that drug companies provide them with predetermined discounts from list prices and are challenging the prices charged for medical products. We cannot be sure that coverage and reimbursement will be available for any product that we or any collaborator commercialize and, if reimbursement is available, the level of reimbursement. In addition, coverage and reimbursement may impact the demand for, or the price of, any product candidate for which we or a collaborator obtains marketing approval. If coverage and reimbursement are not available or reimbursement is available only to limited levels, we or our collaborators may not be able to successfully commercialize any product candidate for which marketing approval is obtained.

There may be significant delays in obtaining coverage and reimbursement for newly approved drugs, and coverage may be more limited than the purposes for which the drug is approved by the FDA, EMA or other regulatory authorities. Moreover, eligibility for coverage and reimbursement does not imply that a drug will be paid for in all cases or at a rate that covers our costs, including research, development, manufacture, sale and distribution expenses. Interim reimbursement levels for new drugs, if applicable, may also be insufficient to cover our and any collaborator's costs and may not be made permanent. Reimbursement rates may vary according to the use of the drug and the clinical setting in which it is used, may be based on reimbursement levels already set for lower cost drugs and may be incorporated into existing payments for other services. Net prices for drugs may be reduced by mandatory discounts or rebates required by government healthcare programs or private payers and by any future relaxation of laws that presently restrict imports of drugs from countries where they may be sold at lower prices than in the U.S. Third-party payers often rely upon Medicare coverage policy and payment limitations in setting their own reimbursement policies. Our or any collaborator's inability to promptly obtain coverage and profitable payment rates from both government-funded and private payers for any approved products that we or our collaborators develop could have a material adverse effect on our operating results, our ability to raise capital needed to commercialize products and our overall financial condition.

Our target patient populations in orphan and niche indications, such as KCNQ2-EE and EIEE13, are relatively small. In order for therapies that are designed to treat smaller patient populations to be commercially viable, the reimbursement for such therapies needs to be higher, on a relative basis, to account for the lack of volume. Accordingly, we will need to implement a coverage and reimbursement strategy for any approved product that

accounts for the smaller potential market size. If we are unable to establish or sustain coverage and adequate reimbursement for our current and any future products from third party payers or the government, the adoption of those products and sales revenue will be adversely affected, which, in turn, could adversely affect the ability to market or sell those products.

Recently enacted and future legislation may increase the difficulty and cost for us to commercialize any products that we or our collaborators develop and affect the prices we may obtain.

The U.S. and some foreign jurisdictions are considering or have enacted a number of legislative and regulatory proposals to change the healthcare system in ways that could affect our ability to sell any of our products profitably, once such products are approved for sale. Among policy makers and payers in the U.S. and elsewhere, there is significant interest in promoting changes in healthcare systems with the stated goals of containing healthcare costs, improving quality and/or expanding access. In the U.S., the pharmaceutical industry has been a particular focus of these efforts and has been significantly affected by major legislative initiatives.

For example, in 2010, the Patient Protection and Affordable Care Act, as amended by the Health Care and Education Reconciliation Act of 2010, collectively, the PPACA, was enacted and includes measures that have significantly changed, or will significantly change, the way healthcare is financed by both governmental and private insurers. The Trump administration and Congress, through legislation, executive orders and other measures, has taken action to repeal and replace certain provisions of the PPACA. The impact of any such changes on us and the pharmaceutical industry as a whole is currently unknown. In addition, there has been heightened governmental scrutiny over the manner in which manufacturers set prices for their marketed products, which has resulted in several Congressional inquiries and proposed and enacted federal and state legislation designed to, among other things, bring more transparency to product pricing, review the relationship between pricing and manufacturer patient programs, and reform government program reimbursement methodologies for pharmaceutical products. Congress and the Trump administration have each indicated that it will continue to seek new legislative and/or administrative measures to control drug costs. These and other health reform measures that are implemented may have a material adverse effect on our result of operations.

In the EU, similar political, economic and regulatory developments may affect our ability to profitably commercialize our current or any future products. In addition to continuing pressure on prices and cost containment measures, legislative developments at the EU or member state level may result in significant additional requirements or obstacles that may increase our operating costs. In international markets, reimbursement and healthcare payment systems vary significantly by country, and many countries have instituted price ceilings on specific products and therapies. Our future products, if any, might not be considered medically reasonable and necessary for a specific indication or cost-effective by third-party payers. An adequate level of reimbursement might not be available for such products and third-party payers' reimbursement policies might adversely affect our or our collaborators' ability to sell any future products profitably.

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 U.S. Congress of the FDA's approval process may significantly delay or prevent marketing approval, as well as subject us to more stringent product labeling and post-approval testing and other requirements.

We cannot predict the likelihood, nature or extent of government regulation that may arise from future legislation or administrative action, either in the U.S. or abroad. If we or our collaborators are slow or unable to adapt to changes in existing requirements or the adoption of new requirements or policies, or if we or our collaborators are not able to maintain regulatory compliance, our product candidates may lose any marketing approval that may have been obtained and we may not achieve or sustain profitability, which would adversely affect our business.

Foreign governments tend to impose strict price controls, which may adversely affect our future profitability.

In most foreign countries, particularly those in the EU, prescription drug pricing and/or reimbursement is subject to governmental control. In those countries that impose price controls, 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 candidate to other available therapies.

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, and negatively impact the revenue that is generated from the sale of the product in that country. If reimbursement of such products is unavailable or limited in scope or amount, or if pricing is set at unsatisfactory levels, or if there is competition from lower priced cross-border sales, our profitability will be negatively affected.

Risks Related to Our Dependence on Third Parties

Our prospects for successful development and commercialization of our partnered products and product candidates are dependent upon the research, development and marketing efforts of our collaborators.

We have no control over the resources, time and effort that our collaborators may devote to our programs and limited access to information regarding or resulting from such programs. We are dependent on our collaborators, including Genentech and Merck, to fund and conduct the research and any clinical development of product candidates under our collaboration with each of them, and for the successful regulatory approval, marketing and commercialization of one or more of such products or product candidates. Such success will be subject to significant uncertainty.

Our ability to recognize revenue from successful collaborations may be impaired by multiple factors including:

- a collaborator may shift its priorities and resources away from our programs due to a change in business strategies, or a merger, acquisition, sale or downsizing of its company or business unit;
- a collaborator may cease development in therapeutic areas which are the subject of our strategic alliances;
- a collaborator may change the success criteria for a particular program or product candidate thereby delaying or ceasing development of such program or candidate;
- significant delay in initiation of certain development activities by a collaborator will also delay payment of milestones tied to such activities, thereby impacting our ability to fund our own activities;
- a collaborator could develop a product that competes, either directly or indirectly, with our current or future products, if any;
- a collaborator with commercialization obligations may not commit sufficient financial or human resources to the marketing, distribution or sale of a product;
- a collaborator with manufacturing responsibilities may encounter regulatory, resource or quality issues and be unable to meet demand requirements;
- a collaborator may exercise its rights under the agreement to terminate our collaboration;
- dispute may arise between us and a collaborator concerning the research or development of a product candidate, commercialization of a product or payment of royalties or milestone payments, any of which could result in a delay in milestones, royalty payments or termination of a program and possibly resulting in costly litigation or arbitration which may divert management attention and resources;
- a collaborator may not adequately protect the intellectual property rights associated with a product or product candidate; and
- a collaborator may use our proprietary information or intellectual property in such a way as to invite litigation from a third party.

If our collaborators do not perform in the manner we expect or fulfill their responsibilities in a timely manner, or at all, the clinical development, regulatory approval and commercialization efforts could be delayed, terminated or be commercially unsuccessful. Conflicts between us and our collaborators may arise. In the event of termination of one or more of our collaboration agreements, it may become necessary for us to assume the responsibility of any terminated product or product candidates at our own expense or seek new collaborators. In that event, we would likely be required to limit the size and scope of one or more of our independent programs or increase our expenditures and seek additional funding which may not be available on acceptable terms or at all, and our business would be materially and adversely affected.

We may not be successful in establishing new collaborations or maintaining our existing alliances, which could adversely affect our ability to develop future product candidates and commercialize future products.

