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

FORM 10-Q

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

For the quarterly period ended June 30, 2022

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 001-39069

Aprea Therapeutics, Inc.
(Exact name of registrant as specified in its charter)

Delaware	**84-2246769**
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)
535 Boylston Street **Boston, Massachusetts**	**02116**
(Address of principal executive offices)	(Zip Code)

(617) 463-9385
(Registrant's telephone number, including area code)

Not Applicable
(Former name, former address and former fiscal year, if changed since last report)

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	**Trading Symbol**	**Name of exchange on which registered:**
Common stock, par value $0.001 per share	APRE	NASDAQ Global Select Market

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

Large accelerated filer ☐	Accelerated filer ☐
Non-accelerated filer ☒	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 ☒

There were 23,401,846 shares of the registrant's common stock, $0.001 par value, outstanding as of August 10, 2022.

Aprea Therapeutics, Inc.
Quarterly Report on Form 10-Q
For the Quarter Ended June 30, 2022

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This Quarterly Report on Form 10-Q includes statements that are, or may be deemed, "forward-looking statements." In some cases, these forward-looking statements can be identified by the use of forward-looking terminology, including the terms "believes," "estimates," "anticipates," "expects," "plans," "intends," "may," "designed," "would," "could," "might," "will," "should," "approximately" or, in each case, their negative or other variations thereon or comparable terminology, although not all forward-looking statements contain these words. They appear in a number of places throughout this Quarterly Report on Form 10-Q and include statements regarding our current intentions, beliefs, projections, outlook, analyses or current expectations concerning, among other things, our planned clinical trials, including the commencement of our Phase 1 trial of ATRN-119, our planned IND-enabling studies, including for ATRN-W1051, our ongoing and planned development, prospects for commercialization, and market uptake of our potential product candidates, the strength and breadth of our intellectual property, our planned clinical trials, the timing of and our ability to make regulatory filings and obtain and maintain regulatory approvals for our product candidates, the legal and regulatory landscape impacting our business, the degree of clinical utility of our product candidates, particularly in specific patient populations, expectations regarding clinical trial data, our development and validation of manufacturing capabilities, our results of operations, financial condition, liquidity, prospects, growth and strategies, the length of time that we will be able to continue to fund our operating expenses and capital expenditures, our expected financing needs and sources of financing, the industry in which we operate and the trends that may affect the industry or us.

By their nature, forward-looking statements involve risks and uncertainties because they relate to future events, competitive dynamics, and healthcare, regulatory and scientific developments and depend on economic circumstances that may or may not occur in the future or may occur on longer or shorter timelines than anticipated. We caution you that forward-looking statements are not guarantees, or predictive, of future performance and that our actual results of operations, financial condition and liquidity, and the development of the industry in which we operate may differ materially from the forward-looking statements contained in this Quarterly Report on Form 10-Q.

Some of the factors that we believe could cause actual results to differ from those anticipated or predicted include:

- our ability to continue to operate as an integrated company subsequent to our acquisition of Atrin Pharmaceuticals Inc.;
- estimates of our expenses, capital requirements and our needs for additional financing;
- business interruptions, including delays in enrollment and data collection of clinical trials, resulting from the outbreak of the novel coronavirus, COVID-19;
- the prospects of our product candidates, all of which are still in development;
- outcome and results of ongoing or future preclinical studies and clinical trials of our product candidates;
- our expectations regarding our ability to identify, discover or acquire additional suitable product candidates;
- the design of our planned clinical trials, including the sample size, trial duration, endpoint definition, event rate assumptions and eligibility criteria;
- our expectations regarding the timing of initiation of data readout from our clinical trials;
- market acceptance or commercial success of any product candidate we develop and the degree of acceptance among physicians, patients, patient advocacy groups, healthcare payors and the medical community;
- our expectations regarding competition, potential market size, the size of the patient populations for our product candidates, if approved for commercial use, and market acceptance;
- our ability to obtain regulatory approval of our product candidates, and any restrictions, limitations and/or warnings in their labels, if approved;
- the scope of protection we are able to establish and maintain for intellectual property rights covering our product candidates;

- potential claims relating to our intellectual property and third-party intellectual property;
- the duration of our intellectual property estate that will provide protection for our product candidates;
- developments relating to our competitors and our industry;
- our sales, marketing or distribution capabilities and our ability to commercialize our product candidates, if we obtain regulatory approval;
- current and future agreements with third parties in connection with conducting clinical trials, as well as the manufacturing of our product candidates;
- our expectations regarding the ability of our current contract manufacturing partners to produce our product candidates in the quantities and timeframe that we will require;
- our expectations regarding our future costs of goods;
- our ability to attract, retain and motivate key personnel and increase the size of our organization;
- our ability to establish collaborations in lieu of obtaining additional financing;
- the impact of government laws and regulations;
- our financial performance; and
- our expectations regarding the time during which we will be an emerging growth company under the JOBS Act or a smaller reporting company under the Exchange Act.

Any forward-looking statements that we make in this Quarterly Report on Form 10-Q speak only as of the date of such statement, and we undertake no obligation to update such statements to reflect events or circumstances after the date of this Quarterly Report on Form 10-Q. You should also read carefully the factors described in the "Risk Factors" included in Part II, Item 1A of this Quarterly Report and in Part I, Item 1A of our Annual Report on Form 10-K for the year ended December 31, 2021 to better understand significant risks and uncertainties inherent in our business and underlying any forward-looking statements. As a result of these factors, we cannot assure you that the forward-looking statements in this Quarterly Report on Form 10-Q will prove to be accurate. Furthermore, if our forward-looking statements prove to be inaccurate, the inaccuracy may be material. In light of the significant uncertainties in these forward-looking statements, you should not regard these statements as a representation or warranty by us or any other person that we will achieve our objectives and plans in any specified timeframe, or at all.

This Quarterly Report on Form 10-Q includes statistical and other industry and market data that we obtained from industry publications and research, surveys and studies conducted by third parties. Industry publications and third-party research, surveys and studies generally indicate that their information has been obtained from sources believed to be reliable, although they do not guarantee the accuracy or completeness of such information. While we believe these industry publications and third-party research, surveys and studies are reliable, we have not independently verified such data.

We qualify all of our forward-looking statements by these cautionary statements. In addition, with respect to all of our forward-looking statements, we claim the protection of the safe harbor for forward-looking statements contained in the Private Securities Litigation Reform Act of 1995.

This Form 10-Q may include trademarks, tradenames, and service marks that are the property of other organizations. Solely for convenience, our trademarks and tradenames referred to in this Form 10-Q may appear without the ® and ™ symbols, but those references are not intended to indicate, in any way, that we will not assert, to the fullest extent under applicable law, our rights, or the right of the applicable licensor to these trademarks and tradenames.

Aprea Therapeutics, Inc.
Part I – Financial Information

Item 1. Financial Statements

Aprea Therapeutics, Inc.
Condensed Consolidated Balance Sheets
(Unaudited)

	June 30, 2022	December 31, 2021
Assets		
Current assets:		
Cash and cash equivalents	$ 39,062,415	$ 53,076,052
Prepaid expenses and other current assets	1,400,837	3,508,358
Total current assets	40,463,252	56,584,410
Property and equipment, net	20,258	23,870
Right of use lease asset	170,967	185,811
Other noncurrent assets	29,359	29,372
Total assets	$ 40,683,836	$ 56,823,463
Liabilities and Stockholders' Equity (Deficit)		
Current liabilities:		
Accounts payable	$ 3,989,794	$ 1,773,032
Accrued expenses	3,505,287	5,352,996
Lease liability—current	189,116	190,471
Total current liabilities	7,684,197	7,316,499
Lease liability—noncurrent	—	—
Total liabilities	7,684,197	7,316,499
Commitments and contingencies (Note 8)		
Series A convertible preferred stock, $0.001 par value, 40,000,000 shares authorized; 2,949,630 and 0 shares issued and outstanding at June 30, 2022 and December 31, 2021, respectively.	68,777,468	—
Stockholders' equity:		
Common stock, $0.001 par value, 400,000,000 shares authorized, 23,401,846 and 21,859,413 shares issued and outstanding at June 30, 2022 and December 31, 2021, respectively.	23,401	21,859
Additional paid-in capital	261,795,121	240,978,439
Accumulated other comprehensive loss	(10,266,806)	(10,358,956)
Accumulated deficit	(287,329,545)	(181,134,378)
Total stockholders' equity (deficit)	(35,777,829)	49,506,964
Total liabilities and stockholders' equity (deficit)	$ 40,683,836	$ 56,823,463

See accompanying notes to unaudited condensed consolidated financial statements.

Aprea Therapeutics, Inc.
Condensed Consolidated Statements of Operations and Comprehensive Loss
(Unaudited)

	Three Months Ended June 30,		Six Months Ended June 30,	
	2022	2021	2022	2021
Operating expenses:				
Research and development	$ 6,811,609	$ 6,654,257	$ 10,901,186	$ 13,418,105
General and administrative	15,633,738	3,343,325	19,619,036	6,769,158
Acquired in-process research and development	76,020,184	—	76,020,184	—
Total operating expenses	98,465,531	9,997,582	106,540,406	20,187,263
Other income (expense):				
Interest income (expense), net	52,491	(588)	54,462	(1,645)
Foreign currency gain (loss)	154,566	(252,843)	290,777	269,140
Total other income (loss)	207,057	(253,431)	345,239	267,495
Net loss	$ (98,258,474)	$ (10,251,013)	$ (106,195,167)	$ (19,919,768)
Other comprehensive loss:				
Foreign currency translation	157,655	193,020	92,150	(209,830)
Total comprehensive loss	(98,100,819)	(10,057,993)	(106,103,017)	(20,129,598)
Net loss per share attributable to common stockholders, basic and diluted	$ (4.34)	$ (0.48)	$ (4.77)	$ (0.94)
Weighted-average common shares outstanding, basic and diluted	22,661,835	21,186,827	22,283,783	21,186,827

See accompanying notes to unaudited condensed consolidated financial statements.

Aprea Therapeutics, Inc.
Condensed Consolidated Statements of Preferred Stock and Stockholders' Equity (Deficit)
(Unaudited)

	Series A Preferred Stock		Common Stock		Additional Paid-in Capital	Other Comprehensive Loss	Accumulated Deficit	Stockholders' Equity (Deficit)
	Shares	Amount	Shares	Amount				
Balance, December 31, 2020	—	$ —	21,186,827	$ 21,187	$ 231,418,356	$ (10,037,261)	$ (144,007,075)	$ 77,395,207
Exercise of stock options	—	—	—	—	—	—	—	—
Stock-based compensation	—	—	—	—	1,822,562	—	—	1,822,562
Foreign currency translation	—	—	—	—	—	(402,850)	—	(402,850)
Net loss	—	—	—	—	—	—	(9,668,755)	(9,668,755)
Balance, March 31, 2021	—	$ —	21,186,827	$ 21,187	$ 233,240,918	$ (10,440,111)	$ (153,675,830)	$ 69,146,164
Stock-based compensation	—	$ —	—	—	1,863,498	—	—	1,863,498
Foreign currency translation	—	—	—	—	—	193,020	—	193,020
Net loss	—	—	—	—	—	—	(10,251,013)	(10,251,013)
Balance, June 30, 2021	—	$ —	21,186,827	$ 21,187	$ 235,104,416	$ (10,247,091)	$ (163,926,843)	$ 60,951,669
Balance, December 31, 2021	—	$ —	21,859,413	$ 21,859	$ 240,978,439	$ (10,358,956)	$ (181,134,378)	$ 49,506,964
Vesting of restricted stock units			114,889	115	(115)	—	—	—
Stock-based compensation	—	—	—	—	2,084,060	—	—	2,084,060
Foreign currency translation	—	—	—	—	—	(65,505)	—	(65,505)
Net loss	—	—	—	—	—	—	(7,936,693)	(7,936,693)
Balance, March 31, 2022	—	$ —	21,974,302	$ 21,974	$ 243,062,384	$ (10,424,461)	$ (189,071,071)	$ 43,588,826
Issuance of preferred stock upon acquisition of Atrin	2,949,630	$ 68,777,468	—	$ —	$ —	$ —	$ —	$ —
Issuance of common stock upon acquisition of Atrin	—	—	1,117,394	1,117	1,328,582	—	—	1,329,699
Value of assumed stock options	—	—	—	—	2,602,850			2,602,850
Vesting of restricted stock units	—	—	310,150	310	(310)	—	—	—
Stock-based compensation	—	—	—	—	14,801,615	—	—	14,801,615
Foreign currency translation	—	—	—	—	—	157,655	—	157,655
Net loss	—	—	—	—	—	—	(98,258,474)	(98,258,474)
Balance, June 30, 2022	2,949,630	$ 68,777,468	23,401,846	$ 23,401	$ 261,795,121	$ (10,266,806)	$ (287,329,545)	$ (35,777,829)

See accompanying notes to unaudited condensed consolidated financial statements.

Aprea Therapeutics, Inc.
Condensed Consolidated Statements of Cash Flows
(Unaudited)

	Six Months Ended June 30,	
	2022	2021
Cash flows from operating activities:		
Net loss	$ (106,195,167)	$ (19,919,768)
Adjustments to reconcile net loss to net cash used in operating activities:		
Acquired in-process research and development	72,523,293	—
Depreciation and amortization	6,666	6,724
Stock-based compensation	16,885,675	3,686,060
Amortization of right of use lease asset	120,795	129,518
Foreign currency (gain) loss	(290,777)	(269,140)
Changes in operating assets and liabilities:		
Prepaid expenses and other current assets	2,126,847	1,904,566
Accounts payable	2,288,527	(2,142,301)
Accrued expenses and other liabilities	(1,756,495)	(2,533,713)
Lease liability	(107,306)	(135,934)
Net cash used in operating activities	(14,397,942)	(19,273,988)
Cash flows from investing activities:		
Purchases of property and equipment	—	—
Net cash used in investing activities	—	—
Cash flows from financing activities:		
Proceeds from the exercise of stock options	—	—
Net cash provided by financing activities	—	—
Decrease in cash and cash equivalents	(14,397,942)	(19,273,988)
Effect of exchange rate changes on cash	384,305	60,148
Cash and cash equivalents—beginning of year	53,076,052	89,017,686
Cash and cash equivalents—end of period	$ 39,062,415	$ 69,803,846
Non-cash investing and financing activities:		
Operating lease liabilities arising from obtaining right-of-use assets	$ 123,786	$ -
Issuance of convertible preferred stock and common stock in connection with acquisition	70,107,167	

See accompanying notes to unaudited condensed consolidated financial statements.

Aprea Therapeutics, Inc.
Notes to Condensed Consolidated Financial Statements
(Unaudited)

1. Nature of business and basis of presentation

Nature of business—Aprea Therapeutics, Inc. (or the "Company") is a clinical-stage biopharmaceutical company focused on developing and commercializing novel cancer therapeutics targeting DNA damage response pathways. The Company began principal operations in 2006 and is headquartered in Boston, Massachusetts with research facilities in Doylestown, Pennsylvania. Prior to the acquisition of Atrin Pharmaceuticals Inc. (Atrin), the Company was engaged in the clinical development of cancer therapeutics that reactivate the mutant p53 tumor suppressor protein. In December 2020, the Company announced that its pivotal Phase 3 myelodysplastic syndromes trial failed to meet its predefined primary endpoint of complete remission (CR) rate. Given these results, FDA feedback and the costs of continuing the APR-246 development program, the Company has shifted primary focus of its activities to the assets acquired in the May 16, 2022 acquisition of Atrin (see Note 3). The Company's lead product candidate, which was acquired in the Atrin acquisition, is ATRN-119, a Phase 1-ready small molecule ATR inhibitor being developed for solid tumor indications.

Agreement and plan of merger—On May 16, 2022, the Company acquired Atrin Pharmaceuticals Inc., a Delaware corporation (the "Atrin Acquisition"). Under the terms of the Agreement and Plan or Merger dated May 16, 2022 (the "Merger Agreement"), the Company issued to the stockholders of Atrin 1,117,394 shares of the Company's common stock, par value $0.001 per share, and 2,949,630 shares of Series A convertible preferred stock ("Series A Preferred Stock") (as described below). The Series A Preferred Stock had a conversion value on the closing date of $68.8 million. In addition, the Company assumed options granted under the Atrin stock option plan, which became options to purchase 3,275,149 shares of the Company's common stock. See Note 3 for additional information.

Series A Preferred Stock—As a result of the Atrin Acquisition, the Company issued the following Series A Preferred Stock:

	Series A Preferred Stock	**Common Stock Issuable Upon Conversion (1)**
Outstanding shares issued in merger	2,949,630	29,496,300

(1) Each share of Series A Preferred Stock is convertible into 10 shares of common stock.

The Company held a stockholders' meeting on July 28, 2022 where approval of the conversion of the Series A Preferred Stock into shares of the Company's common stock in accordance with Nasdaq Listing Rule 5635(a) was received.

Basis of presentation and management plans—The accompanying financial statements are prepared in conformity with accounting principles generally accepted in the United States ("U.S. GAAP"). The accompanying financial statements have been prepared on a going concern basis, which contemplates the realization of assets and the satisfaction of liabilities in the normal course of business.

Since its inception, the Company has devoted substantially all of its efforts to business planning, research and development, recruiting management and technical staff, and raising capital, and has financed its operations through the issuance of convertible preferred stock and common stock.

The Company is subject to risks common to companies in the biopharmaceutical industry. There can be no assurance that the Company's research and development will be successfully completed, that adequate protection for the Company's intellectual property will be maintained, that any therapeutic products developed will obtain required regulatory approval or that any approved or consumer products will be commercially viable. Even if the Company's development efforts are successful, it is uncertain when, if ever, the Company will generate significant product sales.

The Company believes that the June 30, 2022 cash balance of approximately $39.1 million will be sufficient to fund the Company's operations through the end of 2023. In the event that additional funds are not available thereafter,

management would expect to significantly reduce expenditures to conserve cash, which would involve scaling back or curtailing new development activity.

2. Summary of significant accounting policies

The Company's complete listing of significant accounting policies are described in Note 2 to the Company's audited consolidated financial statements as of December 31, 2021 included in its annual report on Form 10-K filed with the Securities and Exchange Commission (or the “SEC”).

Principles of consolidation—The consolidated financial statements include the accounts of the Company and its wholly owned subsidiaries Aprea Therapeutics AB, which was incorporated in May 2009 and Aprea US, Inc., which was incorporated in June 2016. Management has concluded it has a single reporting segment for purposes of reporting financial condition and results of operations. All intercompany transactions and balances have been eliminated.

Unaudited interim consolidated financial statements—The accompanying unaudited interim condensed consolidated financial statements have been prepared by the Company in accordance with U.S. GAAP for interim information and pursuant to the rules and regulations of the SEC for reporting on Form 10-Q. Accordingly, certain information and footnote disclosure normally included in financial statements prepared in accordance with U.S. GAAP have been condensed or omitted pursuant to such rules and regulations. These unaudited condensed interim financial statements should be read in conjunction with the audited financial statements and related notes included in the Company’s annual report on Form 10-K for the year ended December 31, 2021 filed with the SEC.

The unaudited interim consolidated financial statements have been prepared on the same basis as the audited consolidated financial statements, and in management’s opinion, include all adjustments, consisting of only normal recurring adjustments, necessary for the fair presentation of the financial information for the interim periods have been made. The results of operations for the three and six months ended June 30, 2022 are not necessarily indicative of the results to be expected for the full fiscal year or any future period.

Use of estimates—The preparation of financial statements in conformity with U.S. GAAP requires management to make estimates and assumptions that affect the reported amounts of assets, liabilities, revenue, and expenses as of and during the reporting period. The Company bases estimates and assumptions on historical experience when available and on various factors that it believes to be reasonable under the circumstances. The Company assesses estimates on an ongoing basis; however, actual results could materially differ from those estimates. Significant items subject to such estimates and assumptions, are used for, but not limited to, include stock-based compensation and accounting for research and development costs.

Foreign currency and currency translation—The functional currency for Aprea Therapeutics AB is the Swedish Krona. Assets and liabilities of Aprea Therapeutics AB are translated into United States dollars at the exchange rate in effect on the balance sheet date. Operating expenses are translated at the average exchange rate in effect during the period. Unrealized translation gains and losses are recorded as a cumulative translation adjustment, which is included in the consolidated statements of stockholders’ equity (deficit) as a component of accumulated other comprehensive loss. Adjustments that arise from exchange rate changes on transactions denominated in a currency other than the local currency are included in other income (expense), net in the condensed consolidated statements of operations and comprehensive loss as incurred.

Cash and cash equivalents— The Company considers all highly liquid investments with original maturities of three months or less at the date of purchase to be cash equivalents.

Fair value of financial instruments—The accounting standard for fair value measurements provides a framework for measuring fair value and requires expanded disclosures regarding fair value measurements. Fair value is defined as the price that would be received upon sale of an asset or paid to transfer a liability between market participants at

measurement dates. ASC Topic 820, Fair Value Measurement ("ASC 820"), establishes a three-level valuation hierarchy for instruments measured at fair value. The hierarchy is based on the transparency of inputs to the valuation of an asset or liability as of the measurement date. The hierarchy defines three levels of valuation inputs, of which the first two are considered observable and the last is considered unobservable:

- Level 1 inputs: Quoted prices in active markets for identical assets or liabilities.
- Level 2 inputs: Inputs other than quoted prices included within Level 1 that are either directly or indirectly observable, such as quoted market prices, interest rates and yield curves.
- Level 3 inputs: Unobservable inputs developed using estimates or assumptions developed by the Company, which reflect those that a market participant would use in pricing the asset or liability.

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

The Company's financial instruments consist of cash and cash equivalents and accounts payable. The carrying amount of accounts payable is considered a reasonable estimate of fair value due to the short-term maturity.

Accounting for leases—The Company adopted the Lease standard (ASC 842) effective January 1, 2019, using the modified retrospective method. The new standard provided a number of optional practical expedients in transition. The Company elected to apply the 'package of practical expedients' which allowed them to not reassess (i) whether existing or expired arrangements contain a lease, (ii) the lease classification of existing or expired leases, or (iii) whether previous initial direct costs would qualify for capitalization under the new lease standard. The Company also elected to apply (i) the practical expedient which allows them to not separate lease and non-lease components, for new leases entered into after adoption and (ii) the short-term lease exemption for all leases with an original term of less than 12 months, for purposes of applying the recognition and measurements requirements in the new standard.

At the inception of an arrangement, the Company determines whether the arrangement is or contains a lease based on specific facts and circumstances, the existence of an identified asset(s), if any, and the Company's control over the use of the identified asset(s), if applicable. Operating lease liabilities and their corresponding right-of-use assets are recorded based on the present value of future lease payments over the expected lease term. The interest rate implicit in lease contracts is typically not readily determinable. As such, the Company utilizes the incremental borrowing rate, which is the rate incurred to borrow on a collateralized basis over a similar term an amount equal to the lease payments in a similar economic environment. The Company's incremental borrowing rate ranged from approximately 3.0% to 4.3% based on the remaining lease term of the applicable leases.

The Company has elected not to separate lease and non-lease components as a single component. Operating leases are recognized on the balance sheet as ROU lease assets, lease liabilities current and lease liabilities non-current. Fixed rents are included in the calculation of the lease balances while variable costs paid for certain operating and pass-through costs are excluded. Lease expense is recognized over the expected term on a straight-line basis.

Stock-based compensation—The Company measures stock options and other stock-based awards granted to employees and directors based on their fair value on the date of the grant and recognize compensation expense of those awards over the requisite service period, which is generally the vesting period of the respective award. The Company applies the straight-line method of expense recognition to all awards with only service based vesting conditions.

For stock-based awards granted to non-employees, compensation expense is recognized over the period during which services are rendered by such non-employees until completed in accordance with the FASB issued ASU No. 2018-07,

Aprea Therapeutics, Inc.
Notes to Condensed Consolidated Financial Statements
(Unaudited)

Compensation Stock Compensation (Topic 718): Improvements to Nonemployee Share Based Payment Accounting. The new standard largely aligns the accounting for share based payment awards issued to employees and nonemployees by expanding the scope of ASC 718 to apply to nonemployee share based transactions, as long as the transaction is not effectively a form of financing.

The Company estimates the fair value of each stock option grant on the date of grant using the Black Scholes option pricing model, which uses as inputs the fair value of the Company's common stock and assumptions the Company makes for the volatility of its common stock, the expected term of its stock options, the risk-free interest rate for a period that approximates the expected term of its stock options and its expected dividend yield. The Company elects to account for forfeitures when they occur.

The Company also awards restricted stock units ("RSUs") to employees and directors. RSUs are generally subject to forfeiture if employment terminates prior to the completion of the vesting restrictions. The Company expenses the cost of the RSUs, which is determined to be the fair market value of the shares of common stock underlying the RSUs at the date of grant, ratably over the period during which the vesting restrictions lapse.

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

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

	Six months ended June 30,	
	2022	2021
Convertible preferred stock	2,949,630	—
Options to purchase common stock	8,955,354	4,821,759
Unvested restricted stock units	—	507,050
Total shares of common stock equivalents	11,904,984	5,328,809

Acquired in-process research and development—The Company measures and recognizes asset acquisitions that are not deemed to be business combinations based on the cost to acquire the assets, including transaction costs. In an asset acquisition, the cost allocated to acquire in-process research and development ("IPR&D) with no alternative future use is charged to expense at the acquisition date. Please see Note 3 – "Acquisition of Atrin" for additional information.

Recently issued accounting pronouncements—From time to time, new accounting pronouncements are issued by the Financial Accounting Standards Board ("FASB") or other standard setting bodies that the Company adopts as of the specified effective date.

Management does not believe that any recently issued, but not yet effective accounting pronouncements, if adopted, would have a material impact on the accompanying financial statements.

3. **Acquisition of Atrin**

On May 16, 2022, the Company completed its acquisition of Atrin in accordance with the terms of the Merger Agreement as described in Note 1 – "Nature of business and basis of presentation". Under the terms of the Merger

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Agreement, the Company issued 1,117,394 shares of common stock and 2,949,630 shares of Series A Preferred Stock. Each share of Series A Preferred Stock is convertible into 10 shares of Common Stock.

The Company concluded the Atrin acquisition was not the acquisition of a business, as substantially all of the fair value of the non-monetary assets acquired was concentrated in a single identifiable asset, ATRN-119.

The Company determined that the cost to acquire the Atrin assets was $76.2 million, based on the fair value of the equity consideration issued [and including direct costs of the acquisition of $3.5 million. The net assets acquired in connection with the Atrin acquisition were recorded at their estimated fair values as of May 16, 2022, which is the date the Atrin acquisition was completed. The following table summarizes the net assets acquired based on their estimated fair values as of May 16, 2022:

Acquired IPR&D	$ 76,020,184
Cash and cash equivalents	2,489,745
Prepaid expenses and other assets	34,579
Accounts payable and accrued liabilities	(2,336,462)
Total Acquisition Value	$ 76,208,046

The Atrin acquisition was accounted for as an asset acquisition as Atrin was not considered to be a business under ASC 805 or SEC Rule 11-01(d). In the estimation of fair value of the asset purchase consideration, the Company used the carrying value of the cash and cash equivalents, prepaid expenses, accounts payable, and accrued liabilities as the most reliable indicator of fair value based on the associated short-term nature of the balances. The remaining fair value was attributable to the acquired IPR&D. Since Atrin was in preclinical development and no clinical trials had commenced at the time of the acquisition, the cost attributable to the IPR&D was expensed in the Company's consolidated statements of operations and comprehensive loss for the three and six months ended June 30, 2022 as the acquired IPR&D had no alternative future use, as determined by the Company in accordance with U.S. GAAP.

As a result of the Atrin acquisition, the Company announced in May 2022 it was closing its research facility in Sweden and reducing its related workforce in Sweden. The closure of the Swedish research facility and the reduction in workforce resulted in total expenses for employee severance and employee benefits of approximately $1.1 million, of which was recorded in the three months ended June 30, 2022. As of June 30, 2022, the remaining liability is approximately $0.8 million.

In connection with the Atrin acquisition, a non-transferable contingent value right (a "CVR") was distributed to the Aprea stockholders of record as of the close of business on May 13, 2022. Holders of the CVR will be entitled to receive certain stock and/or cash payments from proceeds received by the Company, if any, related to the disposition of its legacy assets in the 2 year period following the closing of the transaction. The CVR had a deminimus value as of May 16, 2022 and June 30, 2022.

4. Leases

The Company is party to operating leases for office and laboratory space. The Company's finance leases are immaterial both individually and in the aggregate. The Company has elected to apply the short-term lease exception to all leases of one year or less. Rent expense for three and six months ended June 30, 2022 was $84,900 and $159,716, respectively. Rent expense for the three and six months ended June 30, 2021 was $84,401 and $176,087, respectively.

The Company has an operating lease in Boston, Massachusetts for office space which was amended effective July 1, 2021. The lease will expire on December 31, 2022 and does not have any renewal options. The Company has an operating lease for office and laboratory space in Doylestown, Pennsylvania which expires on December 31, 2022. The Company also has an operating lease for office and laboratory space in Solna, Sweden which was extended effective January 1, 2022 and now expires on June 30, 2023.

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Quantitative information regarding the Company's leases for the three months ended June 30, 2022 and 2021 is as follows:

	Three months ended June 30,		Six months ended June 30,	
Lease Cost	**2022**	**2021**	**2022**	**2021**
Operating lease cost	$ 60,679	$ 58,481	$ 120,795	$ 116,404
Other Information				
Operating cash flows paid for amounts included in the measurement of lease liabilities	$ 64,057	$ 63,482	$ 128,113	$ 126,966
Operating lease liabilities arising from obtaining right-of-use assets	$ —	$ —	$ 123,786	$ —
Weighted average remaining lease term (years)	0.50-1.00	0.50-1.00	0.50-1.00	0.50-1.00
Weighted average discount rate	3.0 - 4.3%	3.0 - 4.3%	3.0 - 4.3%	3.0 - 4.3%

Future lease payments under noncancelable leases are as follows at June 30, 2022:

Future Lease Payments	**Operating Leases**
2022	$ 128,163
2023	63,903
Total Lease Payments	$ 192,066
Less: Imputed Interest	(2,950)
Total Lease Liabilities	$ 189,116

As most of the Company's leases do not provide an implicit rate, the Company used its incremental borrowing rate based on the information available at commencement date in determining the present value of lease payments.

5. Accrued expenses

Accrued expenses consist of the following:

	June 30, 2022	**December 31, 2021**
Professional fees	$ 196,674	$ 247,123
Compensation and benefits	1,679,863	1,418,309
Research and development	1,365,298	3,504,375
Other	263,452	183,189
Total accrued expenses	$ 3,505,287	$ 5,352,996

6. Stockholders' equity

The total number of shares of all classes of capital stock that the Company is authorized to issue is 440,000,000 shares, consisting of 400,000,000 shares of common stock, par value $0.001 per share and 40,000,000 shares of preferred stock, par value $0.001 per share.

Common Stock

The holders of common stock are entitled to one vote for each share of common stock. In the event of any voluntary or involuntary liquidation, dissolution or winding up of the Company, after the payment or provision for payment of all

debts and liabilities of the Company, the holders of common stock shall be entitled to share in the remaining assets of the Company available for distribution, if any.

Shelf Registration Statement

On November 12, 2020, the Company filed a universal shelf registration statement with the SEC for the issuance of common stock, preferred stock, warrants, rights, debt securities and units up to an aggregate of $350.0 million. On November 30, 2020, the Shelf Registration Statement was declared effective by the SEC. The universal shelf registration statement includes an at-the-market ("ATM") offering program for the sale of up to $50.0 million of shares of the Company's common stock. The Company agreed to pay a commission of 3% of the gross proceeds of any common stock sold in connection with the ATM offering program. The Company did not sell any common stock under the ATM program during the three and six months ended June 30, 2022 or 2021.

Stock-Based Compensation Expense

The Company recorded stock-based compensation expense of $14,801,615, and $16,885,675 for the three and six months ended June 30, 2022, respectively. The company recorded compensation expense of $1,863,498 and $3,686,060 for the three and six months ended June 30, 2021, respectively.

7. Income Taxes

The Company has no income tax expense due to operating losses incurred for the three and six months ended June 30, 2022 and 2021. The Company has provided a valuation allowance for the full amount of the net deferred tax assets as, based on all available evidence, it is considered more likely than not that all the recorded deferred tax assets will not be realized in a future period.

Realization of the future tax benefits is dependent on may factors, including the Company's ability to generate taxable income within the net operating loss carryforward period. Under the provisions of the U.S. Internal Revenue Code and Sweden tax law, certain substantial changes in the Company's ownership, including a sale of the Company or significant changes in ownership due to sales of equity, may have limited, or may limit in the future, the amount of net operating loss carryforwards that could be used annually to offset future taxable income. For U.S. and Swedish income tax purposes, the Company has not completed a study to assess whether a change of control has occurred or whether there have been changes of control since the Company's formation due to the complexity and cost associated with such study and because there could be additional changes of control in the future. As a result, the Company is not able to estimate the effect of the change in control, if any, on the Company's ability to utilize U.S. or Swedish net operating losses or other tax attribute carryforwards in the future. For Swedish income tax purposes, the Company's net operating losses may be subject to limitations in accordance with the country's group contribution restriction laws.