In the ordinary course, we engage with other biotechnology and pharmaceutical companies to discuss potential in-licensing, out-licensing, alliances and other strategic transactions. We may seek to enter into these types of transactions to enhance and accelerate the development of our future product candidates and the commercialization of any resulting products. We face significant competition in seeking appropriate collaborators and the negotiation process is time-consuming and complex. Moreover, we may not be successful in our efforts to establish other collaborations or other alternative arrangements for any future product candidates because our research and development pipeline may be insufficient, our product candidates may be deemed to be at too early of a stage of development for collaboration effort and/or third parties may view our product candidates as lacking the requisite potential to demonstrate safety and efficacy. Even if we are successful in our efforts to establish collaborations, the terms that we agree upon may not be favorable to us and we may not be able to maintain such collaborations if, for example, development or approval of a product candidate is delayed or sales of an approved product are disappointing.

If any of our existing collaboration agreements is terminated, or if we determine that entering into other product collaborations is in our best interest but we either fail to enter into, delay in entering into or fail to maintain such collaborations:

- the development of certain of our current or future product candidates may be terminated or delayed;
- our cash expenditures related to development of our product candidates would increase significantly and we may need to seek additional financing sooner than expected;
- we may be required to hire additional employees or otherwise develop expertise, such as clinical, regulatory, sales and marketing expertise, which we do not currently have;
- we will bear all of the risk related to the development of any such product candidates; and
- the competitiveness of any product that is commercialized could be reduced.

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

We do not currently own or operate any manufacturing facilities nor do we have significant in-house manufacturing experience or personnel. We rely on our collaborators to manufacture product candidates licensed to them or work with multiple third-party contract manufacturers to produce sufficient quantities of materials required for the manufacture of our product candidates for pre-clinical testing and clinical trials and intend to do so for the commercial manufacture of our products. If we are unable to arrange for such third-party manufacturing sources, or fail to do so on commercially reasonable terms, we may not be able to successfully produce sufficient supply of product candidate or we may be delayed in doing so. Such failure or substantial delay could materially harm our business.

Reliance on third-party manufacturers entails risks to which we would not be subject if we manufactured product candidates ourselves, including reliance on the third party for regulatory compliance and quality control and assurance, volume production, the possibility of breach of the manufacturing agreement by the third party because of factors beyond our control (including a failure to synthesize and manufacture our product candidates in accordance with our product specifications) and the possibility of termination or nonrenewal of the agreement by the third party at a time that is costly or damaging to us. In addition, the FDA, EMA and other regulatory authorities require that our product candidates be manufactured according to cGMP and similar foreign standards. Pharmaceutical manufacturers and their subcontractors are required to register their facilities and/or products manufactured at the time of submission of the marketing application and then annually thereafter with the FDA, EMA and other regulatory agencies. They are also subject to periodic unannounced inspections by the FDA, EMA and other regulatory agencies. Any subsequent

discovery of problems with a product, or a manufacturing or laboratory facility used by us or our collaborators, may result in restrictions on the product or on the manufacturing or laboratory facility, including product recall, suspension of manufacturing, product seizure or a voluntary withdrawal of the drug from the market. Any failure by our third-party manufacturers to comply with cGMP or any failure to deliver sufficient quantities of product candidates in a timely manner, could lead to a delay in, or failure to obtain, regulatory approval of any of our product candidates.

We rely on third parties to monitor, support, conduct, and/or oversee clinical trials of the product candidates that we are developing independently and, in some cases, to maintain regulatory files for those product candidates. We may not be able to obtain regulatory approval for our product candidates or commercialize any products that may result from our development efforts, if we are not able to maintain or secure agreements with such third parties on acceptable terms, if these third parties do not perform their services as required, or if these third parties fail to timely transfer any regulatory information held by them to us.

We rely on entities outside of our control, which may include academic institutions, CROs, hospitals, clinics and other third-party collaborators, to monitor, support, conduct and/or oversee pre-clinical and clinical studies of our current and future product candidates. As a result, we have less control over the timing and cost of these studies and the ability to recruit trial subjects than if we conducted these trials with our own personnel.

If we are unable to maintain or enter into agreements with these third parties on acceptable terms, or if any such engagement is terminated prematurely, we may be unable to enroll patients on a timely basis or otherwise conduct our trials in the manner we anticipate. In addition, there is no guarantee that these third parties will devote adequate time and resources to our studies or perform as required by our contract or in accordance with regulatory requirements, including maintenance of clinical trial information regarding our product candidates. If these third parties fail to meet expected deadlines, fail to transfer to us any regulatory information in a timely manner, fail to adhere to protocols or fail to act in accordance with regulatory requirements or our agreements with them, or if they otherwise perform in a substandard manner or in a way that compromises the quality or accuracy of their activities or the data they obtain, then clinical trials of our future product candidates may be extended or delayed with additional costs incurred, or our data may be rejected by the FDA, EMA or other regulatory agencies.

Ultimately, we are responsible for ensuring that each of our clinical trials is conducted in accordance with the applicable protocol, legal, regulatory and scientific standards, and our reliance on third parties does not relieve us of our regulatory responsibilities.

We and our CROs are required to comply with cGCP regulations and guidelines enforced by the FDA, the competent authorities of the member states of the European Economic Area and comparable foreign regulatory authorities for products in clinical development. Regulatory authorities enforce these cGCP regulations through periodic inspections of clinical trial sponsors, principal investigators and clinical trial sites. If we or any of our CROs fail to comply with applicable cGCP regulations, the clinical data generated in our clinical trials may be deemed unreliable and our submission of marketing applications may be delayed or the FDA, EMA or another regulatory authority may require us to perform additional clinical trials before approving our marketing applications. Upon inspection, the FDA, EMA or another regulatory authority could determine that any of our clinical trials fail or have failed to comply with applicable cGCP regulations. In addition, our clinical trials must be conducted with product produced under the cGMP regulations enforced by the FDA, EMA and other regulatory authorities, and our clinical trials may require a large number of test subjects. Our failure to comply with these regulations may require us to repeat clinical trials, which would delay the regulatory approval process and increase our costs. Moreover, our business may be implicated if any of our CROs violates federal or state fraud and abuse or false claims laws and regulations or healthcare privacy and security laws.

If any of our clinical trial sites terminates for any reason, we may experience the loss of follow-up information on patients enrolled in our ongoing clinical trials unless we are able to transfer the care of those patients to another qualified clinical trial site. Further, if our relationship with any of our CROs is terminated, we may be unable to enter into arrangements with alternative CROs on commercially reasonable terms, or at all.

Switching or adding CROs or other suppliers can involve substantial cost and require extensive management time and focus. In addition, there is a natural transition period when a new CRO or supplier commences work. As a result,

delays may occur, which can materially impact our ability to meet our desired clinical development timelines. If we are required to seek alternative supply arrangements, the resulting delays and potential inability to find a suitable replacement could materially and adversely impact our business.

Risks Related to Intellectual Property

We could be unsuccessful in obtaining or maintaining adequate patent protection for one or more of our products or product candidates.

Our commercial success will depend, in large part, on our ability to obtain and maintain patent and other intellectual property protection with respect to our product candidates. We evaluate our global patent portfolio in the ordinary course of business to enhance patent protection in areas of our strategic focus and in key markets for our potential products and abandon existing patents or patent applications related to terminated development programs or areas of low strategic importance. Patents might not be issued or granted with respect to our patent applications that are currently pending, and issued or granted patents might later be found to be invalid or unenforceable, be interpreted in a manner that does not adequately protect our current product or any future products, or fail to otherwise provide us with any competitive advantage. The patent position of biotechnology and pharmaceutical companies is generally uncertain because it involves complex legal and factual considerations. The standards applied by the U.S. Patent and Trademark Office, or USPTO, and foreign patent offices in granting patents are not always applied uniformly or predictably. For example, there is no uniform worldwide policy regarding patentable subject matter or the scope of claims allowable in biotechnology and pharmaceutical patents. Consequently, patents may not issue from our pending patent applications. As such, we do not know the degree of future protection that we will have on our proprietary products and technology, if any, and a failure to obtain adequate intellectual property protection with respect to our product candidates and proprietary technology could have a material adverse impact on our business.