The Company files tax returns in Sweden, the United States and Massachusetts. Income tax returns prior to 2018 in the United States and Massachusetts are no longer subject to examination and income tax returns prior to 2015 are no longer subject to examination in Sweden. The Company is not currently under examination by the IRS or any other jurisdictions for any tax years.

As tax law is complex and often subject to varied interpretations, it is uncertain whether some of the Company's tax positions will be sustained upon examination. Tax liabilities associated with uncertain tax positions represent unrecognized tax benefits, which arise when the estimated benefit recorded in the Company's financial statements differs from the amounts taken or expected to be taken in a tax return because of the uncertainties described above. Substantially all of these unrecognized tax benefits, if recognized, would benefit the Company's effective income tax rate.

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As of June 30, 2022 and December 31, 2021, the Company had approximately $0.1 million of liabilities related to uncertain tax positions. As the Company's uncertain tax positions can be offset by available net operating losses, the Company did not recognize interest and penalties for 2022 and 2021.

8. Commitments and contingencies

The Company records a provision for contingent losses when it is both probable that a liability has been incurred and the amount of the loss can be reasonably estimated. As of June 30, 2022, the Company has not recorded a provision for any contingent losses.

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

You should read the following discussion and analysis of our financial condition and results of operations together with the unaudited financial information and notes thereto included in this Quarterly Report on Form 10-Q. Some of the information contained in this discussion and analysis or set forth elsewhere in this Quarterly Report, including information with respect to our plans and strategy for our business and related financing, including forward-looking statements that involve risks and uncertainties. As a result of many factors, including those factors set forth in the "Risk Factors" section of this Quarterly Report and in our Annual Report on Form 10-K for the year ended December 31, 2021, our actual results could differ materially from the results described in or implied by the forward-looking statements contained in the following discussion and analysis.

Overview

We are a biopharmaceutical company focused on developing novel synthetic lethality-based cancer therapeutics that target DNA damage response (DDR) pathways. Our approach is built upon a platform of integrated discovery technologies to enrich our pipeline with novel targets in synthetic lethality and cancer treatment. Together with our expertise in small molecule drug discovery, we are applying the capabilities of our discovery platform to the development of new precision oncology therapies and the identification of patient populations most likely to benefit.

Prior to the acquisition of Atrin, we were engaged in the clinical development of cancer therapeutics that reactivate the mutant p53 tumor suppressor protein. In December 2020, we announced that our pivotal Phase 3 myelodysplastic syndromes trial failed to meet its predefined primary endpoint of complete remission (CR) rate. Given these results, FDA feedback and the costs of continuing the APR-246 development program, we shifted the primary focus of our activities to the assets acquired in the May 16, 2022 acquisition of Atrin Pharmaceuticals Inc., or Atrin, a privately held company focused on developing next-generation cancer therapeutics that regulate the DDR, including the ATRN-119 and ATRN-W1051 programs. Following the acquisition of Atrin, the Company's primary focus is the discovery and development of proprietary molecules targeting DDR pathways in oncology through synthetic lethality. This focus leverages Atrin's development of a proprietary discovery platform to interrogate DDR pathways that may enable identification of both potential novel DDR targets for future development and potential biomarkers for enhanced sensitivity and patient selection in clinical trials. The acquisition of Atrin was the result of thorough evaluation of strategic options, which commenced in Q4 2021. We believe the acquisition represents a potential opportunity to create long-term value for our stockholders.

DDR Overview

Cells are continuously exposed to endogenous and exogenous stress that can lead to DNA damage. To counter this lethal threat, cells have mechanisms to detect DNA damage, activate the appropriate repair pathway or, if irreparable, induce cell cycle arrest or apoptosis. These DDR processes are vital for cell survival.

Cancer cells rely on various alternative pathways to repair and resist DNA damage and replication stress. Many of these DDR-related genes are mutated across cancers, as loss of the DDR pathway allows cancer cells to rapidly evolve and grow out of control. Notably, functional loss of these pathways also creates a vulnerability in these cancers because mutation or loss of some DDR genes increases reliance on other DDR genes to support continued cancer cell growth. When mutation or loss of two DDR genes leads to cell death, the interplay between these genes is synthetic lethality. Importantly, selective targeting of specific members of the DDR pathway represents an attractive potential therapeutic approach for the treatment of cancer. Furthermore, because genes that are mutated in cancers continue to function normally in healthy tissues, this treatment approach can potentially reduce drug-induced toxicity while maintaining anti-cancer activity.

Leveraging synthetic lethality in therapeutic targeting of DDR represents an emerging strategy to treat a broad spectrum of cancers that currently lack effective treatments. Our team was the first to identify ATR as a drug target that synergistically kills cancer cells based on one of their most fundamental characteristics, oncogene expression. Aprea's development pipeline is based on our discovery platforms and a rationally designed series of novel molecules. We have

developed highly selective small molecule regulators of DDR proteins that play fundamental roles in these response pathways.

Platform of Integrated Discovery Technologies

Our drug discovery and development processes integrate three unique platforms: Repli-Biom, ATRIZE™ and SCET™. These integrated technologies provide us with the opportunity to enrich our pipeline with novel targets in synthetic lethality and cancer treatment. In addition, by utilizing our integrated technologies we have identified cancer-associated gene alterations that can lead to increased sensitivity to Aprea's DDR inhibitors and may provide future opportunities for improved efficacy and tolerability in cancer treatment.

Repli-Biom

Repli-Biom identifies proteins that cancer cells use to resist the effects of drug treatment. This integrated proteomic, genomic and machine learning approach identifies response factors that both participate in the molecular response to drug treatment and are highly mutated in cancers.

Absence of these resistance factors predict sensitivity to drug treatment, thus potentially promoting durable drug responses. In addition, this approach is being used to identify novel combination therapy approaches and new drug targets to advance Aprea's drug development programs.

ATRIZE

ATRIZE is an innovative, high-throughput system to detect disruption of DNA synthesis and DDR activation, and thus is ideal for screening DDR inhibitors. ATRIZE may significantly reduce the time required to discover active drug candidates and optimize their design for precision cancer therapy.

SCET

SCET is a medicinal chemistry cyclization approach to generate highly potent and selective enzyme inhibitors. The SCET approach enables the design and synthesis of novel conformationally-constrained drug candidates with potentially higher affinity and specificity for the target enzyme. By utilizing this approach, we believe that we have developed highly potent and specific anticancer drug candidates with decreased off-target activities.

DDR Product Candidates

ATRN-119

Ataxia Telangiectasia and Rad3-related (ATR) and Checkpoint Kinase 1 (CHK1) are critical DNA damage response kinases that prevent the collapse of replication forks into DNA double strand breaks (DSBs). ATR is one of several key regulators of the response to defective DNA replication and DNA damage, which occurs more commonly in cancer cells than in normal cells.

In response to these cancer-associated genomic insults, ATR is activated to inhibit progression to cellular division and prevent the assembly of the SLX1-SLX4, MUS81-EME1 and XPF-ERCC1 (SMX) endonuclease (DNA cutting) complex. When ATR is inhibited, the SMX complex is inappropriately activated, promoting the cutting of replication forks into DSBs. In association with ATR's fundamental roles in these replication responses, cells with increased oncogenic stress, p53 mutations and deficiencies in DDR pathways are predicted to have increased sensitivity to ATR inhibition. Accordingly, ATR inhibition is also predicted to sensitize cells to DNA-damaging chemotherapy, radiotherapy and PARP inhibitor treatments, making ATR inhibitors particularly attractive for the development of novel combination therapies.

We have developed an orally bioavailable, highly potent and selective macrocyclic small molecule inhibitor of ATR (ATRN-119) that has the potential to have less toxicity to normal tissues while continuing to capitalize on cancer

vulnerabilities due to oncogenic stress and DDR pathway defects. ATRN-119 has received FDA IND approval (IND #141317) for a first-in-human clinical trial for cancer patients. This clinical trial is expected to begin in the third quarter of 2022.

ATRN-119 and related second-generation candidates were discovered by Atrin. We believe the selectivity and toxicology profiles of ATRN-119 may be differentiated from other ATR inhibitors currently being developed by other companies and we are planning to study ATRN-119 as both a monotherapy and in combination with standard of care in Phase 1/2 clinical trials in solid tumor malignancies. We currently retain worldwide development and commercialization rights to all of our ATR inhibitor product candidates.

ATRN-W1051

WEE1 kinase is a key regulator of multiple phases of the cell cycle, most prominently in progression from G1 to S phase and from S/G2 to M phase through inhibitory phosphorylation of CDK2 and CDK1, respectively. Thus, when WEE1 is inhibited, both G1-S and G2-M checkpoints are abrogated, leading to premature S-phase and M-phase entry. Notably, the replication stress caused by cyclin E1 overexpression is transformed into toxic levels of DSBs and cancer cell death when WEE1 is inhibited. These findings suggest cyclin E overexpression as a cancer-associated vulnerability that may be capitalized on by WEE1 inhibitors.

We have discovered and initiated development of an orally bioavailable, highly potent and selective small molecule WEE1 inhibitor, ATRN-W1051, that is distinct from other WEE1 inhibitors based on its potentially superior pharmacokinetic properties and selectivity regarding common off-targets (PLK1/2/3). ATRN-W1051 is currently in preclinical development, and we anticipate commencing IND-enabling studies in the second half of 2022.

ATRN-W1051 was discovered by Atrin. We believe the selectivity profile of ATRN-W1051 may be differentiated from other WEE1 inhibitors currently being developed by other companies and we are planning to study ATRN-W1051 as both a monotherapy and in combination with standard of care for the treatment of multiple cancers. We currently retain worldwide development and commercialization rights to ATRN-W1051.

p53 Reactivator Programs

Eprenetapopt

APR-246, or *eprenetapopt*, is a small molecule p53 reactivator that has been tested in clinical trials for solid tumors and for hematologic malignancies, including myelodysplastic syndromes, or MDS, and acute myeloid leukemia, or AML. Eprenetapopt has received Orphan Drug and Fast Track designations from the FDA for MDS, Fast Track designation from the FDA for AML, and Orphan Drug designation from the European Commission for MDS and AML, and we believe eprenetapopt will be a first-in-class therapy if approved by applicable regulators.

While we currently have no ongoing clinical trials of eprenetapopt, we have received clearance from FDA to proceed under our existing INDs with new Phase 1 dose-optimization clinical trials in relapsed/refractory MDS/AML and Richter's transformed NHL, including initial testing of a new oral formulation of eprenetapopt.

- **Phase 1 Relapsed/Refractory MDS/AML Trial—** In the first quarter of 2022, we received clearance from the FDA to proceed under our existing IND of a clinical trial in relapsed/refractory (R/R) MDS/AML. The trial is designed to determine the optimal pharmacologically active dose of eprenetapopt in combination with azacitidine in relapsed/refractory (R/R) MDS/AML.

- **Phase 1 NHL Trial—**In the first quarter of 2022 we received clearance from FDA to proceed under our existing IND with a clinical trial in relapsed/refractory (R/R) *TP53* mutant Richter's transformed NHL. Richter's transformed NHL is a subset of CLL that is characterized by significantly more aggressive disease. The trial is designed to seek to determine the optimal pharmacologically active dose of eprenetapopt in combination with venetoclax and rituximab. The trial includes administration of an oral formulation of eprenetapopt as part of a monotherapy lead-in phase. Under the trial protocol,

pharmacokinetic data following oral administration would be collected to assess exposure relative to intravenous administration and to inform potential future clinical opportunities of an oral dosage form of eprenetapopt.

Prior Developments in p53 Clinical Trials

- On August 4, 2021, the U.S. Food and Drug Administration (FDA) placed a partial clinical hold on the clinical trials of eprenetapopt in combination with azacitidine in our Phase 3 frontline MDS clinical trial, our Phase 2 MDS/AML Post-Transplant clinical trial and our Phase 1/2 AML clinical trial. The FDA's concerns referred to the safety and efficacy data from the Phase 3 frontline MDS clinical trial. In particular, the FDA requested more information related to a potential risk-reward imbalance between the combination of eprenetapopt and azacitidine versus azacitidine alone as it relates to increased serious adverse events in the Phase 3 frontline clinical trial in MDS. At the time of the clinical hold announcement the MDS, AML and post-transplant maintenance trials had all completed enrollment. Patients who were benefiting from treatment could continue to receive study treatment. In December 2021 we discussed with FDA the data and analyses from the Phase 3 trial and reached preliminary agreement on proposals for new clinical trials in myeloid malignancies. In the first quarter of 2022, FDA informed us that it would continue the partial clinical hold on these three clinical trials, allowing patients currently on and benefiting from treatment to continue with treatment, but prohibiting enrollment of new patients. As all trials had already achieved full enrollment and primary endpoint readout, we had no plans to enroll new patients into any of these trials. These trials have been concluded and there are no patients receiving eprenetapopt in any of these trials. FDA has given us clearance to proceed under our existing myeloid malignancy IND with a new clinical trial in relapsed/refractory MDS and AML.

- On August 11, 2021, FDA placed a clinical hold on our clinical trial evaluating eprenetapopt in patients with non-Hodgkin lymphoma. The FDA's concerns referred to the safety and efficacy data from the Phase 3 frontline MDS clinical trial in our myeloid malignancy program. In particular, the FDA requested more information related to a potential risk-reward imbalance between the combination of eprenetapopt and azacitidine versus azacitidine alone as it relates to increased serious adverse events in the Phase 3 frontline clinical trial in MDS. At the time of the clinical hold announcement the NHL trial had enrolled one patient. Patients who were benefiting from treatment could continue to receive study treatment and no additional patients could be enrolled until the clinical hold was resolved. There are currently no patients receiving eprenetapopt in this trial. In October 2021 we discussed with FDA the requested data and analyses from the Phase 3 trial and proposed amendments for clinical trials to proceed in our lymphoid malignancy program. FDA lifted the clinical hold in December 2021.

Next Generation Programs

APR-548

APR-548 is a second generation p53 reactivator that is a unique analog of eprenetapopt. APR-548 exhibits high oral bioavailability in preclinical testing and is being developed in an oral dosage form.

- **Phase 1 MDS/AML Trial—**We initiated a Phase 1 clinical trial testing APR-548 in relapsed/refractory MDS and AML. Enrollment in the first dosing cohort was completed. There are currently no patients receiving APR-548 in this trial and enrollment into the trial has been closed.

Corporate Background

Aprea Therapeutics AB, or Aprea AB, was originally incorporated in 2002 and commenced principal operations in 2006. We incorporated Aprea Therapeutics, Inc. (the "Company") in May 2019. In September 2019 we completed a corporate reorganization and, as a result, all of the issued and outstanding stock of Aprea AB was exchanged for common stock, preferred stock or options, as applicable, of the Company As a result of such transactions, Aprea AB became a wholly-owned subsidiary of the Company. On May 16, 2022 we completed the acquisition of Atrin.

We have devoted substantially all of our resources to developing our product candidates, including eprenetapopt, building our intellectual property portfolio, business planning, raising capital and providing general and administrative support for these operations. To date, we have financed our operations primarily through private placements of preferred stock and the net proceeds received from the initial public offering (IPO) of our common stock. Through June 30, 2022, we had received net proceeds of approximately $225.6 million from our sales of preferred and common stock.

On May 16, 2022, we acquired Atrin in accordance with the terms of the Agreement and Plan of Merger date May 16, 2022 (the "Merger Agreement"), by and among Aprea, ATR Merger Sub I Inc., a Delaware corporation and wholly owned subsidiary of Aprea ("First Merger Sub"), ATR Merger Sub II LLC, a Delaware limited liability company and wholly owned subsidiary of Aprea ("Second Merger Sub") and Atrin. Pursuant to the Merger Agreement, First Merger Sub merged with and into Atrin, pursuant to which Atrin was the surviving corporation and became a wholly owned subsidiary of Aprea (the "First Merger"). Immediately following the First Merger, Atrin merged with and into the second Merger Sub, pursuant to which Second Merger Sub was the surviving entity (the "Second Merger", together with the First Merger, the "Merger"). The Atrin acquisition was accounted for as an asset acquisition for accounting purposes (see Note 3 to the financial statements).