Periodic maintenance fees, renewal fees, annuity fees and various other governmental fees on patents and/or applications will be due to be paid to the USPTO and various governmental patent agencies outside of the U.S. in several stages over the lifetime of the patents and/or applications. The USPTO and various non-US governmental patent agencies require compliance with a number of procedural, documentary, fee payment and other similar provisions during the patent application process. We employ reputable law firms and other professionals to help us comply with respect to the patents and patent applications that we own, and we rely upon our licensors or our other collaborators to effect compliance with respect to the patents and patent applications that we license. In many cases, an inadvertent lapse can be cured by payment of a late fee or by other means in accordance with the applicable rules. However, there are situations in which noncompliance can result in abandonment or lapse of the patent or patent application, resulting in partial or complete loss of patent rights in the relevant jurisdiction. In such an event, our competitors might be able to enter the market and this circumstance would have a material adverse effect on our business.

Our intellectual property rights will not necessarily provide us with competitive advantages.

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

The following examples are illustrative:

- others may be able to make compounds that are similar to our product candidates but that are not covered by the claims of the patents that we or our collaborators own or have exclusively licensed;
- others may independently develop similar or alternative technologies without infringing our intellectual property rights;
- issued patents that we own or have exclusively licensed may not provide us with any competitive advantages, or may be held invalid or unenforceable, as a result of legal challenges by our competitors;
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we may obtain patents for certain compounds many years before we obtain marketing approval for products containing such compounds, and because patents have a limited life, which may begin to run out prior to the commercial sale of the related product, the commercial value of our patents may be limited;

- our competitors might conduct research and development activities in countries where we do not have patent rights and then use the information learned from such activities to develop competitive products for sale in our major commercial markets;
- we may fail to develop additional proprietary technologies that are patentable;
- the laws of certain foreign countries may not protect our intellectual property rights to the same extent as the laws of the U.S., or we may fail to apply for or obtain adequate intellectual property protection in all the jurisdictions in which we operate; and

- the patents of others may have an adverse effect on our business, for example by preventing us from marketing one or more of our product candidates for one or more indications.

Any of the aforementioned threats to our competitive advantage could have a material adverse effect on our business.

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

Filing, prosecuting and defending patents on product candidates in all countries throughout the world would be prohibitively expensive, and our intellectual property rights in some countries outside the U.S. can be less extensive than those in the U.S. In addition, the laws of some foreign countries do not protect intellectual property rights to the same extent as federal and state laws in the U.S. Consequently, we may not be able to prevent third parties from practicing our inventions in all countries outside the U.S., or from selling or importing products made using our inventions in and into the U.S. or other jurisdictions. Competitors may use our technologies in jurisdictions where we have not obtained patent protection to develop their own products and further, may export otherwise infringing products to territories where we have patent protection, but enforcement is not as strong as that in the U.S. These products may compete with our current or future products, if any, and our patents or other intellectual property rights may not be effective or sufficient to prevent them from competing.

Many companies have encountered significant problems in protecting and defending intellectual property rights in foreign jurisdictions. The legal systems of certain countries, particularly certain developing countries, do not favor the enforcement of patents, trade secrets and other intellectual property protection, particularly those relating to biotechnology products, which could make it difficult for us to stop the infringement of our patents or marketing of competing products in violation of our proprietary rights generally. Proceedings to enforce our patent rights in foreign jurisdictions could result in substantial costs and divert our efforts and attention from other aspects of our business, could put our patents at risk of being invalidated or interpreted narrowly and our patent applications at risk of not issuing and could provoke third parties to assert claims against us. We may not prevail in any lawsuits that we initiate and the damages or other remedies awarded, if any, may not be commercially meaningful. Accordingly, our efforts to enforce our intellectual property rights around the world may be inadequate to obtain a significant commercial advantage from the intellectual property that we develop or license.

Our patents covering one or more of our products or product candidates could be found invalid or unenforceable if challenged.

Any of our intellectual property rights could be challenged or invalidated despite measures we take to obtain patent and other intellectual property protection with respect to our product candidates and proprietary technology. For example, if we were to initiate legal proceedings against a third party to enforce a patent covering one of our product candidates, the defendant could counterclaim that our patent is invalid and/or unenforceable. In patent litigation in the U.S. and in some other jurisdictions, defendant counterclaims alleging invalidity and/or unenforceability are commonplace. Grounds for a validity challenge could be an alleged failure to meet any of several statutory requirements, for example, lack of novelty, obviousness or non-enablement. Grounds for an unenforceability assertion could be an allegation that someone connected with prosecution of the patent withheld material information from the USPTO or the applicable foreign counterpart, or made a misleading statement, during prosecution. A litigant or the USPTO itself could challenge our patents on this basis even if we believe that we have conducted our patent prosecution in accordance with the duty of candor and in good faith. The outcome following such a challenge is unpredictable.

With respect to challenges to the validity of our patents, for example, there might be invalidating prior art, of which we and the patent examiner were unaware during prosecution. If a defendant were to prevail on a legal assertion of invalidity and/or unenforceability, we would lose at least part, and perhaps all, of the patent protection on a product candidate. Even if a defendant does not prevail on a legal assertion of invalidity and/or unenforceability, our patent

claims may be construed in a manner that would limit our ability to enforce such claims against the defendant and others. The cost of defending such a challenge, particularly in a foreign jurisdiction, and any resulting loss of patent protection could have a material adverse impact on one or more of our product candidates and our business.

Enforcing our intellectual property rights against third parties may also cause such third parties to file other counterclaims against us, which could be costly to defend, particularly in a foreign jurisdiction, and could require us to pay substantial damages, cease the sale of certain products or enter into a license agreement and pay royalties (which may not be possible on commercially reasonable terms or at all). Any efforts to enforce our intellectual property rights are also likely to be costly and may divert the efforts of our scientific and management personnel.

Patent protection and patent prosecution for some of our product candidates is dependent on, and the ability to assert patents and defend them against claims of invalidity is maintained by, third parties.

There have been and may be times in the future when certain patents that relate to our product candidates or any approved products are controlled by our licensees or licensors. Although we may, under such arrangements, have rights to consult with our collaborators on actions taken as well as back-up rights of prosecution and enforcement, we have in the past and may in the future relinquish rights to prosecute and maintain patents and patent applications within our portfolio as well as the ability to assert such patents against infringers. For example, currently some of the rights relating to the patent portfolio for novel Nav1.7 inhibitors are held by Genentech.

If any current or future licensee or licensor with rights to prosecute, assert or defend patents related to our product candidates fails to appropriately prosecute and maintain patent protection for patents covering any of our product candidates, or if patents covering any of our product candidates are asserted against infringers or defended against claims of invalidity or unenforceability in a manner which adversely affects such coverage, our ability to develop and commercialize any such product candidate may be adversely affected and we may not be able to prevent competitors from making, using and selling competing products.

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

Competitors may infringe our patents or the patents of our licensors. To counter infringement or unauthorized use, we may be required to file infringement claims, which can be expensive and time-consuming. In addition, in an infringement proceeding, a court may decide that a patent of ours or one of our licensors is not valid or is unenforceable or may refuse to stop the other party in such infringement proceeding from using the technology at issue on the grounds that our patents do not cover the technology in question. An adverse result in any litigation or defense proceedings could put one or more of our patents at risk of being invalidated, held unenforceable or interpreted narrowly, and could put any of our patent applications at risk of not yielding an issued patent.

Interference proceedings, derivation proceedings, entitlement proceedings, ex parte reexamination, inter partes reexamination, inter partes review, post-grant review, and opposition proceedings provoked by third parties or brought by the USPTO or any foreign patent authority may be used to challenge inventorship, ownership, claim scope, or validity of our patent applications. An unfavorable outcome could require us to cease using the related technology or to attempt to license rights to it from the prevailing party. Our business could be harmed if the prevailing party does not offer us a license on commercially reasonable terms, if any license is offered at all. Litigation or interference proceedings may fail and, even if successful, may result in substantial costs and distract our management and other employees.

We may not be able to prevent, alone or with our licensors, misappropriation of our trade secrets or confidential information, particularly in countries where the laws may not protect those rights as fully as in the U.S. Furthermore, because of the substantial amount of discovery required in connection with intellectual property litigation, there is a risk that some of our confidential information could be compromised by disclosure during this type of litigation. In addition, there could be public announcements of the results of hearings, motions or other interim proceedings or developments. If securities analysts or investors perceive these results to be negative, it could have a substantial adverse effect on the market price of our common shares.

Claims that our product candidates or the sale or use of our future products infringe the patent or other intellectual property rights of third parties could result in costly litigation or could require substantial time and money to resolve, even if litigation is avoided.

Our commercial success depends upon our ability to develop product candidates and commercialize products that may be approved in the future, using our proprietary technology without infringing the intellectual property rights of others. Our product or product candidates or any uses of them may now and in the future infringe third-party patents or other intellectual property rights. Third parties might allege that we or our collaborators are infringing their patent rights or that we have misappropriated their trade secrets, or that we are otherwise violating their intellectual property rights, whether with respect to the manner in which we have conducted our research or to the composition, use or manufacture of the compounds we have developed or are developing with our collaborators. Such third parties might resort to litigation against us or other parties we have agreed to indemnify, which litigation could be based on either existing intellectual property or intellectual property that arises in the future.

It is possible that relevant patents or patent applications held by third parties will cover our product candidates at the time of launch and we may also fail to identify, relevant patents or patent applications held by third parties that cover our product candidates. For example, applications filed before November 29, 2000, and certain applications filed after that date that will not be filed outside the U.S. remain confidential until patents issue. Other patent applications in the U.S. and several other jurisdictions are published approximately 18 months after the earliest filing for which priority is claimed, with such earliest filing date being commonly referred to as the priority date. Furthermore, publication of discoveries in the scientific or patent literature often lags behind actual discoveries. Therefore, we cannot be certain that we or our collaborators were the first to invent, or the first to file patent applications on, our product candidates or for their uses, or that our product candidates will not infringe patents that are currently issued or that are issued in the future. In the event that a third party has also filed a patent application covering one of our product candidates or a similar invention, we may have to participate in an adversarial proceeding, known as an interference, declared by the USPTO or its foreign counterpart to determine priority of invention. Additionally, pending patent applications and patents which have been published can, subject to certain limitations, be later amended in a manner that could cover our current or future products, if any, or their use.

Defending against claims of patent infringement, misappropriation of trade secrets or other violations of intellectual property rights could be costly and time consuming, regardless of the outcome. Thus, even if we were to ultimately prevail, or to settle at an early stage, such litigation could burden us with substantial unanticipated costs. In addition, litigation or threatened litigation could result in significant demands on the time and attention of our management team, distracting them from the pursuit of other company business. Claims that our product candidates or the sale or use of our future products infringe, misappropriate or otherwise violate third-party intellectual property rights could therefore have a material adverse impact on our business.

Most of our competitors are larger than we are and have substantially greater financial resources. They are, therefore, likely to be able to sustain the costs of complex intellectual property litigation longer than we could. In addition, the uncertainties associated with litigation could have a material adverse effect on our ability to raise the funds necessary to conduct our clinical trials, continue our internal research programs, in-license needed technology, or enter into strategic collaborations that would help us bring our product candidates to market.

In addition, any future intellectual property litigation, interference or other administrative proceedings will result in additional expense and distraction of our personnel. An adverse outcome in such litigation or proceedings may expose us or any future strategic collaborators to loss of our proprietary position, expose us to significant liabilities, or require us to seek licenses that may not be available on commercially acceptable terms, if at all, each of which could have a material adverse effect on our business.

Unfavorable outcomes in intellectual property litigation could limit our research and development activities and/or our ability to commercialize certain products.

If third parties successfully assert their intellectual property rights against us, we might be barred from using certain aspects of our technology or barred from developing and commercializing certain products. Prohibitions against using certain technologies, or prohibitions against commercializing certain products, could be imposed by a court or by a settlement agreement between us and a plaintiff. In addition, if we are unsuccessful in defending against allegations that we have infringed, misappropriated or otherwise violated patent or other intellectual property rights of others, we may be forced to pay substantial damage awards to the plaintiff. There is inevitable uncertainty in intellectual property litigation and we could lose, even if the case against us is weak or flawed. If litigation leads to an outcome unfavorable to us, we may be required to obtain a license from the intellectual property owner in order to continue our research and development programs or to market any resulting product. It is possible that the necessary license will not be available to us on commercially acceptable terms, or at all. Alternatively, we may be required to modify or redesign our current or future products, if any, in order to avoid infringing or otherwise violating third-party

intellectual property rights. This may not be technically or commercially feasible, may render those products less competitive, or may delay or prevent the entry of those products to the market. Any of the foregoing could limit our research and development activities, our ability to commercialize one or more product candidates, or both.

In order to avoid or settle potential claims with respect to any patent or other intellectual property rights of third parties, we may choose or be required to seek a license from a third party and be required to pay license fees or royalties or both, which could be substantial. These licenses may not be available on acceptable terms, or at all. Even if we or any future collaborators were able to obtain a license, the rights may be nonexclusive, which could result in our competitors gaining access to the same intellectual property. Ultimately, we could be prevented from commercializing a product, or be forced, by court order or otherwise, to cease some or all aspects of our business operations, if, as a result of actual or threatened patent or other intellectual property claims, we are unable to enter into licenses on acceptable terms. Further, we could be found liable for significant monetary damages as a result of claims of intellectual property infringement. In the future, we may receive offers to license and demands to license from third parties claiming that we are infringing their intellectual property or owe license fees and, even if such claims are without merit, we could fail to successfully avoid or settle such claims.

If Genentech, Merck or other collaborators license or otherwise acquire rights to intellectual property controlled by a third party in various circumstances, for example, where a product could not be legally developed or commercialized in a country without the third-party intellectual property right or, where it is decided that it would be useful to acquire such third-party right to develop or commercialize the product, they are eligible under our collaboration agreements to decrease payments payable to us on a product-by-product basis and, in certain cases, on a country-by-country basis. Any of the foregoing events could harm our business significantly.

If we breach any of the agreements under which we license the use, development and commercialization rights to our product candidates or technology from third parties, we could lose license rights that are important to our business.

Under our existing license and other agreements, including those associated with our XEN1101 program, we are subject to various obligations, including diligence obligations such as development and commercialization obligations, as well as potential milestone payments and other obligations. If we fail to comply with any of these obligations or otherwise breach our license agreements, our licensing partners may have the right to terminate the applicable license in whole or in part. Generally, the loss of any one of our current licenses, or any other license we may acquire in the future, could materially harm our business, prospects, financial condition and results of operations.

Confidentiality agreements with employees and third parties may not prevent unauthorized disclosure of trade secrets and other proprietary information, which would harm our competitive position.

In addition to patents, we rely on trade secrets, technical know-how and proprietary information concerning our discovery platform, business strategy and product candidates in order to protect our competitive position, which are difficult to protect. In the course of our research and development activities and our business activities, we often rely on confidentiality agreements to protect our proprietary information. Such confidentiality agreements are used, for example, when we talk to vendors of laboratory or clinical development services or potential strategic collaborators. In addition, each of our employees and consultants is required to sign a confidentiality agreement and invention assignment agreement upon joining our company. Our employees, consultants, contractors, business partners or outside scientific collaborators might intentionally or inadvertently disclose our trade secret information in breach of these confidentiality agreements or our trade secrets may otherwise be misappropriated. Our collaborators might also have rights to publish data and we might fail to apply for patent protection prior to such publication. It is possible that a competitor will make use of such information, and that our competitive position will be compromised. In addition, to the extent that our employees, consultants or contractors use intellectual property owned by others in their work for us, disputes may arise as to the rights in related or resulting know-how and inventions. Enforcing a claim that a third party illegally obtained and is using any of our trade secrets is expensive and time consuming, and the outcome is unpredictable. In addition, courts outside the U.S. sometimes are less willing than U.S. courts to protect trade secrets. Moreover, our competitors may independently develop equivalent knowledge, methods and know-how. If we cannot maintain the confidentiality of our proprietary technology and other confidential information, then our ability to obtain patent protection or to protect our trade secret information would be jeopardized, which would adversely affect our competitive position.

Recent court decisions could increase the uncertainties and costs surrounding the prosecution of our patent applications and the enforcement or defense of our issued patents.