Under the terms of the Merger agreement, at the closing of the Merger, Aprea issued to the securityholders of Atrin, 1,117,394 shares of the common stock of Aprea, par value $0.001 per share (the "Common Stock") and 2,949,630 shares of Series A Preferred Stock, each share of which is convertible into 10 shares of common Stock. In addition, we assumed outstanding Atrin stock options, which became options for 3,275,149 shares of our common stock.

Pursuant to the Merger Agreement, Aprea held its annual stockholders' meeting (the "Stockholders' Meeting") on July 28, 2022 where the following matters were approved; (i) the conversion of the Series A Preferred Stock into shares of Common Stock in accordance with Nasdaq Listing Rule 5635(a) and (ii) the ratification of the appointment by the Aprea Board of Directors of additional members to the Board**.**

Since our inception, we have incurred significant losses on an aggregate basis. Our ability to generate product revenue sufficient to achieve profitability will depend on the successful development and eventual commercialization of one or more of our product candidates. Our net losses were $98.3 million and $106.2 million for the three and six months ended June 30, 2022, respectively, $10.3 million and $19.9 million for the three and six months ended June 30, 2021, respectively and $37.1 million, $53.5 million and $28.1 million for the years ended December 31, 2021, 2020 and 2019, respectively. As of June 30, 2022, we had an accumulated deficit of $287.3 million. These losses have resulted primarily from costs incurred in connection with research and development activities, patent investment, and general and administrative costs associated with our operations and the acquisition of in process research and development associated with the acquisition of Atrin. We expect to continue to incur significant expenses and increasing operating losses for at least the next several years.

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

- conduct our planned clinical trials and additional preclinical research;
- initiate and continue research and preclinical and clinical development of our other product candidates;
- seek to identify and develop additional product candidates;
- seek marketing approvals for any of our product candidates that successfully complete clinical trials, if any;
- establish a sales, marketing, manufacturing and distribution infrastructure to commercialize any products for which we may obtain marketing approval;
- require the manufacture of larger quantities of our product candidates for clinical development and potential commercialization;

- maintain, expand, protect and enforce our intellectual property portfolio;
- acquire or in-license other drugs and technologies;
- defend against any claims of infringement, misappropriation or other violation of third-party intellectual property;
- hire and retain additional clinical, quality control and scientific personnel; and
- add operational, financial and management information systems and personnel, including personnel to support our drug development, any future commercialization efforts and our operation as a public company.

Furthermore, if we obtain marketing approval for any of our product candidates, we expect to incur significant commercialization expenses related to product manufacturing, marketing, sales and distribution.

As a result, we will need additional financing to support our continuing operations. Until such time as we can generate significant revenue from product sales, if ever, we expect to finance our operations through a combination of public or private equity or debt financings or other sources, which may include collaborations with third parties. We may be unable to raise additional funds or enter into other agreements or arrangements when needed on favorable terms, or at all. If we fail to raise capital or enter into such agreements as and when needed, we may have to significantly delay, scale back or discontinue the development or commercialization of one or more of our product candidates.

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

As of June 30, 2022, we had cash and cash equivalents of $39.1 million. We believe that our existing cash and cash equivalents will enable us to fund our operating expenses and capital expenditure requirements through the end of 2023. We have based this estimate on assumptions that may prove to be wrong, and we could exhaust our available capital resources sooner than we expect. See “—Liquidity and Capital Resources.”

The COVID-19 pandemic

The novel coronavirus outbreak (COVID-19) has been declared a “Public Health Emergency of International Concern” by the World Health Organization. COVID-19 has spread to the countries in which we, our suppliers, and our other business partners conduct business. Governments in affected regions have implemented, and may continue to implement or re-implement, safety precautions, including quarantines, travel restrictions, business closures, cancellations of public gatherings, and other measures they deem necessary. Like many other organizations and individuals, the Company and our employees are taking additional steps to avoid or reduce infection, including limiting travel and implementing remote work arrangements. We will continue to actively monitor the situation and may take further actions that could alter our business operations as may be required by national, state, or local authorities, or that we determine are in the best interests of our employees and stockholders.

There are many uncertainties regarding the COVID-19 pandemic, and we are closely monitoring the impact of the pandemic on all aspects of our business, including how it will impact our clinical trials, employees, suppliers, vendors and business partners. While the pandemic did not materially affect our financial results and business operations for the three and six months ended June 30, 2022, we are unable to predict the impact that COVID-19 will have on our financial position and operating results at this time due to numerous uncertainties such as the duration and spread of the outbreak. We will continue to assess the evolving impact of the COVID-19 pandemic and will make adjustments to our operations if necessary.

Components of our results of operations

Revenue

We have not generated any revenue from product sales and do not expect to generate any revenue from the sale of products in the near future. If our development efforts for any of our product candidates are successful and result in marketing approval or collaboration or license agreements with third parties, we may generate revenue in the future from a combination of product sales or payments from collaboration or license agreements that we may enter into with third parties.

Operating expenses

Our expenses since inception have consisted solely of research and development costs and general and administrative costs.

Research and development expenses

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

- expenses incurred under agreements with third parties, including contract research organizations, or CROs, that conduct research, preclinical activities and clinical trials on our behalf as well as contract manufacturing organizations, or CMOs, that manufacture our product candidates for use in our preclinical and clinical trials;
- salaries, benefits and other related costs, including stock-based compensation expense, for personnel engaged in research and development functions;
- costs of outside consultants, including their fees, stock-based compensation and related travel expenses;
- costs of laboratory supplies and acquiring, developing and manufacturing preclinical study and clinical trial materials;
- expenses related to compliance with regulatory requirements; and
- facility-related expenses, which include direct depreciation costs and allocated expenses for rent and maintenance of facilities and other operating costs.

We expense research and development costs as incurred. We recognize costs for certain development activities, such as clinical trials, based on an evaluation of the progress to completion of specific tasks using data such as patient enrollment, clinical site activations, or information provided to us by our vendors and our clinical investigative sites. Payments for these activities are based on the terms of the individual agreements, which may differ from the pattern of costs incurred, and are reflected in our financial statements as prepaid or accrued research and development expenses.

We typically use our employee and infrastructure resources across our development programs. We track outsourced development costs and payments made to our research partners by product candidate or development program, but we do not allocate personnel costs or other internal costs to specific development programs or product candidates.

Research and development activities are central to our business model. Product candidates in later stages of clinical development generally have higher development costs than those in earlier stages of clinical development, primarily due to the increased size and duration of later-stage clinical trials. We expect that our research and development expenses will continue to increase for the foreseeable future as we initiate clinical trials for ATRN-119 and other product candidates and continue to discover and develop additional product candidates.

We cannot determine with certainty the duration and costs of planned clinical trials of our product candidates or if, when, or to what extent we will generate revenue from the commercialization and sale of any our product candidates for which we obtain marketing approval. We may never succeed in obtaining marketing approval for any of our product candidates. The duration, costs and timing of clinical trials and development of our product candidates will depend on a variety of factors, including:

- the scope, rate of progress, expense and results of any future clinical trials of our product candidates and other research and development activities that we may conduct;
- uncertainties in clinical trial design and patient enrollment rates;
- significant and changing government regulation and regulatory guidance;
- the timing and receipt of, and any limitations imposed by regulatory bodies on, any marketing approvals; and
- the expense of filing, prosecuting, defending and enforcing any patent claims and other intellectual property rights.

A change in the outcome of any of these variables with respect to the development of a product candidate could mean a significant change in the costs and timing associated with the development of that product candidate. For example, if the U.S. Food and Drug Administration, or FDA, or another regulatory authority in a foreign jurisdiction were to require us to conduct clinical trials beyond the scope we currently anticipate, or additional clinical trials beyond those that we anticipate will be required for the completion of clinical development of a product candidate, or if we experience significant trial delays due to patient enrollment or other reasons, we would be required to expend significant additional financial resources and time on the completion of clinical development.

General and administrative expenses

General and administrative expenses consist primarily of salaries and other related costs, including stock-based compensation, for personnel in our executive, finance, corporate and business development and administrative functions. General and administrative expenses also include legal fees relating to patent and corporate matters; professional fees for accounting, auditing, tax and consulting services; insurance costs; travel expenses; and facility-related expenses, which include direct depreciation costs and allocated expenses for rent and maintenance of facilities and other operating costs.

We expect that our general and administrative expenses will increase in the future as a result of the costs associated with the Merger as well as the expansion of operations subsequent to the Merger, as we increase our headcount to support personnel in research and development and to support our operations generally, and as we increase our research and development activities and activities related to the potential commercialization of our product candidates. We also expect to continue to incur increased expenses associated with being a public company, including costs of accounting, audit, legal, regulatory and tax-related services associated with maintaining compliance with exchange listing and SEC requirements; director and officer insurance costs; and investor and public relations costs.

Acquired In-Process Research and Development Expense

Acquired in-process research and development (“IPR&D”) expense resulted from the Atrin acquisition in May 2022 which was accounted for as an asset acquisition. The acquisition cost allocated to acquire IPR&D with no alternative future use was recorded as an expense at the acquisition date and no additional IPR&D expense relating to the Atrin acquisition is expected to be reported in future periods.

Other income and expense

Interest income and expense

Interest income consists of income earned on our cash and cash equivalents. Interest expense consists of the interest component associated with our facility leases. Our interest income initially increased as our cash and cash equivalents were higher due to the cash proceeds received from our IPO. Such interest income is subsequently decreasing as (i) our cash balance decreases as we continue to fund operations and (ii) a decrease in interest rates.

Foreign currency gain

Our consolidated financial statements are presented in U.S. dollars, which is our reporting currency. The financial position and results of operations of our subsidiary Aprea AB is measured using the foreign subsidiary's local currency as the functional currency. Aprea AB cash accounts holding U.S. dollars are remeasured based upon the exchange rate at the date of remeasurement with the resulting gain or loss included in the consolidated statement of operations and comprehensive loss. Expenses of such subsidiaries have been translated into U.S. dollars at average exchange rates prevailing during the period. Assets and liabilities have been translated at the rates of exchange on the consolidated balance sheet date. The resulting translation gain and loss adjustments are recorded directly as a separate component of stockholders' equity and as other comprehensive loss on the consolidated statement of operations and comprehensive loss.

Income taxes

We have not recorded any U.S. federal, state or foreign income tax expense or benefits for the net losses we have incurred in any year, due to our uncertainty of realizing a benefit from those items. We have provided a valuation allowance for the full amount of the net deferred tax assets as, based on all available evidence, it is considered more likely than not that all the recorded deferred tax assets will not be realized in a future period.

Critical accounting policies and use of estimates

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

While our significant accounting policies are described in more detail in the notes to our financial statements, we believe that the following accounting policies are those most critical to the judgments and estimates used in the preparation of our financial statements.

Accrued research and development expenses

As part of the process of preparing our financial statements, we are required to estimate our accrued research and development expenses at each balance sheet. This process involves reviewing open contract and purchase orders, communicating with our personnel to identify services that have been performed on our behalf and estimating the level of service performed and the associated costs incurred for the services when we have not yet been invoiced or otherwise notified of the actual costs. The majority of our service providers invoice us in arrears for services performed, on a pre-determined schedule or when contractual milestones are met; however, some require advanced payments. We make estimates of our accrued expenses as of each balance sheet date in our financial statements based on facts and

circumstances known to us at that time. Examples of estimated accrued research and development expenses include fees paid to:

- CROs in connection with performing research activities on our behalf and conducting preclinical studies and clinical trials on our behalf;
- investigative sites or other service providers in connection with clinical trials;
- vendors in connection with preclinical and clinical development activities; and
- vendors related to product manufacturing and development and distribution of preclinical and clinical supplies.

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

Stock-based compensation

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

For stock-based awards granted to non-employees, compensation expense is recognized over the period during which services are rendered by such non-employees until completed in accordance with the FASB issued ASU No. 2018-07, Compensation-Stock Compensation (Topic 718): Improvements to Nonemployee Share-Based Payment Accounting. The new standard largely aligns the accounting for share-based payment awards issued to employees and nonemployees by expanding the scope of ASC 718 to apply to nonemployee share-based transactions, as long as the transaction is not effectively a form of financing.

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

We also award restricted stock units (“RSUs”) to employees and directors. RSUs are generally subject to forfeiture if employment terminates prior to completion of the vesting restrictions. We expense the cost of the RSUs, which is determined to be the fair market value of the shares of common stock underlying the RSUs at the date of grant, ratably over the period during which the vesting restrictions lapse.

Emerging growth company and smaller reporting company status

We are an emerging growth company (EGC), as defined in the JOBS Act. Under this act, emerging growth companies are permitted to delay adopting new or revised accounting standards applicable to public companies until those standards would otherwise apply to private companies. We have irrevocably elected not to avail ourselves of this exemption from new or revised accounting standards and, therefore, will be subject to the same new or revised accounting standards as other public companies that are not emerging growth companies.

We may remain classified as an EGC until the end of the fiscal year in which the fifth anniversary of our IPO occurs, although if the market value of our common stock that is held by non-affiliates exceeds $700 million as of the last trading day of the second quarter before that time or if we have annual gross revenues of $1.07 billion or more in any fiscal year, we would cease to be an EGC as of December 31 of the applicable year. We also would cease to be an EGC if we issue more than $1 billion of non-convertible debt over a three-year period.

We are also a "smaller reporting company," as such term is defined in Rule 12b-2 of the Exchange Act, meaning that the market value of our common stock held by non-affiliates is less than $700 million and our annual revenue is less than $100 million during the most recently completed fiscal year. We may continue to be a smaller reporting company if either (i) the market value of our common stock held by non-affiliates is less than $250 million or (ii) our annual revenue is less than $100 million during the most recently completed fiscal year and the market value of our common stock held by non-affiliates is less than $700 million. If we are a smaller reporting company at the time we cease to be an emerging growth company, we may continue to rely on exemptions from certain disclosure requirements that are available to smaller reporting companies. Specifically, as a smaller reporting company we may choose to present only the two most recent fiscal years of audited financial statements in our Annual Report on Form 10-K and, similar to emerging growth companies, smaller reporting companies have reduced disclosure obligations regarding executive compensation.

Results of operations

Comparison of the three months ended June 30, 2022 and 2021

	Three Months Ended June 30,		
	2022	2021	Change
Operating expenses:			
Research and development	$ 6,811,609	$ 6,654,257	$ 157,352
General and administrative	15,633,738	3,343,325	12,290,413
Acquired in-process research and development	76,020,184	—	76,020,184
Total operating expenses	98,465,531	9,997,582	88,467,949
Other income (expense):			
Interest expense	52,491	(588)	53,079
Foreign currency gain (loss)	154,566	(252,843)	407,409
Total other income (expense)	207,057	(253,431)	460,488
Net loss	$ (98,258,474)	$ (10,251,013)	$ (88,007,461)

Research and development expenses

	Three Months Ended June 30,		
	2022	2021	Change
APR-246	$ 3,597,971	$ 3,662,149	$ (64,178)
Other early-stage development programs	364,966	1,309,067	(944,101)
Unallocated research and development expenses	2,848,672	1,683,041	1,165,631
Total research and development expenses	$ 6,811,609	$ 6,654,257	$ 157,352

Research and development expenses for the three months ended June 30, 2022 were $6.8 million, compared to $6.7 million for the three months ended June 30, 2021. The overall increase of $0.1 million was primarily due to the overall activity in connection with the wrap up and close out of the clinical trials of eprenetapopt as follows:

- an increase of $1.1 million related to the close out of our Phase 2 post-transplant MDS/AML clinical trial;
- an increase of $0.4 million related to the close out of our pivotal Phase 3 clinical trial of eprenetapopt with azacitidine for frontline treatment of *TP53* mutant MDS;
- an increase of $0.2 million related to the close out of our Phase 1 AML clinical trial;

These increases were offset, in part by the following:

- a decrease of $1.1 million related to the close out of our Phase 1/2 solid tumor trial;
- a decrease of $0.3 million related to the close out of our Phase 1/2 clinical trial in relapsed/refractory *TP53* mutant chronic lymphoid leukemia (CLL) assessing eprenetapopt with venetoclax and rituximab and eprenetapopt with ibrutinib in order to further assess eprenetapopt in hematological malignancies; and
- a decrease of $0.2 million in manufacturing expenses related to the pausing of scale-up of manufacturing activities for the anticipated commercial production of eprenetapopt;

General and administrative expenses

General and administrative expenses for the three months ended June 30, 2022 were $15.6 million, compared to $3.3 million for the three months ended June 30, 2021. The increase of $12.3 million was primarily related to

- an increase of $12.2 million in non-cash stock-based compensation expense. The increase in non-cash stock-based compensation expense was related to the accelerated vesting of all outstanding and unvested stock options and RSUs in connection with the Atrin acquisition.