On June 13, 2013, the U.S. Supreme Court decision in Association for Molecular Pathology v. Myriad Genetics, Inc., held that isolated DNA sequences are not patentable. In December 2014, the USPTO issued its Interim Guidance on Patent Subject Matter Eligibility, in which it extended Myriad's "marked difference" standard for patent subject matter eligibility to all potential natural products. This standard applies to patent claims that recite not only nucleic acids (such as DNA in Myriad), but also other subject matter that could be considered a natural product, such as peptides, proteins, extracts, organisms, antibodies, chemicals, and minerals. As a consequence of the Myriad decision and the

USPTO's Interim Guidance, if any of our future product candidates utilize isolated DNA, peptides, proteins or the like, we will not be able to obtain patents in the U.S. claiming such novel gene targets that we discover, which could limit our ability to prevent third parties from developing drugs directed against such targets.

If we do not obtain protection under the Hatch-Waxman Act and similar legislation outside of the U.S. by extending the patent terms for our product candidates, our business may be materially harmed.

Depending upon the timing, duration and specifics of FDA marketing approval of our product candidates, if any, one or more U.S. patents may be eligible for limited patent term restoration under the Hatch-Waxman Act. The Hatch-Waxman Act permits a patent restoration term of up to five years as compensation for patent term lost during clinical testing of the product and the subsequent FDA regulatory review process. However, we may not be granted an extension because of, for example, failing to apply within applicable deadlines, failing to apply prior to expiration of relevant patents or otherwise failing to satisfy applicable requirements. Moreover, the applicable time period or the scope of patent protection afforded could be less than we request.

If we are unable to obtain patent term extension or restoration or the term of any such extension is less than we request, the period during which we will have the right to exclusively market our product will be shortened and our competitors may obtain approval of competing products following our patent expiration, and our revenue could be reduced, possibly materially.

We have not registered our corporate name as a trademark in all of our potential markets, and failure to secure those registrations could adversely affect our business.

Our corporate name, Xenon, has not been trademarked in each market where we operate and plan to operate. Our trademark applications for our corporate name or the name of our products may not be allowed for registration, and our registered trademarks may not be maintained or enforced. During trademark registration proceedings, we may receive rejections, which we may be unable to overcome in our responses. Third parties may also attempt to register trademarks utilizing the Xenon name on their products, and we may not be successful in preventing such usage. In addition, in the USPTO and in comparable agencies in many foreign jurisdictions, third parties are given an opportunity to oppose pending trademark applications and to seek to cancel registered trademarks. Opposition or cancellation proceedings may be filed against our trademarks, and our trademarks may not survive such proceedings. If we do not secure registrations for our trademarks, we may encounter more difficulty in enforcing them against third parties than we otherwise would.

Intellectual property litigation may lead to unfavorable publicity that harms our reputation and causes the market price of our common shares to decline.

During the course of any intellectual property litigation, there could be public announcements of the initiation of the litigation as well as results of hearings, rulings on motions, and other interim proceedings in the litigation. If securities analysts or investors regard these announcements as negative, the perceived value of our existing products, programs or intellectual property could be diminished. Accordingly, the market price of our common shares may decline. Such announcements could also harm our reputation or the market for our future products, which could have a material adverse effect on our business.

Risks Related to Our Industry

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

We face an inherent risk of product liability as a result of the clinical testing of our product candidates, and we will face an even greater risk if we commercialize any product candidates. For example, we may be sued if any of our product candidates, including any that are developed in combination with other therapies, allegedly causes injury or is found to be otherwise unsuitable during product testing, manufacturing, marketing or sale. Any such product liability claims may include allegations of defects in manufacturing, defects in design, a failure to warn of dangers inherent in the product, negligence, strict liability and a breach of warranties. Claims could also be asserted under state consumer protection acts. If we cannot successfully defend ourselves against product liability claims, we may incur substantial liabilities or be required to limit commercialization of our product candidates. Even successful defense would require significant financial and management resources. There is also risk that third parties we have agreed to indemnify could incur liability. Regardless of the merits or eventual outcome, liability claims may result in:

- decreased demand for our product candidates or any resulting products;
- injury to our reputation;
- withdrawal of clinical trial participants;
- costs to defend the related litigation;

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

- a decline in the market price of our common shares.

We currently carry product liability insurance of $10,000,000 CAD per occurrence and $10,000,000 CAD aggregate limit. We believe our product liability insurance coverage is appropriate relative to our current clinical programs; however, we may not be able to maintain insurance coverage at a reasonable cost or in sufficient amounts to protect us against losses due to liability. If and when we obtain marketing approval for product candidates, we intend to expand our insurance coverage to include the sale of commercial products; however, we may then be unable to obtain product liability insurance on commercially reasonable terms or in adequate amounts. On occasion, large judgments have been awarded in class action lawsuits based on drugs or medical treatments that had unanticipated adverse effects. A successful product liability claim or series of claims brought against us could cause the market price of our common shares to decline and, if judgments exceed our insurance coverage, could adversely affect our future results of operations and business.

Patients with certain of the diseases targeted by our product candidates are often already in severe and advanced stages of disease and have both known and unknown significant pre-existing and potentially life-threatening conditions. During the course of treatment, patients may suffer adverse events, including death, for reasons that may be related to our product candidates. Such events could subject us to costly litigation, require us to pay substantial amounts of money to injured patients, delay, negatively impact or end our opportunity to receive or maintain regulatory approval to market those product candidates, or require us to suspend or abandon our commercialization efforts. Even in a circumstance in which we do not believe that an adverse event is related to our products, the investigation into the circumstance may be time-consuming or inconclusive. These investigations may interrupt our sales efforts, delay our regulatory approval process in other countries, or impact and limit the type of regulatory approvals our product candidates receive or maintain. As a result of these factors, a product liability claim, even if successfully defended, could have a material adverse effect on our business, financial condition or results of operations.

Our current and future operations in the U.S. and elsewhere will be subject, directly or indirectly, to applicable federal and state anti-kickback, fraud and abuse, false claims, transparency, health information privacy and security, and other healthcare laws and regulations, which could expose us to criminal sanctions, civil penalties, contractual damages, reputational harm, administrative burdens, and diminished profits and future earnings.

Healthcare providers, physicians and third-party payers in the U.S. and elsewhere play a primary role in the recommendation and prescription of any product candidates for which we obtain marketing approval. Our current arrangements with health care providers and our future arrangements with third-party payers and customers may expose us to broadly applicable fraud and abuse and other healthcare laws and regulations, including, without limitation, the federal Anti-Kickback Statute and the federal False Claims Act, that may constrain the business or financial arrangements and relationships through which we market, sell and distribute any products for which we obtain marketing approval. In addition, we may be subject to transparency laws and patient privacy regulation by the federal government and by the U.S. states and foreign jurisdictions in which we conduct our business. The applicable federal, state and foreign healthcare laws and regulations that may affect our ability to operate include the following:

- the federal Anti-Kickback Statute, which 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 either the referral of an individual for, or the purchase, order or recommendation of, any good or service for which payment may be made under federal and state healthcare programs such as Medicare and Medicaid;
- federal civil and criminal false claims laws and civil monetary penalty laws, including the federal False Claims Act, which impose criminal and civil penalties, including civil whistleblower or qui tam actions, against individuals or entities for knowingly presenting, or causing to be presented, to the federal government, including the Medicare and Medicaid programs, or other third-party payers claims for payment that are false or fraudulent or making a false statement to avoid, decrease or conceal an obligation to pay money to the federal government;
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HIPAA, which imposes criminal and civil liability for executing a scheme to defraud any healthcare benefit program and making false statements relating to healthcare matters;

- HIPAA, as amended by HITECH, and their respective implementing regulations, which impose obligations on covered healthcare providers, health plans, and healthcare clearinghouses, as well as their business associates that create, receive, maintain, or transmit individually identifiable health information for or on their behalf, with respect to safeguarding the privacy, security and transmission of individually identifiable health information;
- the federal Open Payments program; and

- analogous state and foreign laws and regulations, such as state anti-kickback and false claims laws, which may apply to sales or marketing arrangements and claims involving healthcare items or services reimbursed by non-governmental third-party payers, including private insurers; state and foreign laws that require pharmaceutical companies to comply with the pharmaceutical industry's voluntary compliance guidelines and the relevant compliance guidance promulgated by the federal government or otherwise restrict payments that may be made to healthcare providers; state and foreign laws that require drug manufacturers to report information related to payments to physicians and other healthcare providers or marketing expenditures; state and local laws requiring the registration of pharmaceutical sales representatives; and state and foreign laws governing the collection, export, privacy, use and security of biological materials and health information in certain circumstances, many of which differ from each other in significant ways and may not have the same effect, thus complicating compliance efforts.