Acquired In-process Research and Development (IPR&D) Expense

Acquired IPR&D expense was $76.0 million for the three months ended June 30, 2022. Acquired IPR&D resulted from the Atrin Acquisition in May 2022 which was accounted for as an asset acquisition. The acquisition cost allocated to acquired IPR&D with no alternative future use was recorded as an expense as of the closing date of the Atrin Acquisition. No acquired IPR&D expense was incurred in the three months ended June 30, 2021.

Other income and expense

Foreign currency gain for the three months ended June 30, 2022 was $0.2 million compared to a foreign currency loss of $0.2 million for the three months ended June 30, 2021. The change in the foreign currency of $0.4 million was primarily due to a weakening of the U.S. dollar against the Swedish Krona during the three months ended June 30, 2022 as compared to the three months ended June 30, 2021. Interest income, net for the three months ended June 30, 2022 consisted of interest income on our cash and cash equivalents, offset in part, by interest expense associated with our facility leases. Interest expense, net for the three months ended June 30, 2021 consisted of interest expense associated with our facility leases, offset in part, by interest income on our cash and cash equivalents.

Comparison of the six months ended June 30, 2022 and 2021

	Six months ended June 30,		
	2022	2021	Change
Operating expenses:			
Research and development	$ 10,901,186	$ 13,418,105	$ (2,516,919)
General and administrative	19,619,036	6,769,158	12,849,878
Acquired in-process research and development	76,020,184	—	76,020,184
Total operating expenses	106,540,406	20,187,263	86,353,143
Other income (expense):			
Interest expense	54,462	(1,645)	56,107
Foreign currency gain	290,777	269,140	21,637
Total other income (expense)	345,239	267,495	77,744
Net loss	$ (106,195,167)	$ (19,919,768)	$ (86,275,399)

Research and development expenses

	Six months ended June 30,		
	2022	2021	Change
APR-246	$ 4,639,594	$ 7,465,322	$ (2,825,728)
Other early-stage development programs	1,068,600	2,425,067	(1,356,467)
Unallocated research and development expenses	5,192,992	3,527,716	1,665,276
Total research and development expenses	$ 10,901,186	$ 13,418,105	$ (2,516,919)

Research and development expenses for the six months ended June 30, 2022 were $10.9 million, compared to $13.4 million for the six months ended June 30, 2021. The overall decrease of $2.5 million was primarily due to the decreased activity in connection with the wrap up of the clinical trials of eprenetapopt as follows:

- a decrease of $1.4 million related to the close out of our Phase 1/2 solid tumor trial;
- a decrease of $0.7 million in manufacturing expenses related to the pausing of scale-up of manufacturing activities for the anticipated commercial production of eprenetapopt;
- a decrease of $0.6 million related to the close out of our Phase 1/2 clinical trial in relapsed/refractory *TP53* mutant chronic lymphoid leukemia (CLL) assessing eprenetapopt with venetoclax and rituximab and eprenetapopt with ibrutinib in order to further assess eprenetapopt in hematological malignancies; and
- a decrease of $0.4 million in pre-clinical activities

These decreases were offset, in part by the following:

- an increase of $0.5 million related to the close out of our Phase 2 post-transplant MDS/AML clinical trial;

General and administrative expenses

General and administrative expenses for the six months ended June 30, 2022 were $19.6 million, compared to $6.8 million for the six months ended June 30, 2021. The increase of $12.8 million was primarily related to

- an increase of $12.4 million in non-cash stock-based compensation expense. The increase in non-cash stock-based compensation expense was related to the accelerated vesting of all outstanding and unvested stock options and RSUs in connection with the Atrin acquisition; and

- an increase of $0.3 million in legal expense primarily associated with post acquisition activities.

Acquired In-process Research and Development (IPR&D) Expense

Acquired IPR&D expense was $76.0 million for the six months ended June 30, 2022. Acquired IPR&D resulted from the Atrin Acquisition in May 2022 which was accounted for as an asset acquisition. The acquisition cost allocated to acquired IPR&D with no alternative future use was recorded as an expense as of the closing date of the Atrin Acquisition. No acquired IPR&D expense was incurred in the six months ended June 30, 2021.

Other income and expense

Foreign currency gain for the six months ended June 30, 2022 was $0.3 million for both the six months ended June 30, 2022 and the six months ended June 30, 2021. Interest income, net for the six months ended June 30, 2022 consisted of interest income on our cash and cash equivalents, offset in part, by interest expense associated with our facility leases. Interest expense, net for the six months ended June 30, 2021 consisted of interest expense associated with our facility leases, offset in part, by interest income on our cash and cash equivalents.

Liquidity and capital resources

Since our inception, we have incurred significant losses on an aggregate basis. We have not yet commercialized any of our product candidates, which are in various phases of preclinical and clinical development, and we do not expect to generate revenue from sales of any products for several years, if at all. To date, we have financed our operations primarily through private placements of our preferred and common stock and the net proceeds received from the initial public offering (IPO) of our common stock. Through June 30, 2022, we had received net proceeds of $225.6 million from our sales of preferred and common stock. As of June 30, 2022, we had cash and cash equivalents of $39.1 million.

Cash flows

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

	Six months ended June 30,	
	2022	2021
Net cash provided by (used in):		
Operating activities	$ (14,397,942)	$ (19,273,988)
Investing activities	—	—
Financing activities	—	—
Net increase in cash and cash equivalents	$ (14,397,942)	$ (19,273,988)

Operating activities.

Cash used in operating activities resulted primarily from our net losses adjusted for non-cash charges and changes in components of working capital. Net cash used in operating activities was $14.4 million for the six months ended June 30, 2022 compared to $19.3 million for the six months ended June 30, 2021. The decrease in cash used in operating activities of $4.9 million was primarily attributable to an increase in our net loss of $86.3 million, which was largely due to acquired IPR&D associated with Atrin acquisition, and an increase in operating assets and liabilities of $5.5 million, partially offset by an increase in non-cash stock-based compensation of $13.2 million.

Investing activities.

No cash was used in investing activities for the six months ended June 30, 2022 or 2021.

Financing activities.

No cash was provided by financing activities for the six months ended June 30, 2022 or 2021.

Funding requirements

We expect our expenses to increase in connection with our ongoing and planned development activities. In addition, we have incurred and continue to incur additional costs associated with operating as a public company. We expect that our expenses will increase substantially if and as we:

- initiate and conduct clinical trials and additional preclinical research for our product candidates;
- seek to identify and develop additional product candidates;
- seek marketing approvals for any of our product candidates that successfully complete clinical trials, if any;
- establish a sales, marketing, manufacturing and distribution infrastructure to commercialize any products for which we may obtain marketing approval;
- require the manufacture of larger quantities of our product candidates for clinical development and potentially commercialization;
- maintain, expand, protect and enforce our intellectual property portfolio;
- acquire or in-license other drugs and technologies;
- defend against any claims of infringement, misappropriation or other violation of third-party intellectual property;
- hire and retain additional clinical, quality control and scientific personnel;
- build out new facilities or expand existing facilities to support our ongoing development activity;
- add operational, financial and management information systems and personnel, including personnel to support our drug development, any future commercialization efforts and our transition to a public company; and
- continue to operate as a public company.

As of June 30, 2022, we had cash and cash equivalents of $39.1 million. We believe that our existing cash and cash equivalents will enable us to fund our operating expenses and capital expenditure requirements through the end of 2023. We have based this estimate on assumptions that may prove to be wrong, and we could exhaust our available capital resources sooner than we expect.

Because of the numerous risks and uncertainties associated with the development of our product candidates and programs and because the extent to which we may enter into collaborations with third parties for development of our product candidates is unknown, we are unable to estimate the timing and amounts of increased capital outlays and operating expenses associated with completing the research and development of our product candidates. Our future capital requirements will depend on many factors, including:

- the scope, progress, results and costs of our planned clinical trials, drug discovery and preclinical research for our product candidates;
- the number of future product candidates that we pursue and their development requirements;

- the costs, timing and outcome of regulatory review of our product candidates;
- the extent to which we acquire or invest in assets or businesses, products and technologies, including entering into or maintaining licensing or collaboration arrangements for product candidates on favorable terms, and although we recently completed the Merger and may continue to explore such opportunities from time to time during the normal course of business, we currently have no commitments or agreements to complete any such transactions];
- the costs and timing of future commercialization activities, including drug sales, marketing, manufacturing and distribution, for any of our product candidates for which we receive marketing approval, to the extent that such sales, marketing, manufacturing and distribution are not the responsibility of any collaborator that we may have at such time;
- the amount of revenue, if any, received from commercial sales of our product candidates, should any of our product candidates receive marketing approval;
- the impact of COVID-19 on the financial markets in general and on our business in particular;
- the costs of preparing, filing and prosecuting patent applications, maintaining, protecting and enforcing our intellectual property rights and defending intellectual property-related claims;
- our headcount growth and associated costs as we expand our business operations and our research and development activities; and
- the costs of operating as a public company.

Developing drug products, including conducting preclinical studies and clinical trials, is a time-consuming, expensive and uncertain process that takes years to complete, and we may never generate the necessary data or results required to obtain marketing approval for any product candidates or generate revenue from the sale of any products for which we may obtain marketing approval. In addition, our product candidates, if approved, may not achieve commercial success. Our commercial revenues, if any, will be derived from sales of drugs that we do not expect to be commercially available for many years, if ever. Accordingly, we will need to obtain substantial additional funds to achieve our business objectives.

Adequate additional funds may not be available to us on acceptable terms, or at all. We do not currently have any committed external source of funds. To the extent that we raise additional capital through the sale of equity or convertible debt securities, ownership interests in our securities may be diluted, and the terms of these securities may include liquidation or other preferences and anti-dilution protections that could adversely affect the rights of our common stockholders. Additional debt or preferred equity financing, if available, may involve agreements that include restrictive covenants that may limit our ability to take specific actions, such as incurring debt, making capital expenditures or declaring dividends, which could adversely impact our ability to conduct our business, and may require the issuance of warrants, which could potentially dilute existing ownership interest.

If we raise additional funds through collaborations, strategic alliances or licensing arrangements with third parties, we may have to relinquish valuable rights to our technology, future revenue streams, research programs, 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 or collaborations, strategic alliances or licensing arrangements with third parties when needed, we may be required to delay, limit, reduce and/or terminate our product development programs or any future commercialization efforts or grant rights to develop and market product candidates that we would otherwise prefer to develop and market ourselves.

Contractual obligations and commitments

For additional details regarding our contractual obligations, see Note 3 “Leases” to our condensed consolidated financial statements appearing elsewhere in this Quarterly Report on Form 10-Q.

Shelf Registration Statement

On November 12, 2020, we filed a universal shelf registration statement with the SEC for the issuance of common stock, preferred stock, warrants, rights and debt securities and units up to an aggregate of $350.0 million. On November 30, 2020, the Shelf Registration Statement was declared effective by the SEC. The universal shelf registration statement includes an at-the-market offering program for the sale of up to $50.0 million of shares of our common stock. During the year ended December 31, 2021, we sold 366,773 shares of our common stock under the at-the-market offering program resulting in net proceeds of approximately $1.5 million. There were no sales of common stock under the at-the-market program during the three and six months ended June 30, 2022.

Recent accounting pronouncements

From time to time, new accounting pronouncements are issued by the Financial Accounting Standards Board (“FASB”) or other standard setting bodies that we adopt as of the specified effective date.

We do not believe that any recently issued, but not yet effective accounting pronouncements, if adopted, would have a material impact on our financial statements.

Off-balance sheet arrangements

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

Item 3. Quantitative and qualitative disclosures about market risk

Interest Rate Risk

We are exposed to market risk related changes in interest rates. As of June 30, 2022, our cash equivalents consisted of bank deposits and money market accounts. Our primary exposure to market risk is interest income sensitivity, which is affected by changes in the general level of U.S. interest rates. However, historical fluctuations in interest income have not been significant for us.

Foreign Currency Exchange Rate Risk

We face market risk to the extent that changes in foreign currency exchange rates affect our non-U.S. dollar functional currency foreign subsidiaries’ revenues, expenses, assets and liabilities. The financial position and results of operations of our subsidiary Aprea AB is measured using the foreign subsidiary’s local currency as the functional currency. Aprea AB cash accounts holding U.S. dollars are remeasured based upon the exchange rate at the date of remeasurement with the resulting gain or loss included in the consolidated statement of operations and comprehensive loss.

Our investments in foreign subsidiaries with a functional currency other than the U.S. dollar are generally considered long-term. In addition, we do not believe that we currently have any significant direct foreign exchange risk. Accordingly, we have not used any derivative financial instruments to hedge exposure to such risk.

Item 4. Controls and Procedures

Disclosure Controls and Procedures

Our management, with the participation of our chief executive officer and chief financial officer, evaluated the effectiveness of our disclosure controls and procedures as of June 30, 2022. The term "disclosure controls and procedures," as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act, mean controls and other procedures of a company that are designed to ensure that information required to be disclosed by us in the reports that we file or submit under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms. Disclosure controls include, without limitation, controls and procedures designed to ensure that information required to be disclosed by a company on the reports that it files or submits under the Exchange Act is accumulated and communicated to management, including, our principal executive and principal financial officers, as appropriate, to allow timely decisions regarding required disclosure.

Management recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving their objectives and management necessarily applies its judgement in evaluating the cost-benefit relationship of possible controls and procedures. Based on the evaluation of our disclosure controls and procedures as of June 30, 2022, our chief executive officer and chief financial officer concluded that, as of such date, our disclosure controls and procedures were effective at the reasonable level.

Changes in Internal Control

There has been no change in our internal control over financial reporting as such term is defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act during our most recent fiscal quarter that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

PART II: OTHER INFORMATION

Item 1. Legal Proceedings.

We are not currently subject to any material legal proceedings.

Item 1A. Risk Factors

Our business is subject to substantial risks and uncertainties. Investing in our common stock involves a high degree of risk. You should carefully consider the risk factors below, together with the information contained elsewhere in this Quarterly Report on Form 10-Q, including Part I, Item 1 "Financial Statements" and Part I, Item 2. "Management's Discussion and Analysis of Financial Condition and Results of Operations," and in our other public filings in evaluating our business, including our Annual Report on Form 10-K for the year ended December 31, 2021, which was filed with the SEC on March 15, 2022. Any of the risks and uncertainties described below and in our other filings with the SEC, either alone or taken together, could materially and adversely affect our business, financial condition, results of operations, prospects for growth, and the value of an investment in our common stock. In addition, these risks and uncertainties could cause actual results to differ materially from those expressed or implied by forward looking statements contained in this Form 10-Q (please read the Cautionary Note Regarding Forward-Looking Statements in this Form 10-Q).

Risk Factor Summary

An investment in our securities is subject to various risks, the most significant of which are summarized below.

Risks related to our financial position and the need for additional capital

- We have incurred significant losses in each year since inception. We expect to incur losses for the foreseeable future and may never achieve or maintain profitability.
- Our limited operating history may make it difficult for you to evaluate the success of our business to date and to assess our future viability. We have never generated revenues and may never be profitable.
- We will need substantial additional funding, which may not be available to us on acceptable terms or at all. If we are unable to raise capital when needed, we may be forced to delay, reduce and/or eliminate our research and drug development programs or future commercialization efforts.
- Raising additional capital may cause dilution to our stockholders and restrict our operations or require us to relinquish rights to our product candidates.

Risks related to the discovery, development and commercialization of our product candidates

- We are substantially dependent on the success of our lead product candidate, ATRN-119, which we expect will be in clinical development in the second half of 2022. Our clinical trials of ATRN-119 may not be successful. If we are unable to obtain approval for and commercialize ATRN-119 or experience significant delays in doing so, our business will be materially harmed.
- We have not tested ATRN-119 and ATRN-W1051 in clinical trials. The results of preclinical studies and early-stage clinical trials may not be predictive of future results in later studies or trials. Initial success in clinical trials may not be indicative of results obtained when these trials are completed or in later-stage clinical trials.
- We may not be able to file INDs or IND amendments to commence additional clinical trials on the timelines we expect, and even if we are able to, the FDA may not permit us to proceed.
- We may find it difficult to enroll patients in our clinical trials. If we experience delays or difficulties in the enrollment of patients in clinical trials, our receipt of necessary marketing approvals could be delayed or prevented.
- Leveraging synthetic lethality in therapeutic targeting of DDR represents an emerging an emerging strategy to treat a broad spectrum of cancers, and negative perceptions of the efficacy, safety, or tolerability of this class of targets, including any that we develop, could adversely affect our ability to conduct our business, advance our product candidates or obtain regulatory approvals.
- If serious adverse or unacceptable side effects are identified during the development of our product candidates or we observe limited efficacy of our product candidates, we may need to abandon or limit the development of one or more of our product candidates.
- The outcome of preclinical testing and early clinical trials may not be predictive of the success of later clinical trials, interim results of a clinical trial do not necessarily predict final results, and the results of our clinical trials may not satisfy the requirements of the FDA or comparable foreign regulatory authorities.
- Clinical drug development is a lengthy and expensive process, with an uncertain outcome. If clinical trials of our product candidates fail to demonstrate safety and efficacy to the satisfaction of regulatory authorities or do not otherwise produce positive results, we may incur additional costs, experience delays in completing, or ultimately be unable to complete, the development of our product candidates or be unable to obtain marketing approval.