Efforts to ensure that our business arrangements with third parties will comply with applicable healthcare laws and regulations may 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, including, without limitation, damages, fines, imprisonment, exclusion from participation in government healthcare programs, such as Medicare and Medicaid, integrity oversight and reporting obligations, and the curtailment or restructuring of our operations, which could have a material adverse effect on our business. If any of the physicians or other providers or entities with whom we expect to do business, including our collaborators, is found not to be in compliance with applicable laws, it may be subject to criminal, civil or administrative sanctions, including exclusions from participation in government healthcare programs, which could also materially affect our business.

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 the success of our business.

Our research and development activities involve the controlled use of potentially harmful biological materials as well as hazardous materials, chemicals, and various radioactive compounds typically employed in molecular and cellular biology. For example, we routinely use cells in culture and we employ small amounts of radioisotopes. We cannot completely eliminate the risk of accidental contamination or injury from the use, storage, handling, or disposal of these materials through our maintenance of up-to-date licensing and training programs. In the event of contamination or injury, we could be held liable for damages that result, and any liability could exceed our resources. We currently carry insurance covering certain claims arising from our use of these materials. However, if we are unable to maintain our insurance coverage at a reasonable cost and with adequate coverage, our insurance may not cover any liability that may arise. We are subject to U.S. and Canadian federal, provincial, and local laws and regulations governing the use, storage, handling, and disposal of these materials and specified waste products. Complying with regulations regarding the use of these materials could be costly, and if we fail to comply with these regulations, it could have a material adverse effect on our operations and profitability.

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

Our headquarters are located in Burnaby, British Columbia, Canada. We are vulnerable to natural disasters such as earthquakes that could disrupt our operations. If a natural disaster, power outage, fire or other event occurred that prevented us from using all or a significant portion of our headquarters, that damaged critical infrastructure, such as the manufacturing facilities of our third-party contract manufacturers, or that otherwise disrupted operations, it may be difficult or, in certain cases, impossible for us to continue our business for a substantial period of time. Although we carry insurance for earthquakes and other natural disasters, we may not carry sufficient business interruption insurance to compensate us for all losses that may occur. The disaster recovery and business continuity plans we have in place

may not be adequate in the event of a serious disaster or similar event. We may incur substantial expenses as a result of a natural disaster or earthquake, which could have a material adverse effect on our business. In addition, we may lose samples or other valuable data. The occurrence of any of the forgoing could have a material adverse effect on our business.

Risks Related to the Securities Markets and Ownership of Our Common Shares

The market price of our common shares may be volatile, and purchasers of our common shares could incur substantial losses.

The market price of our common shares has fluctuated in the past and is likely to be volatile in the future. As a result of this volatility, investors may experience losses on their investment in our common shares. The market price for our common shares may be influenced by many factors, including the following:

- announcements by us or our competitors of new products, product candidates or new uses for existing products, significant contracts, commercial relationships or capital commitments and the timing of these introductions or announcements;
- actions by any of our collaborators regarding our product candidates they are developing, including announcements regarding clinical or regulatory decisions or developments or our collaboration;
- unanticipated serious safety concerns related to the use of any of our products and product candidates;
- results from or delays of clinical trials of our product candidates;
- failure to obtain or delays in obtaining or maintaining product approvals or clearances from regulatory authorities;
- adverse regulatory or reimbursement announcements;
- announcements by us or our competitors of significant acquisitions, strategic collaborations, joint ventures or capital commitments;
- the results of our efforts to discover or develop additional product candidates;
- our dependence on third parties, including our collaborators, CROs, clinical trial sponsors and clinical investigators;
- regulatory or legal developments in Canada, the U.S. or other countries;
- developments or disputes concerning patent applications, issued patents or other proprietary rights;
- the recruitment or departure of key scientific or management personnel;
- our ability to successfully commercialize our future product candidates we develop independently, if approved;
- the level of expenses related to any of our product candidates or clinical development programs;
- actual or anticipated changes in estimates as to financial results, development timelines or recommendations by securities analysts;
- actual or anticipated quarterly variations in our financial results or those of our competitors;
- any change to the composition of the board of directors or key personnel;
- sales of common shares by us or our shareholders in the future, as well as the overall trading volume of our common shares;
- failure to comply with covenants or make required payments under loan agreements;
- changes in the structure of healthcare payment systems;
- commencement of, or our involvement in, litigation;

- general economic, industry and market conditions in the pharmaceutical and biotechnology sectors and other factors that may be unrelated to our operating performance or the operating performance of our competitors, including changes in market valuations of similar companies; and
- the other factors described in this "Risk Factors" section.

In addition, the stock market in general, and Nasdaq and the biopharmaceutical industry in particular, have from time to time experienced volatility that often has been unrelated to the operating performance of the underlying companies. These broad market and industry fluctuations may adversely affect the market price of our common shares, regardless of our operating performance. In several recent situations where the market price of a stock has been volatile, holders of that stock have instituted securities class action litigation against the company that issued the stock. If any of our shareholders were to bring a lawsuit against us, the defense and disposition of the lawsuit could be costly and divert the time and attention of our management and harm our operating results.

Future sales of our common shares in the public market could cause the market price of our common shares to fall.

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

In addition, in the future, we may issue additional common shares, preferred shares, or other equity or debt securities convertible into common shares in connection with a financing, acquisition, litigation settlement, employee arrangements or otherwise. Any such issuance, could result in substantial dilution to our existing shareholders and could cause the market price of our common shares to decline.

Provisions in our corporate charter documents and Canadian law could make an acquisition of us, which may be beneficial to our shareholders, more difficult and may prevent attempts by our shareholders to replace or remove our current management and/or limit the market price of our common shares.

Provisions in our articles and our by-laws, as well as certain provisions under the Canada Business Corporations Act, or CBCA, and applicable Canadian securities laws, may discourage, delay or prevent a merger, acquisition, tender offer or other change in control of us that shareholders may consider favorable, including transactions in which they might otherwise receive a premium for their common shares. These provisions could also limit the price that investors might be willing to pay in the future for our common shares, thereby depressing the market price of our common shares. 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 shareholders to replace or remove our current management by making it more difficult for shareholders to replace members of our board of directors. Among other things, these provisions include the following:

- shareholders cannot amend our articles unless such amendment is approved by shareholders holding at least two-thirds of the shares entitled to vote on such approval;
- shareholders must give advance notice to nominate directors or to submit proposals for consideration at shareholders' meetings; and
- applicable Canadian securities laws generally require, subject to certain exceptions, a tender offer to remain open for 105 days and that more than 50% of the outstanding securities not owned by the offeror be tendered before the offeror may take up the securities.

Any provision in our articles, by-laws, under the CBCA or under any applicable Canadian securities law that has the effect of delaying or deterring a change in control could limit the opportunity for our shareholders to receive a premium for their common shares, and could also affect the price that some investors are willing to pay for our common shares.

U.S. civil liabilities may not be enforceable against us, our directors, or our officers.

We are governed by the CBCA and our principal place of business is in Canada. Many of our directors and officers reside outside of the U.S., and all or a substantial portion of their assets as well as all or a substantial portion of our assets are located outside the U.S. As a result, it may be difficult for investors to effect service of process within the U.S. upon us and certain of our directors and officers or to enforce judgments obtained against us or such persons, in U.S. courts, in any action, including actions predicated upon the civil liability provisions of U.S. federal securities laws or any other laws of the U.S. Additionally, rights predicated solely upon civil liability provisions of U.S. federal securities laws or any other laws of the U.S. may not be enforceable in original actions, or actions to enforce judgments obtained in U.S. courts, brought in Canadian courts, including courts in the Province of British Columbia.

We are governed by the corporate and securities laws of Canada which in some cases have a different effect on shareholders than the corporate laws of Delaware, U.S. and U.S. securities laws.

We are governed by the CBCA and other relevant laws, which may affect the rights of shareholders differently than those of a company governed by the laws of a U.S. jurisdiction, and may, together with our charter documents, have the effect of delaying, deferring or discouraging another party from acquiring control of our company by means of a tender offer, a proxy contest or otherwise, or may affect the price an acquiring party would be willing to offer in such an instance. The material differences between the CBCA and Delaware General Corporation Law, or DGCL, that may have the greatest such effect include, but are not limited to, the following: (i) for material corporate transactions (such as mergers and amalgamations, other extraordinary corporate transactions or amendments to our articles) the CBCA generally requires a two-thirds majority vote by shareholders, whereas DGCL generally only requires a majority vote; and (ii) under the CBCA holders of 5% or more of our shares that carry the right to vote at a meeting of shareholders can requisition a special meeting of shareholders, whereas such right does not exist under the DGCL.

An active trading market for our common shares may not be maintained.

Our common shares are currently traded on Nasdaq, but we can provide no assurance that we will be able to maintain an active trading market on Nasdaq or any other exchange in the future. If an active market for our common shares is not maintained, it may be difficult for our shareholders to sell the common shares they have purchased without depressing the market price for the common shares or at all. Further, an inactive market may also impair our ability to raise capital by selling additional common shares and may impair our ability to enter into strategic collaborations or acquire companies or products by using our common shares as consideration.

We are an “emerging growth company,” and any decision on our part to comply only with certain reduced reporting and disclosure requirements applicable to emerging growth companies could make our common shares less attractive to investors.

We are an “emerging growth company,” as defined in the Jumpstart Our Business Startups Act of 2012, or the JOBS Act. For as long as we continue to be an “emerging growth company,” we may choose to take advantage of exemptions from various reporting requirements applicable to other public companies that are not “emerging growth companies,” including, but not limited to, not being required to have our independent registered public accounting firm audit our internal control over financial reporting under Section 404, reduced disclosure obligations regarding executive compensation in our periodic reports and proxy statements and exemptions from the requirements of holding a nonbinding advisory vote on executive compensation and shareholder approval of any golden parachute payments not previously approved. We could be an “emerging growth company” for up to five years following the completion of our initial public offering, although, if we have more than $1.07 billion in annual revenue, if the market value of our common shares held by non-affiliates exceeds $700 million as of June 30 of any year, or we issue more than $1.0 billion of non-convertible debt over a three-year period before the end of that five-year period, we would cease to

be an “emerging growth company” as of the following December 31. Investors could find our common shares less attractive if we choose to rely on these exemptions. If some investors find our common shares less attractive as a result of any choices to reduce future disclosure, there may be a less active trading market for our common shares and the market price of our common shares may be more volatile.

As an “emerging growth company,” the JOBS Act allows us to delay adoption of new or revised accounting pronouncements applicable to public companies until such pronouncements are made applicable to private companies. However, we previously decided to “opt out” of such extended transition period, and as a result, we will comply with new or revised accounting standards on the relevant dates on which adoption of such standards is required for non-emerging growth companies. Section 107 of the JOBS Act provides that our decision to opt out of the extended transition period for complying with new or revised accounting standards is irrevocable.

Complying with the laws and regulations affecting public companies will increase our costs and the demands on management and could harm our operating results and our ability to accurately report our financial condition, results of operations or cash flows, which may adversely affect investor confidence in us and, as a result, the value of our common shares.

As a public company, and particularly after we cease to be an "emerging growth company," we will incur significant legal, accounting and other expenses. In addition, the Sarbanes-Oxley Act of 2002, or the Sarbanes-Oxley Act, and the related rules and regulations subsequently implemented by the SEC, the applicable Canadian securities regulators and Nasdaq impose numerous requirements on public companies, including requiring changes in corporate governance practices. Also, the Securities Exchange Act of 1934, as amended, or the Exchange Act, requires, among other things, that we file annual, quarterly and current reports with respect to our business and operating results. Our management and other personnel have and will continue to devote a substantial amount of time to compliance with these laws and regulations. These requirements have increased and will continue to increase our legal, accounting, and financial compliance costs and have made and will continue to make some activities more time-consuming and costly. For example, these rules and regulations make it difficult and expensive for us to maintain director and officer liability insurance and we may be required to accept reduced policy limits and coverage or to incur substantial costs to maintain the same or similar coverage. These rules and regulations could also make it more difficult for us to attract and retain qualified persons to serve on our board of directors or our board committees or as executive officers.

The Sarbanes-Oxley Act requires, among other things, that we assess the effectiveness of our internal control over financial reporting annually and the effectiveness of our disclosure controls and procedures quarterly. In particular, Section 404 of the Sarbanes-Oxley Act, or Section 404, requires us to perform system and process evaluation and testing of our internal control over financial reporting to allow management to report on, and our independent registered public accounting firm potentially to attest to, the effectiveness of our internal control over financial reporting. As an "emerging growth company" we expect to avail ourselves of the exemption from the requirement that our independent registered public accounting firm attest to the effectiveness of our internal control over financial reporting under Section 404. However, we may no longer avail ourselves of this exemption when we cease to be an "emerging growth company." When our independent registered public accounting firm is required to undertake an assessment of our internal control over financial reporting, the cost of our compliance with Section 404 will correspondingly increase. Our compliance with applicable provisions of Section 404 will require that we incur substantial accounting expense and expend significant management time on compliance-related issues as we implement additional corporate governance practices and comply with reporting requirements. Moreover, if we are not able to comply with the requirements of Section 404 applicable to us in a timely manner, or if we or our independent registered public accounting firm identifies deficiencies in our internal control over financial reporting that are deemed to be material weaknesses, the market price of our common shares could decline and we could be subject to sanctions or investigations by the SEC or other regulatory authorities, which would require additional financial and management resources.

Furthermore, investor perceptions of our company may suffer if deficiencies are found, and this could cause a decline in the market price of our common shares. Irrespective of compliance with Section 404, any failure of our internal control over financial reporting could have a material adverse effect on our stated operating results and harm our reputation. If we are unable to implement these requirements effectively or efficiently, it could harm our operations, financial reporting, or financial results and could result in an adverse opinion on our internal controls from our independent registered public accounting firm.

If we fail to maintain an effective system of internal control over financial reporting, we may not be able to accurately report our financial results or prevent fraud. As a result, shareholders could lose confidence in our financial and other public reporting, which would harm our business and the market price of our common shares.

Effective internal controls over financial reporting are necessary for us to provide reliable financial reports and, together with adequate disclosure controls and procedures, are designed to prevent fraud. Any failure to implement required new or improved controls, or difficulties encountered in their implementation could cause us to fail to meet our reporting obligations. In addition, any testing by us conducted in connection with Section 404 or any subsequent testing by our independent registered public accounting firm, may reveal deficiencies in our internal controls over financial reporting that are deemed to be material weaknesses or that may require prospective or retroactive changes to our financial statements or identify other areas for further attention or improvement. Inferior internal controls could also cause investors to lose confidence in our reported financial information, which could have a negative effect on the market price of our common shares.

We are required to disclose changes made in our internal controls and procedures on a quarterly basis and our management is required to assess the effectiveness of these controls annually. However, for as long as we are an "emerging growth company" under the JOBS Act, our independent registered public accounting firm will not be required to attest to the effectiveness of our internal controls over financial reporting pursuant to Section 404. An independent assessment of the effectiveness of our internal controls could detect problems that our management's assessment might not. Undetected material weaknesses in our internal controls could lead to financial statement restatements and require us to incur the expense of remediation.

Future sales and issuances of our common shares, preferred shares, or rights to purchase common shares, including warrants or pursuant to our equity incentive plans, could cause you to incur dilution and could cause the market price of our common shares to fall.

As of September 30, 2018, stock options to purchase 2,682,263 of our common shares with a weighted-average exercise price of $6.99 per common share were outstanding and 1,568,000 of our Series 1 Preferred Shares were outstanding, which are convertible into our common shares on a one-for-one basis at the option of the holder, subject to certain ownership limitations following a requested conversion. On September 10, 2018, certain funds affiliated with BVF Partners L.P. exercised its conversion rights to convert 1,300,000 Series 1 Preferred Shares into the same number of common shares. The exercise of any of these stock options or conversion of the remaining Series 1 Preferred Shares would result in dilution to current shareholders. Further, because we will need to raise additional capital to fund our clinical development programs, we may in the future sell substantial amounts of common shares, preferred shares, or other securities convertible into or exchangeable for common shares. Pursuant to our equity incentive plans, our compensation committee (or a subset or delegate thereof) is authorized to grant equity-based incentive awards to our employees, directors and consultants. Future stock option grants and issuances of common shares under our share-based compensation plans may have an adverse effect on the market price of our common shares.