- We may expend our limited resources to pursue a particular product candidate or indication and fail to capitalize on product candidates or indications that may be more profitable or for which there is a greater likelihood of success.

- The failure to obtain required regulatory clearances or approvals for any companion diagnostic tests that we may pursue may prevent or delay approval of any of our product candidates. Moreover, the commercial success of any of our product candidates that require a companion diagnostic will be tied to the receipt of any required regulatory clearances or approvals and the continued availability of such tests.

- If we are required to in the future and if we are unable to successfully develop companion diagnostic tests for our product candidates that require such tests, or experience significant delays in doing so, we may not realize the full commercial potential of these product candidates.

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

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

- Even if any of our product candidates receive marketing approval, they may fail to achieve the degree of market acceptance by physicians, patients, healthcare payors and others in the medical community necessary for commercial success.

- We face substantial competition, which may result in others discovering, developing or commercializing products before or more successfully than we do.

- Our business and operations would suffer in the event of IT system failures, cybersecurity attacks, data breaches, or vulnerabilities in our or our third-party vendors' information security program or defenses.

- If, in the future, we are unable to establish sales and marketing capabilities or enter into agreements with third parties to sell and market our product candidates, we may not be successful in commercializing our product candidates if and when they are approved.

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

- Even if we obtain regulatory approval of any product candidate, the approved product may be subject to post-approval studies and will remain subject to ongoing regulatory requirements. If we fail to comply, or if concerns are identified in subsequent studies, our approval could be withdrawn, and our product sales could be suspended.

- Even if we are able to commercialize any product candidate, such product candidate may become subject to unfavorable pricing regulations, third-party coverage and reimbursement policies or healthcare reform initiatives, which could harm our business.

- Product liability lawsuits against us could cause us to incur substantial liabilities and to limit commercialization of any drugs that we may develop. Our insurance policies may be inadequate and may potentially expose us to unrecoverable risk.

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

- An epidemic or pandemic disease outbreak, including the 2019 novel coronavirus (COVID-19), could disrupt our business operations as well as the business or operations of our single third-party manufacturer, our CROs, clinical data management organizations, medical institutions and clinical investigators, or other third parties with whom we conduct business which may have a material adverse effect on our business, results of operations, financial condition and prospects.
- The reactivation of p53 is a novel and unproven therapeutic approach and our development of eprenetapopt may never lead to a marketable product.

Risks related to our dependence on third parties

- We rely on third parties to conduct our clinical trials and some aspects of our research and preclinical studies, and those third parties may not perform satisfactorily, including failing to meet deadlines for the completion of such trials, research and studies.

- Although we currently plan to retain all commercial rights to our product candidates, we may enter into strategic collaborations for the development, marketing and commercialization of our product candidates. If those collaborations are not successful, the development, marketing and/or commercialization of our product candidates that are the subject of such collaborations would be harmed.
- We are currently dependent on a single third party manufacturer for the manufacture of the active pharmaceutical ingredient for our product candidates. This reliance on a single third party increases the risk that we will not have sufficient quantities of our product candidates or drugs or such quantities at an acceptable cost, which could delay, prevent or impair our development or commercialization efforts.

Risks related to our intellectual property

- If we are unable to obtain and maintain intellectual property protection for our product candidates or for our technology, our competitors could develop and commercialize products or technology similar or identical to ours, and our ability to successfully commercialize any product candidates we may develop, and our technology may be adversely affected.

- Our proprietary position for eprenetapopt depends upon patents that consist of method-of-use and formulation patent claims, which may not prevent a competitor or other third party from using the same product candidate for another use or in another formulation.

- Issued patents covering our product candidates and other technologies could be narrowed or found invalid or unenforceable if challenged in court or before administrative bodies in the United States or abroad.

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

- If we do not obtain patent term extension or data exclusivity for any product candidates we may develop, our business may be materially harmed.

- We may not be successful in obtaining, through acquisitions, in-licenses or otherwise, rights that may be necessary to our product candidates or other technologies.

- Changes in U.S. patent law could diminish the value of patents in general, thereby impairing our ability to protect our product candidates and technology.

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

- If we are sued for infringing, misappropriating or otherwise violating patents or other intellectual property rights of third parties, it will be costly and time consuming, and an unfavorable outcome in that litigation would have a material adverse effect on our business.

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

- Obtaining and maintaining our patent protection depends upon compliance with various procedural, document submission, fee payment and other requirements imposed by governmental patent agencies, and our patent protection could be reduced or eliminated for non-compliance with these requirements.

- We may be subject to claims that our employees, consultants or advisors have wrongfully used or disclosed alleged trade secrets of their current or former employers or claims asserting ownership of what we regard as our own intellectual property.

- Confidentiality agreements with employees and third parties may not prevent unauthorized disclosure of trade secrets and other proprietary information.

- Intellectual property rights do not necessarily address all potential threats.

Risks related to regulatory and marketing approval and other legal compliance matters

- We have never obtained marketing approval for a product candidate and we may be unable to obtain, or may be delayed in obtaining, marketing approval for any of our product candidates.

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

- Failure to obtain marketing approval in foreign jurisdictions would prevent our product candidates from being marketed abroad. Any approval we are granted for our product candidates in the United States would not assure approval of our product candidates in foreign jurisdictions.

- We, or any future collaborators, may not be able to obtain or maintain orphan drug exclusivity for our product candidates and, even if we do, that exclusivity may not prevent the FDA or the European Commission from approving competing products.

- Even if we, or any collaborators we may have in the future, obtain marketing approvals for our product candidates, the terms of approvals and ongoing regulation of our product candidates could require substantial expenditure of resources and may limit how we, or they, manufacture and market our product candidates, which could materially impair our ability to generate revenue.

- The FDA's and other comparable regulatory authorities' policies may change and additional government regulations may be enacted that could prevent, limit or delay regulatory approval of our product candidates, which would impact our ability to generate revenue.

- Any of our product candidates for which we, or our future collaborators, obtain marketing approval in the future will be subject to substantial penalties if we, or they, fail to comply with regulatory requirements or if we, or they, experience unanticipated problems with our product candidates following approval.

- Recently enacted and future legislation, and any change in existing government regulations and policies, may increase the difficulty and cost for us and our future collaborators to obtain marketing approval of and commercialize our product candidates and affect the prices we, or they, may obtain.
- We may seek a breakthrough therapy designation for ATRN-119 or one or more of our other product candidates, but we might not receive such designation, and even if we do, such designation may not lead to a faster development or regulatory review or approval process.
- A fast track designation by the FDA for eprenetapopt, ATRN-119 or any of our product candidates may not actually lead to a faster development or regulatory review or approval process.
- We may seek priority review designation for one or more of our other product candidates, but we might not receive such designation, and even if we do, such designation may not lead to a faster development or regulatory review or approval process.
- Our relationships with healthcare providers, physicians and third-party payors will be subject to applicable anti-kickback, fraud and abuse and other healthcare laws and regulations, which could expose us to penalties, including criminal sanctions, civil penalties, contractual damages, reputational harm and diminished profits and future earnings.
- Our employees may engage in misconduct or other improper activities, including non-compliance with regulatory standards and requirements, which could cause significant liability for us and harm our reputation.
- If we fail to comply with environmental, health and safety laws and regulations, we could become subject to fines or penalties or incur costs that could have a material adverse effect on our business.
- Laws and regulations governing any international operations we may have in the future may preclude us from developing, manufacturing and selling certain product candidates outside of the United States and require us to develop and implement costly compliance programs.
- Security breaches, loss of data and other disruptions could compromise sensitive information related to our business or prevent us from accessing critical information and expose us to liability, which could adversely affect our business and our reputation.
- Any clinical trial programs we conduct or research collaborations we enter into in the European Economic Area ("EEA")/UK may subject us to European data protection laws including, the EU General Data Protection Regulation 2016/679 ("GDPR").

Risks related to employee matters and managing growth

- Our future success depends on our ability to retain our Chairman, our President and Chief Executive Officer, our Senior Vice President and Chief Financial Officer, our Senior Vice President and Chief Operating Officer, our Chief Business Officer and other key executives and to attract, retain and motivate qualified personnel.
- We expect to expand our development and regulatory capabilities and potentially our sales and marketing capabilities, and as a result, we may encounter difficulties in managing our growth, which could disrupt our operations.

Risks related to tax matters

- We have significant deferred tax assets, which may become devalued if we do not generate sufficient future taxable income, applicable corporate tax rates are reduced or if we experience an ownership change.
- We may have taxable income as a result of the purging election made following the Holdco Reorganization.

- We may be subject to current taxation on some of the income of our foreign subsidiaries even absent any cash distributions
- Our foreign subsidiaries may directly become subject to U.S. federal income tax and be subject to a branch profits tax in the United States, which could reduce our after-tax returns and the value of our shares.
- The ongoing effects of the 2017 Tax Cuts and Jobs Act and GILTI could make our results difficult to predict.
- Changes in U.S. federal income tax law and other jurisdictions could materially adversely affect an investment in our common shares.

Risks related to our common stock

- There is no guarantee that the Merger will increase stockholder value.
- Our executive officers, directors and principal stockholders will exert significant control over matters submitted to stockholders for approval. This may prevent new investors from influencing significant corporate decisions.
- Provisions in our corporate charter documents and under Delaware law could make an acquisition of us, which may be beneficial to our stockholders, more difficult and may prevent attempts by our stockholders to replace or remove our current management.
- If securities analysts do not or do not continue to publish research or reports about our business or if they publish negative evaluations of our business, the price of our stock could decline.
- The price of our common stock has been and may continue to be volatile and fluctuate substantially.
- We could be subject to securities class action litigation.
- We are an “emerging growth company” and a “smaller reporting company,” and the reduced disclosure requirements applicable to emerging growth companies or smaller reporting companies may make our common stock less attractive to investors.
- We continue to incur increased costs as a result of operating as a public company as we become subject to additional laws, regulations and listing exchange standards, and our management will continue to be required to devote substantial time to new compliance initiatives.
- Because we do not anticipate paying any cash dividends on our common stock for the foreseeable future, capital appreciation, if any, of our common stock may be investors’ sole source of gain.
- Sales of a substantial number of shares of our common stock by our existing stockholders in the public market could cause our stock price to fall.
- Our certificate of incorporation designates the state courts in the State of Delaware or, if no state court located within the State of Delaware has jurisdiction, the federal court for the District of Delaware, as the sole and exclusive forum for certain types of actions and proceedings that may be initiated by our stockholders, which could discourage lawsuits against the company and our directors, officers and employees.

Risks related to our financial position and need for additional capital

We have incurred significant losses in each year since inception. We expect to incur losses for the foreseeable future and may never achieve or maintain profitability.

Since our inception, we have incurred significant losses on an aggregate basis. Our net loss was $98.3 million and $106.2 million for the three and six months ended June 30, 2022, and $37.1 million, $53.5 million and $28.1 million for the years ended December 31, 2021, 2020 and 2019, respectively. Our accumulated deficit was $287.3 million and $181.1 million as of June 30, 2022 and December 31, 2021, respectively. We have not generated any revenue to date from sales of any drugs and have financed our operations principally through private placements of our preferred stock and the net proceeds received from the initial public offering (IPO) of our common stock. We have devoted substantially all of our efforts to research and development. We expect that our lead product candidate, ATRN-119, which we acquired in connection with the acquisition of Atrin Pharmaceuticals, Inc. (the "Merger"), will be in clinical development in the second half of 2022. One of our other product candidates, eprenetapopt or APR-246, has been tested in clinical trials for solid tumors and hematologic malignancies. A second generation compound, APR-548, also entered clinical development. However, in connection with our eprenetapopt program, we announced in December 2020 that our pivotal Phase 3 trial failed to meet its predefined primary endpoint of complete remission (CR) rate. Given these results, FDA feedback and the costs of continuing the p53 reactivator development programs, we have shifted the primary focus of our activities to the assets acquired in Merger. We expect that it will be several years, if ever, before we have any product candidates ready for commercialization. We expect to continue to incur significant expenses and increasing operating losses for the foreseeable future. The net losses we incur may fluctuate significantly from quarter to quarter.

To become and remain profitable, we must develop, obtain approval for and eventually commercialize a drug or drugs with significant market potential, either on our own or with a collaborator. This will require us to be successful in a range of challenging activities, including completing preclinical studies and clinical trials of our product candidates, obtaining marketing approval for these product candidates, manufacturing, marketing and selling those drugs for which we may obtain marketing approval and establishing and managing any collaborations for the development, marketing and/or commercialization of our product candidates. We may never succeed in these activities and, even if we do, may never generate revenues that are significant or large enough to achieve profitability. If we do achieve profitability, we may not be able to sustain or increase profitability on a quarterly or annual basis. Our failure to become and remain profitable would decrease the value of our company and could impair our ability to raise capital, maintain our research and development efforts, expand our business and/or continue our operations. A decline in the value of our company could also cause our stockholders to lose all or part of their investment.

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

Our product candidates, if approved, may not achieve commercial success. Our commercial revenues, if any, will be derived from sales of drugs that we do not expect to be commercially available for many years, if at all. If we are unable to obtain product approvals or generate significant commercial revenues, our business will be materially harmed.

Our limited operating history may make it difficult for you to evaluate the success of our business to date and to assess our future viability. We have never generated revenues and may never be profitable.

We are an early-stage company. Aprea Therapeutics AB, or Aprea AB, was originally incorporated in 2002 and commenced operations in 2006. We were incorporated in May 2019 and completed the Merger in May 2022.Our operations to date have been limited to organizing and staffing our company, business planning, raising capital, developing eprenetapopt, identifying and acquiring potential product candidates such as ATRN-119, conducting preclinical studies of our product candidates and conducting clinical trials of our product candidates. We expect that our lead product candidate, ATRN-119, will be in clinical development in the second half of 2022. We have not yet

demonstrated our ability to successfully complete large-scale, pivotal clinical trials, obtain marketing approvals, manufacture commercial-scale drug products, or arrange for a third party to do so on our behalf, or conduct sales and marketing activities necessary for successful drug commercialization. Typically, it takes about six to ten years to develop a new drug from the time it is in Phase 1 clinical trials to when it is approved for treating patients, but in many cases it may take longer. Consequently, any predictions you make about our future success or viability may not be as accurate as they could be if we had a longer operating history.

In addition, as a business with a limited operating history, we may encounter unforeseen expenses, difficulties, complications, delays and other known and unknown factors. We may need to transition from a company with a research focus to a company capable of supporting commercial activities. We may not be successful in such a transition.

As we continue to build our business, we expect our financial condition and operating results may fluctuate significantly from quarter to quarter and year to year due to a variety of factors, many of which are beyond our control. Accordingly, you should not rely upon the results of any particular quarterly or annual periods as indications of future operating performance.

We will need substantial additional funding, which may not be available to us on acceptable terms or at all. If we are unable to raise capital when needed, we may be forced to delay, reduce and/or eliminate our research and drug development programs or future commercialization efforts.

Developing drug products, including conducting preclinical studies and clinical trials, is a very time-consuming, expensive and uncertain process that takes years to complete. We expect our expenses to increase in connection with our ongoing activities, particularly as we initiate and conduct clinical trials of, and seek marketing approval for, ATRN-119 and our other product candidates. In addition, if we obtain marketing approval for any of our product candidates, we expect to incur significant commercialization expenses related to drug sales, marketing, manufacturing and distribution to the extent that such sales, marketing, manufacturing and distribution are not the responsibility of any collaborator that we may have at such time for any such product candidate. Furthermore, since the completion of our IPO, we have incurred and expect to incur additional costs associated with operating as a public company. Accordingly, we will need to obtain substantial additional funding in connection with our continuing operations. The ongoing COVID-19 pandemic both in the United States and globally continues to cause uncertainty and volatility in financial markets which in turn may make raising additional funds even more difficult or impossible for us. If we are unable to raise capital when needed or on attractive terms, we may be forced to delay, reduce and/or eliminate our research and drug development programs or future commercialization efforts.

We believe that our existing cash and cash equivalents as of June 30, 2022 will enable us to fund our operating expenses and capital expenditure requirements through the end of 2023. Our estimate as to how long we expect our existing cash and cash equivalents to be able to continue to fund our operations is based on assumptions that may prove to be wrong, and we could use our available capital resources sooner than we currently expect. Further, changing circumstances, some of which may be beyond our control, could cause us to consume capital significantly faster than we currently anticipate, and we may need to seek additional funds sooner than planned. Our future capital requirements will depend on many factors, including:

- the scope, progress, results and costs of our current and future clinical trials of ATRN-119 and our other product candidates for our current and future targeted indications;
- the scope, progress, results and costs of drug discovery, preclinical research and clinical trials for ATRN-119 and our other product candidates;
- the number of future product candidates that we pursue and their development requirements;
- the costs, timing and outcome of regulatory review of our product candidates;
- the extent to which we acquire or invest in businesses, products and technologies, including entering into or maintaining licensing or collaboration arrangements for product candidates on favorable terms, although we currently have no commitments or agreements to complete any such transactions;

- the costs and timing of future commercialization activities, including drug sales, marketing, manufacturing and distribution, for any of our product candidates for which we receive marketing approval, to the extent that such sales, marketing, manufacturing and distribution are not the responsibility of any collaborator that we may have at such time;
- the amount of revenue, if any, received from commercial sales of our product candidates, should any of our product candidates receive marketing approval;
- the costs of preparing, filing and prosecuting patent applications, maintaining, defending and enforcing our intellectual property rights and defending intellectual property-related claims;
- our headcount growth and associated costs as we expand our business operations and our research and development activities; and
- the costs of operating as a public company.

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

We expect our expenses to increase in connection with our planned operations. Until such time, if ever, as we can generate substantial revenues from the sale of drugs, we expect to finance our cash needs through a combination of equity offerings, debt financings, collaborations, strategic alliances and/or licensing arrangements. To the extent that we raise additional capital through the sale of equity or convertible debt securities, ownership interests in our securities may be diluted, and the terms of these securities could include liquidation or other preferences and anti-dilution protections that could adversely affect the rights of our common stockholders. In addition, debt financing, if available, would result in fixed payment obligations and may involve agreements that include restrictive covenants that limit our ability to take specific actions, such as incurring additional debt, making capital expenditures, creating liens, redeeming stock or declaring dividends, that could adversely impact our ability to conduct our business. In addition, securing financing could require a substantial amount of time and attention from our management and may divert a disproportionate amount of their attention away from day-to-day activities, which may adversely affect our management's ability to oversee the development of our product candidates.

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

Risks related to the discovery, development and commercialization of our product candidates

We are substantially dependent on the success of our lead product candidate, ATRN-119, which we expect will be in clinical development in the second half of 2022. Our clinical trials of ATRN-119 may not be successful. If we are unable to obtain approval for and commercialize ATRN-119 or experience significant delays in doing so, our business will be materially harmed.

Our future success is substantially dependent on our ability to timely obtain marketing approval for, and then successfully commercialize, ATRN-119, our lead product candidate. We are investing a majority of our efforts and financial resources in the research and development of ATRN-119. Our business depends entirely on the successful development and commercialization of our product candidates. We currently have no drugs approved for sale and generate no revenues from sales of any products, and we may never be able to develop a marketable product.

Our product candidates will require additional clinical development, evaluation of clinical, preclinical and manufacturing activities, marketing approval in multiple jurisdictions, substantial investment and significant marketing efforts before we generate any revenues from product sales. We are not permitted to market or promote any of our product candidates, before we receive marketing approval from the FDA and comparable foreign regulatory authorities, and we may never receive such marketing approvals.

Additionally, in December 2020, we announced that our pivotal Phase 3 MDS trial for eprenetapopt failed to meet its predefined primary endpoint of complete remission (CR) rate. On August 4, 2021, the U.S. Food and Drug Administration (FDA) placed a partial clinical hold on the clinical trials of eprenetapopt in combination with azacitidine in our myeloid malignancy programs. On August 11, 2021, the FDA placed a clinical hold on our clinical trial evaluating eprenetapopt with acalabrutinib or with venetoclax and rituximab in lymphoid malignancies. On December 8, 2021, FDA notified us that it was lifting the clinical hold on the IND for our lymphoid malignancy program. In the first quarter of 2022, FDA notified us that it would continue the partial clinical hold on three ongoing clinical studies in our myeloid program. However, we received clearance from FDA to proceed under our existing IND with a new trial in R/R MDS and AML. Given these results, FDA feedback and the costs of continuing the p53 reactivator development programs, we have now shifted our primary focus to ATRN-119. Our other product candidates, besides ATRN-119, APR-548 and eprenetapopt, are in earlier stages of development.

The success of ATRN-119 will depend on several factors, including the following:

- successful initiation, successful patient enrollment and timely completion of clinical trials of ATRN-119;
- successful initiation and successful patient enrollment and completion of additional clinical trials, for ATRN-119 or our other product candidates;
- the impact of COVID-19 on our operations, ability to conduct clinical trials and on the ability of our regulators to review and approve our product candidates;
- our ability to demonstrate ATRN-119's safety, tolerability and efficacy to the FDA or any comparable foreign regulatory authority for marketing approval;
- timely receipt of marketing approvals for ATRN-119;
- obtaining and maintaining patent protection, trade secret protection and regulatory exclusivity, both in the United States and internationally;
- successfully defending and enforcing our rights in our intellectual property portfolio;
- avoiding and successfully defending against any claims that we have infringed, misappropriated or otherwise violated any intellectual property of any third party;
- the performance of our future collaborators, if any;
- the extent of and our ability to timely complete, any required post-marketing approval commitments imposed by FDA or other applicable regulatory authorities;
- successfully developing a companion diagnostic test on a timely and cost effective basis;
- establishment of supply arrangements with third-party raw materials and drug product suppliers and manufacturers who are able to manufacture clinical trial and commercial quantities of ATRN-119 drug substance and drug product and to develop, validate and maintain a commercially viable manufacturing process that is compliant with current good manufacturing practices, or cGMP, at a scale sufficient to meet anticipated demand and over time enable us to reduce our cost of manufacturing;
- establishment of scaled production arrangements with third-party manufacturers to obtain finished products that are compliant with cGMP and appropriately packaged for sale;
- successful launch of commercial sales following any marketing approval;
- a continued acceptable safety profile following any marketing approval;
- commercial acceptance by patients, the medical community and third-party payors;
- the availability of coverage and adequate reimbursement and pricing by third-party payors and government authorities;
- the availability, perceived advantages, relative cost, relative safety and relative efficacy of alternative and competing treatments; and

- our ability to compete with other therapies.

We do not have complete control over many of these factors, including certain aspects of clinical development and the regulatory submission process, potential threats to our intellectual property rights and the manufacturing, marketing, distribution and sales efforts of any future collaborator. Accordingly, we cannot assure you that we will ever be able to generate revenue through the sale of our product candidates. If we are not successful in commercializing ATRN-119, or are significantly delayed in doing so, our business will be materially harmed.

We have not tested ATRN-119 and ATRN-W1051 in clinical trials. The results of preclinical studies and early-stage clinical trials may not be predictive of future results in later studies or trials. Initial success in clinical trials may not be indicative of results obtained when these trials are completed or in later-stage clinical trials.

We have not tested ATRN-119 and ATRN-W1051 in clinical trials. The results of preclinical studies, whether or not conducted by us, may not be predictive of the results of clinical trials, and the results of any early-stage clinical trials we commence in the future may not be predictive of the results of the later-stage clinical trials. For example, even if successful, the results of our Phase 1 clinical trials of our product candidates ATRN-119 and ATRN-W1051 and other product candidates may not be predictive of the results of further clinical trials of these product candidates or any of our other product candidates. In addition, initial success in clinical trials may not be indicative of results obtained when such trials are completed on in later stage clinical trials. In particular, the small number of patients in our planned early clinical trials may make the results of these trials less predictive of the outcome of later clinical trials. Moreover, preclinical and clinical data often are susceptible to varying interpretations and analyses, and many companies that have believed their product candidates performed satisfactorily in preclinical studies and clinical trials nonetheless have failed to obtain marketing licensure of their product candidates. Our future clinical trials for ATRN-119 and ATRN-W1051 may not ultimately be successful or support further clinical development. There is a high failure rate for product candidates proceeding through clinical trials. Many companies in the pharmaceutical and biotechnology industries have suffered significant setbacks in clinical development even after achieving encouraging results in earlier studies. Any such setbacks in our clinical development could materially harm our business, results of operations, financial condition and prospects.

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

We have filed an IND for ATRN-119, but we may not be able to file INDs for our other product candidates on the timelines we expect. For example, we may experience manufacturing delays or other delays with IND-enabling studies. Moreover, we cannot be sure that submission of an IND will result in the FDA allowing further clinical trials to begin, or that, once begun, issues will not arise that lead FDA, IRBs, or other authorities to suspend, terminate, or require changes to our clinical trials. Additionally, even if such regulatory and other authorities agree with the design and implementation of the clinical trials set forth in an IND, we cannot guarantee that such regulatory authorities will not change their requirements in the future. These considerations also apply to new clinical trials or changes to existing clinical trials we may submit as amendments to existing INDs or to a new IND. Any failure to file INDs on the timelines we expect or to obtain regulatory clearance or approvals for our trials may prevent us from completing our clinical trials or commercializing our products on a timely basis, if at all.

We may find it difficult to enroll patients in our clinical trials If we experience delays or difficulties in the enrollment of patients in clinical trials, our receipt of necessary marketing approvals could be delayed or prevented.

We may not be able to initiate or continue clinical trials for our product candidates if we are unable to locate and enroll a sufficient number of eligible patients to participate in these trials as required by the FDA or comparable foreign regulatory authorities. Patient enrollment is a significant factor in the timing of clinical trials and our ability to enroll eligible patients may be limited or may result in slower enrollment than we anticipate. Additionally, COVID-19 may negatively impact again our ability to locate and enroll patients.

Patient enrollment may be affected if our competitors have ongoing clinical trials for product candidates that are under development for the same indications as our product candidates, and patients who would otherwise be eligible for our

clinical trials instead enroll in clinical trials of our competitors' product candidates. Patient enrollment may also be affected by other factors, including:

- size and nature of the patient population;
- severity of the disease under investigation;
- availability and efficacy of approved drugs for the disease under investigation;
- patient eligibility criteria for the trial in question;
- patients' and clinicians' perceived risks and benefits of the product candidate under study;
- competing clinical trials;
- efforts to facilitate timely enrollment in clinical trials;
- physicians' attitudes and practices with respect to clinical trial enrollment;
  the ability to monitor patients adequately during and after treatment, including as a result of the impact of COVID-19 ;
- ● proximity and availability of clinical trial sites for prospective patients and;
  ● continued enrollment of prospective patients by clinical trial sites.

Our inability to enroll a sufficient number of patients for our clinical trials would result in significant delays or may require us to abandon one or more clinical trials altogether. Enrollment delays in our clinical trials may result in increased development costs for our product candidates, which would cause the value of our company to decline and limit our ability to obtain additional financing.

Leveraging synthetic lethality in therapeutic targeting of DDR represents an emerging an emerging strategy to treat a broad spectrum of cancers, and negative perceptions of the efficacy, safety, or tolerability of this class of targets, including any that we develop, could adversely affect our ability to conduct our business, advance our product candidates or obtain regulatory approvals.

Aside from PARP inhibitors, such as Lynparza, Rubraca, Zejula and Talzenna, no synthetic lethality small molecule inhibitor therapeutics have been approved to date by the FDA or other regulatory authorities. Adverse events in future clinical trials of our product candidates or in clinical trials of other similar products and the resulting publicity, as well as any other adverse events in the field of synthetic lethality and DDR, or any adverse events involving other products that are perceived to be similar to DDR, such as those related to gene therapy or gene editing, could result in a decrease in the perceived benefit of one or more of our programs, increased regulatory scrutiny, decreased confidence by healthcare professionals, patients and CROs in our product candidates, difficulties and delays in regulatory clearance or approval for, enrollment of patients in, and conduct of, our clinical trials, and less demand for any product that we may develop. Our pipeline of product candidates could result in a greater quantity of reportable adverse events or other reportable negative clinical outcomes, manufacturing reportable events or material clinical events that could lead to clinical delays or holds by the FDA or applicable regulatory authority or other clinical delays, any of which could negatively impact the perception of one or more of our product development programs, as well as our business as a whole.

In addition, responses by U.S. federal or foreign governments to adverse events or negative public perception may result in new legislation or regulations that could limit our ability to develop any product candidates or commercialize any approved products, obtain or maintain regulatory approval, or otherwise achieve profitability. More restrictive statutory regimes, government regulations, or negative public opinion would have an adverse effect on our business, financial condition, results of operations, and prospects, and may delay or impair the development of our product candidates and commercialization of any approved products or demand for any products we may develop.

If serious adverse or unacceptable side effects are identified during the development of our product candidates or we observe limited efficacy of our product candidates, we may need to abandon or limit the development of one or more of our product candidates.

Adverse events or unacceptable side effects caused by, or other unexpected properties of, our product candidates could cause us, any future collaborators, an institutional review board, or IRB, or regulatory authorities to interrupt, delay or halt clinical trials of one or more of our product candidates and could result in the (i) delay or denial of marketing

approval by the FDA or comparable foreign regulatory authorities, (ii) approval with significant restrictions on distribution or use or (iii) required labeling information regarding safety concerns, if approved.

In general, our clinical trials of ATRN-119 will include cancer patients who are very sick and whose health is deteriorating. We expect that patients may experience adverse events, serious adverse events or may die during their participation in our future clinical trials for ATRN-119 or other product candidates. Because ATRN-119 has not yet been studied in clinical studies involving humans, we cannot predict with certainty what adverse events may occur in our clinical trials. Any adverse events, serious adverse events, or deaths occurring in our clinical trials, whether related to our product candidates or not, could affect perceptions relating to our product candidates. In addition, our clinical trials of eprenetapopt include cancer patients who are very sick and whose health is deteriorating, and we expect that additional clinical trials of eprenetapopt and our other product candidates will include similar patients with deteriorating health. Multiple patients in our trials have experienced adverse events. The most commonly reported adverse events include nausea, vomiting, constipation, dizziness, fatigue, and neutropenia. Some patients in our trials have experienced serious adverse events. The most common serious adverse events include febrile neutropenia, pneumonia, sepsis, and pyrexia.

In addition, if any of our product candidates are associated with adverse events or undesirable side effects or have properties that are unexpected, our trials could be suspended or terminated and the FDA or comparable foreign regulatory authorities could order us to cease further development of or deny approval of our product candidates for any or all targeted indications. We, or any future collaborators, may abandon development or limit development of that product candidate to certain uses or subpopulations in which the undesirable side effects or other characteristics are less prevalent, less severe or more acceptable from a risk-benefit perspective. Drug-related side effects could affect patient recruitment or the ability of enrolled patients to complete the trial or result in potential product liability claims. Any of these occurrences may harm our business, results of operations, financial condition and prospects significantly.

The outcome of preclinical testing and early clinical trials may not be predictive of the success of later clinical trials, interim results of a clinical trial do not necessarily predict final results, and the results of our clinical trials may not satisfy the requirements of the FDA or comparable foreign regulatory authorities.

We currently have no drugs approved for sale and we cannot guarantee that we will ever have marketable drugs. Clinical failure can occur at any stage of clinical development. Clinical trials may produce negative or inconclusive results, and we or any future collaborators may decide, or regulators may require us, to conduct additional clinical trials or preclinical studies. We will be required to demonstrate with substantial evidence through adequate and well-controlled clinical trials that our product candidates are safe and effective for use in treating specific conditions in order to obtain marketing approvals for their commercial sale. Success in preclinical studies and early-stage clinical trials does not mean that future larger registration clinical trials will be successful because product candidates in later-stage clinical trials may fail to demonstrate safety and efficacy to the satisfaction of the FDA and non-U.S. regulatory authorities despite having progressed through preclinical studies and early-stage clinical trials. Product candidates that have shown promising results in preclinical studies and early-stage clinical trials may still suffer significant setbacks in subsequent registration clinical trials. Additionally, the outcome of preclinical studies and early-stage clinical trials may not be predictive of the success of later-stage clinical trials.