Any future issuances of common shares, preferred shares, or securities such as warrants, notes, or preferred shares that are convertible into, exercisable or exchangeable for, our common shares, would have a dilutive effect on the voting and economic interests of our existing shareholders.

We are at risk of securities class action litigation.

In the past, securities class action litigation has often been brought against a company following a decline in the market price of its securities. This risk is especially relevant for us because biotechnology companies have experienced significant stock price volatility in recent years. If we face such litigation, it could result in substantial costs and a diversion of management's attention and resources, which could harm our business.

Nasdaq may delist our securities from its exchange, which could limit investors' ability to make transactions in our securities and subject us to additional trading restrictions.

Our common shares are listed on Nasdaq under the trading symbol "XENE." Our securities may fail to meet the continued listing requirements to be listed on Nasdaq. If Nasdaq delists our common shares from trading on its exchange, we could face significant material adverse consequences, including:

- significant impairment of the liquidity for our common shares, which may substantially decrease the market price of our common shares;
- a limited availability of market quotations for our securities;
- a determination that our common shares qualify as a "penny stock" which will require brokers trading in our common shares to adhere to more stringent rules and possibly resulting in a reduced level of trading activity in the secondary trading market for our common shares;
- a limited amount of news and analyst coverage for our company; and
- a decreased ability to issue additional securities or obtain additional financing in the future.

If securities or industry analysts do not publish research reports about our business, or if they issue an adverse opinion about our business, the market price of our common shares and the trading volume of our common shares could decline.

The trading market for our common shares is influenced by the research and reports that securities or industry analysts publish about us or our business. If too few securities or industry analysts cover our company, the market price of our common shares would likely be negatively impacted. If securities and industry analysts who cover us downgrade our common shares or publish inaccurate or unfavorable research about our business, the market price of our common shares would likely decline. If one or more of these analysts cease coverage of our company or fail to publish reports on us regularly, demand for our common shares could decrease, which might cause the market price of our common shares and the trading volume of our common shares to decline.

Our management team has broad discretion as to the use of the net proceeds from previous public and private equity and debt financings and the investment of these proceeds may not yield a favorable return. We may invest the proceeds in ways with which our shareholders disagree.

We have broad discretion in the application of the net proceeds to us from previous equity and debt financings including the net proceeds we have received pursuant to our May 2018 “at-the-market” equity offering program with Stifel, Nicolaus & Company, Incorporated; the net proceeds we have received pursuant to our July 2018 “at-the-market” equity offering program with Jefferies LLC and Stifel, Nicolaus & Company, Incorporated; the net proceeds from our August 2018 amended and restated loan and security agreement, pursuant to which we have borrowed an aggregate of $15.5 million of principal; and the net proceeds from our September 2018 public offering of common shares. You may not agree with our decisions, and our use of the proceeds and our existing cash and cash equivalents and marketable securities may not improve our results of operation or enhance the value of our common shares. The results and effectiveness of the use of proceeds are uncertain, and we could spend the proceeds in ways that you do not agree with or that do not improve our results of operations or enhance the value of our common shares. Our failure to apply these funds effectively could have a material adverse effect on our business, delay the development of our product candidates and cause the market price of our common shares to decline. In addition, until the net proceeds are used, they may be placed in investments that do not produce significant income or that may lose value.

We do not anticipate paying any cash dividends on our common shares in the foreseeable future.

We do not currently intend to pay any cash dividends on our common shares in the foreseeable future. We currently intend to retain all of our future earnings, if any, to finance the growth and development of our business. In addition, the terms of any future debt agreements may preclude us from paying dividends. As a result, capital appreciation, if any, of our common shares may be investors’ sole source of gain for the foreseeable future.

Item 2. Unregistered Sales of Equity Securities.

Sales of Unregistered Securities

On August 3, 2018, we issued Silicon Valley Bank a warrant to purchase 40,000 of our common shares at a price per share of $9.79; the warrant is immediately exercisable and will expire on August 3, 2028. The issuance of the warrant was exempt from registration under the Securities Act of 1933, as amended, pursuant to Section 4(a)(2) thereof as a transaction by an issuer not involving a public offering and exempt from the prospectus requirements under applicable Canadian securities laws as Silicon Valley Bank is an “accredited investor”, as such term is defined in section 1.1 of National Instrument 45-106 - Prospectus Exemptions.

On September 10, 2018, we issued an aggregate of 1,300,000 common shares to certain funds affiliated with BVF Partners L.P. upon the conversion of 1,300,000 Series 1 Preferred Shares held by such funds. The conversion was effected in accordance with the terms of our Series 1 Preferred Shares. These issuances were exempt from registration under the Securities Act of 1933, as amended, pursuant to Section 3(a)(9) thereof as an exchange with an existing security holder where no commission or other remuneration is paid or given for soliciting such exchange.

On September 14, 2018, we issued 72,325 common shares to a warrant holder upon the exercise of an outstanding warrant to purchase an aggregate of 86,419 common shares pursuant to a net exercise mechanism under the warrant. The warrant had an exercise price of $2.43 per share. The issuance of the common shares upon exercise were exempt from registration under the Securities Act of 1933, as amended, pursuant to Section 3(a)(9) thereof as an exchange with an existing security holder where no commission or other remuneration is paid or given for soliciting such

exchange.

Item 6. Exhibits

(a) Exhibits.

Exhibit Number	Description of Document	Incorporated by Reference Form	File No.	Exhibit	Filing Date
10.1	At-the-Market Equity Offering Sales Agreement, dated as of July 11, 2018, by and among Xenon Pharmaceuticals Inc., Jefferies LLC and Stifel, Nicolaus & Company, Incorporated.	8-K	001-36687	1.1	July 12, 2018
10.2	Warrant to Purchase Shares, dated August 3, 2018, by and between Xenon Pharmaceuticals Inc. and Silicon Valley Bank.	8-K	001-36687	4.1	August 7, 2018
10.3	Amended and Restated Loan and Security Agreement, dated August 3, 2018, by and among Xenon Pharmaceuticals Inc., Xenon Pharmaceuticals USA Inc. and Silicon Valley Bank.	8-K	001-36687	10.1	August 7, 2018
10.4	Milestone and Royalty Buy-Out Agreement, dated September 7, 2018, by and among Xenon Pharmaceuticals Inc., Valeant Pharmaceuticals Ireland Limited and Valeant Pharmaceuticals Luxembourg S.a.r.l.	8-K	001-36687	10.1	September 11, 2018
10.5†	Amended and Restated Amendment #7, dated September 27, 2018, to the Collaborative Research and License Agreement, dated December 22, 2011, by and among the Company, Genentech, Inc. and F. Hoffmann-La Roche Ltd, as amended.				
31.1	Certification of Chief Executive Officer pursuant to Rule 13a-14(a).				
31.2	Certification of Chief Financial Officer pursuant to Rule 13a-14(a).				
32.1*	Certification of Chief Executive Officer pursuant to 18 U.S.C Section 1350.				
32.2*	Certification of Chief Financial Officer pursuant to 18 U.S.C Section 1350.				
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

† Confidential treatment has been requested with respect to certain portions of this exhibit. Omitted portions have been filed separately with the Securities and Exchange Commission.

* The Certifications attached as Exhibits 32.1 and 32.2 that accompany this Quarterly Report on Form 10-Q are not deemed filed with the Securities and Exchange Commission and are not to be incorporated by reference into any filing of Xenon Pharmaceuticals Inc. under the Securities Act of 1933, as amended, or the Securities Exchange Act of 1934, as amended, whether made before or after the date of this Form 10-Q, irrespective of any general incorporation language contained in such filing.

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.

Date: November 6, 2018

XENON
PHARMACEUTICALS INC.

By: /s/ Simon Pimstone
Simon Pimstone
Chief Executive Officer
(Principal Executive Officer)

Date: November 6, 2018

XENON PHARMACEUTICALS INC.

By: /s/ Ian Mortimer
Ian Mortimer
President and Chief Financial Officer
(Principal Financial and Accounting Officer)