From time to time, we may publish or report interim or preliminary data from our clinical trials. Interim or preliminary data from clinical trials that we may conduct may not be indicative of the final results of the trial and are subject to the risk that one or more of the clinical outcomes may materially change as patient enrollment continues and more patient data become available. Interim or preliminary data also remain subject to audit and verification procedures that may result in the final data being materially different from the interim or preliminary data. As a result, interim or preliminary data should be viewed with caution until the final data are available.

In addition, the design of a clinical trial can determine whether its results will support approval of a drug and flaws in the design of a clinical trial may not become apparent until the clinical trial is well advanced. We have limited experience in designing clinical trials and may be unable to design and conduct a clinical trial to support marketing approval. Further, if our product candidates are found to be unsafe or lack efficacy, we will not be able to obtain marketing approval for them and our business would be harmed. A number of companies in the pharmaceutical industry, including those with

greater resources and experience than us, have suffered significant setbacks in advanced clinical trials, even after obtaining promising results in preclinical studies and earlier clinical trials.

In some instances, there can be significant variability in safety and efficacy results between different clinical trials of the same product candidate due to numerous factors, including changes in trial protocols, differences in size and type of the patient populations, differences in and adherence to the dosing regimen and other trial protocols and the rate of dropout among clinical trial participants. We do not know whether any clinical trials we may conduct will demonstrate consistent or adequate efficacy and safety sufficient to obtain marketing approval to market our product candidates.

In addition, in the event that an adverse safety issue, clinical hold, or other adverse finding occurs in one of our clinical trials, that event could adversely affect any other clinical trials for the same product candidate. Moreover, there is a relatively limited safety data set for product candidates with the same mechanism of action as ATRN-119 or our other product candidates. An adverse safety issue or other adverse finding in a clinical trial conducted by a third party with a similar mechanism of action could adversely affect clinical trials involving ATRN-119 or our other product candidates.

Further, our product candidates may not be approved even if they achieve their primary endpoints in clinical trials, including registration trials. The FDA or comparable foreign regulatory authorities may disagree with our trial design and our interpretation of data from preclinical studies and clinical trials. In addition, any of these regulatory authorities may change requirements for the approval of a product candidate even after reviewing and providing comments or advice on a protocol for a pivotal clinical trial that has the potential to result in approval by the FDA or comparable foreign regulatory authorities. In addition, any of these regulatory authorities may also approve a product candidate for fewer or more limited indications than we request or may grant approval contingent on the performance of costly post-marketing clinical trials. In addition, the FDA or other comparable foreign regulatory authorities may not approve the labeling claims that we believe would be necessary or desirable for the successful commercialization of our product candidates.

Before obtaining marketing approvals for the commercial sale of any product candidate for a target indication, we must demonstrate with substantial evidence gathered in preclinical studies and adequate and well-controlled clinical trials, and, with respect to approval in the United States, to the satisfaction of the FDA and elsewhere to the satisfaction of other comparable foreign regulatory authorities, that the product candidate is safe and effective for use for that target indication. There is no assurance that the FDA or other comparable foreign regulatory authorities will consider our future clinical trials to be sufficient to serve as the basis for approval of one of our product candidates for any indication. The FDA and other comparable foreign regulatory authorities retain broad discretion in evaluating the results of our clinical trials and in determining whether the results demonstrate that a product candidate is safe and effective. If we are required to conduct additional clinical trials of a product candidate than we expect prior to its approval, we will need substantial additional funds and there is no assurance that the results of any such additional clinical trials will be sufficient for approval.

Clinical drug development is a lengthy and expensive process, with an uncertain outcome. If clinical trials of our product candidates fail to demonstrate safety and efficacy to the satisfaction of regulatory authorities or do not otherwise produce positive results, we may incur additional costs, experience delays in completing, or ultimately be unable to complete, the development of our product candidates or be unable to obtain marketing approval.

Before obtaining marketing approval from regulatory authorities for the sale of our product candidates, we must complete preclinical development and then conduct extensive clinical trials to demonstrate the safety and efficacy of our product candidates. Clinical testing is expensive, difficult to design and implement, can take many years to complete and is uncertain as to outcome. A failure of one or more clinical trials can occur at any stage of testing. The outcome of preclinical studies and early-stage clinical trials may not be predictive of the success of later clinical trials, and interim results of a clinical trial, such as the results of our clinical trials of eprenetapopt, do not necessarily predict final results. In December 2020, we announced that our pivotal Phase 3 trial failed to meet its predefined primary endpoint of complete remission (CR) rate.

Moreover, preclinical and clinical data are often susceptible to varying interpretations and analyses, and many companies that have believed their product candidates performed satisfactorily in preclinical studies and clinical trials have nonetheless failed to obtain marketing approval of their drugs.

We do not know whether ongoing clinical trials will be completed on schedule or at all, or whether future clinical trials will begin on time, need to be redesigned, enroll patients on time or be completed on schedule, if at all. Clinical trials can be delayed for a variety of reasons, including delays related to:

- obtaining regulatory authorization to commence a trial;
- reaching agreement on acceptable terms with prospective contract research organizations, or CROs, and clinical trial sites, the terms of which can be subject to extensive negotiation and may vary significantly among different CROs and clinical trial sites;
- obtaining institutional review board or ethics committee approval at each clinical trial site;
- recruiting suitable patients to participate in a trial;
- the impact of COVID-19 on patient screening, patient enrollment, and follow-up;
- developing and validating any companion diagnostic to be used in the trial, to the extent we are required to do so;
- patients failing to comply with the clinical trial protocol or dropping out of a trial;
- clinical trial sites failing to comply with the clinical trial protocol or dropping out of a trial;
- addressing any conflicts with new or existing laws or regulations;
- the need to add new clinical trial sites;
- manufacturing sufficient quantities of product candidate for use in clinical trials and ensuring clinical trial material is provided to clinical sites in a timely manner; or
- obtaining advice from regulatory authorities regarding the statistical analysis plan to be used to evaluate the clinical trial data or other trial design issues.

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

- we may receive feedback from regulatory authorities that requires us to modify the design of our clinical trials;
- clinical trials of our product candidates may produce negative or inconclusive results, and we may decide, or regulators may require us, to conduct additional clinical trials or abandon drug development programs;
- the number of patients required for clinical trials of our product candidates may be larger than we anticipate, enrollment in these clinical trials may be slower than we anticipate or participants may drop out of these clinical trials at a higher rate than we anticipate;
- our third-party contractors, including our CROs, may fail to comply with regulatory requirements or meet their contractual obligations to us in a timely manner, or at all;
- we, our investigators, or any of the overseeing IRBs or ethics committees might decide to suspend or terminate clinical trials of our product candidates for various reasons, including non-compliance with regulatory requirements, a finding that our product candidates have undesirable side effects or other unexpected characteristics, or a finding that the participants are being exposed to unacceptable health risks;
- the cost of clinical trials of our product candidates may be greater than we anticipate;
- the supply or quality of our product candidates or other materials necessary to conduct clinical trials of our product candidates may be insufficient or inadequate;
- regulators may revise the requirements for approving our product candidates, or such requirements may not be as we anticipate; and
- any future collaborators that conduct clinical trials may face any of the above issues and may conduct clinical trials in ways they view as advantageous to them but that are suboptimal for us.

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

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

Our drug development costs will also increase if we experience delays in testing or marketing approvals. We do not know whether clinical trials will begin as planned, will need to be restructured or will be completed on schedule, or at all. Furthermore, we rely on third-party CROs and clinical trial sites to ensure the proper and timely conduct of our clinical trials, and while we have agreements governing their committed activities, we have limited influence over their actual performance. Significant clinical trial delays also could shorten any periods during which we may have the exclusive right to commercialize our product candidates or allow our competitors to bring drugs to market before we do and impair our ability to successfully commercialize our product candidates and may harm our business and results of operations.

We may expend our limited resources to pursue a particular product candidate or indication and fail to capitalize on product candidates or indications that may be more profitable or for which there is a greater likelihood of success.

Because we have limited financial and managerial resources, we focus on research programs and product candidates that we identify for specific indications. As a result, we may forego or delay pursuit of opportunities with other product candidates or for other indications that later prove to have greater commercial potential. For example, due to the results of our pivotal Phase 3 MDS trial, FDA feedback and the costs of continuing our p53 reactivator programs, we shifted our primary focus to ATRN-119. Our resource allocation decisions may cause us to fail to capitalize on viable commercial drugs or profitable market opportunities. Our spending on current and future research and development programs and product candidates for specific indications may not yield any commercially viable drugs. If we do not accurately evaluate the commercial potential or target market for a particular product candidate, we may relinquish valuable rights to that product candidate through collaboration, licensing or other strategic arrangements in cases in which it would have been more advantageous for us to retain sole development and commercialization rights to such product candidate.

The failure to obtain required regulatory clearances or approvals for any companion diagnostic tests that we may pursue may prevent or delay approval of any of our product candidates. Moreover, the commercial success of any of our product candidates that require a companion diagnostic will be tied to the receipt of any required regulatory clearances or approvals and the continued availability of such tests.

In connection with the clinical development of our product candidates for certain indications, we may work with collaborators to develop or obtain access to companion diagnostic tests to identify appropriate patients for our product candidates. We may rely on third parties for the development, testing and manufacturing of these companion diagnostics, the application for and receipt of any required regulatory clearances or approvals, and the commercial supply of these companion diagnostics. The FDA and foreign regulatory authorities regulate companion diagnostics as medical devices that will likely be subject to clinical trials in conjunction with the clinical trials for product candidates, and which will require separate regulatory clearance or approval prior to commercialization. This process could include additional meetings with health authorities, such as a pre-submission meeting and the requirement to submit an investigational device exemption. In the case of a companion diagnostic that is designated as “significant risk device,” approval of an investigational device exemption by the FDA and IRB is required before such diagnostic is used in conjunction with the clinical trials for a corresponding product candidate. We or our third-party collaborators may fail to obtain the required regulatory clearances or approvals, which could prevent or delay approval of our product candidates. In addition, the commercial success of any of our product candidates that require a companion diagnostic will be tied to and dependent

upon the receipt of required regulatory clearances or approvals and the continued ability of such third parties to make the companion diagnostic commercially available to us on reasonable terms in the relevant geographies.

If we are required to in the future and if we are unable to successfully develop companion diagnostic tests for our product candidates that require such tests, or experience significant delays in doing so, we may not realize the full commercial potential of these product candidates.

We may be required by the FDA to develop, either by ourselves or with collaborators, companion diagnostic tests for our product candidates for certain indications. To be successful, we or our collaborators will need to address a number of scientific, technical, regulatory and logistical challenges. We have no prior experience with medical device or diagnostic test development. If we choose to develop and seek FDA approval for companion diagnostic tests on our own, we will require additional personnel. We may rely on third parties for the design, development and manufacture of companion diagnostic tests for our therapeutic product candidates that require such tests. If these parties are unable to successfully develop companion diagnostics for these therapeutic product candidates, or experience delays in doing so, we may be unable to enroll enough patients for our current and planned clinical trials, the development of these therapeutic product candidates may be adversely affected, these therapeutic product candidates may not obtain marketing approval, and we may not realize the full commercial potential of any of these therapeutics that obtain marketing approval. Any failure to successfully develop this companion diagnostic may cause or contribute to delayed enrollment of this trial, and may prevent us from initiating or completing further clinical trials to support marketing approval for our product candidates. As a result, our business, results of operations and financial condition could be materially harmed.

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

Our research programs may initially show promise in identifying potential product candidates, yet fail to yield product candidates for clinical development for a number of reasons, including:

- the research methodology used may not be successful in identifying potential product candidates;
- potential product candidates may, on further study, be shown to have harmful side effects or other characteristics that indicate that they are unlikely to be drugs that will receive marketing approval and/or achieve market acceptance; and
- potential product candidates may not be safe or effective in treating their targeted diseases.

Research programs to identify new product candidates require substantial technical, financial and human resources. If we are unable to identify suitable compounds for preclinical and clinical development, our business would be harmed.

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

Clinical trials of our product candidates must be conducted in carefully defined subsets of patients who have agreed to enter into clinical trials. Consequently, it is possible that our clinical trials, or those of any future collaborator, may indicate an apparent positive effect of a product candidate that is greater than the actual positive effect, if any, or alternatively fail to identify undesirable side effects. If one or more of our product candidates receives marketing approval and we, or others, discover that the drug is less effective than previously believed or causes undesirable side effects that were not previously identified, a number of potentially significant negative consequences could result, including:

- regulatory authorities may withdraw their approval of the drug or seize the drug;
- we, or any future collaborators, may be required to recall the drug, change the way the drug is administered or conduct additional clinical trials;
- additional restrictions may be imposed on the marketing of, or the manufacturing processes for, the particular drug;
- we may be subject to fines, injunctions or the imposition of civil or criminal penalties;
- regulatory authorities may require the addition of labeling statements, such as a “black box” warning or a contraindication;

- we, or any future collaborators, may be required to create a Medication Guide outlining the risks of the previously unidentified side effects for distribution to patients;
- we, or any future collaborators, could be sued and held liable for harm caused to patients;
- the drug may become less competitive in the marketplace; and
- our reputation may suffer.

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

Even if any of our product candidates receive marketing approval, they may fail to achieve the degree of market acceptance by physicians, patients, healthcare payors and others in the medical community necessary for commercial success.

If any of our product candidates receive marketing approval, they may nonetheless fail to gain sufficient market acceptance by physicians, patients, healthcare payors and others in the medical community. For example, current cancer treatments like chemotherapy and radiation therapy are well-established in the medical community, and doctors may continue to rely on these treatments. If our product candidates do not achieve an adequate level of acceptance, we may not generate significant revenues from sales of drugs and we may not become profitable. The degree of market acceptance of our product candidates, if approved for commercial sale, will depend on a number of factors, including:

- the efficacy and safety of the product;
- the potential advantages of the product compared to alternative therapies;
- the prevalence and severity of any side effects;
- whether the product is designated under physician and other provider treatment guidelines as a first-, second- or third-line therapy;
- our ability, or the ability of any future collaborators, to offer the product for sale at competitive prices;
- the product's convenience and ease of administration for patients and healthcare practitioners compared to alternative treatments;
- the willingness of the target patient population to try, and of physicians to prescribe, the product;
- limitations or warnings, including distribution or use restrictions and safety information contained in the product's approved labeling;
- the strength of sales, marketing and distribution support;
- changes in the standard of care for the targeted indications for the product; and
- the availability of coverage by, and the amount of reimbursement from, government payors, managed care plans and other third-party payors.

We face substantial competition, which may result in others discovering, developing or commercializing products before or more successfully than we do.

The pharmaceutical and biotechnology industries generally, and the cancer drug sector specifically, are highly competitive and characterized by rapidly advancing technologies, evolving understanding of disease etiology and a strong emphasis on proprietary drugs. We face competition with respect to ATRN-119, eprenetapopt, and our other product candidates, and will face competition with respect to any product candidates that we may seek to discover and develop or commercialize in the future, from major pharmaceutical, specialty pharmaceutical and biotechnology companies. There are a number of major pharmaceutical, specialty pharmaceutical and biotechnology companies that currently market and sell drugs or are pursuing the development of drugs for the treatment of cancer. Potential competitors also include academic institutions and governmental agencies and public and private research institutions.

There are a large number of companies developing or marketing treatments for cancer, including the indications for which we may develop product candidates. Many of the companies that we compete or may compete against in the future have significantly greater financial resources and expertise in research and development, manufacturing, preclinical testing, conducting clinical trials, obtaining regulatory approvals and marketing approved drugs than we do. Small or early-stage companies may also prove to be significant competitors, particularly through collaborative arrangements with large and established companies. These competitors also compete with us in recruiting and retaining

qualified scientific and management personnel and establishing clinical trial sites and patient registration for clinical trials, as well as in acquiring technologies complementary to, or that may be necessary for, our programs.
Our commercial opportunity could be reduced or eliminated if our competitors develop and commercialize drugs that are safer, more effective, have fewer or less severe side effects, are more convenient or are less expensive than any drugs that we may develop. Our competitors also may obtain FDA or other comparable foreign regulatory approval for their drugs 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. The key competitive factors affecting the success of all of our product candidates, if approved, are likely to be their efficacy, safety, convenience, price, the effectiveness of companion diagnostics in guiding the use of related therapeutics, the level of generic competition and the availability of reimbursement from government and other third-party payors.

The most common methods of treating patients with cancer are surgery, radiation and drug therapy. There are a variety of available drug therapies marketed for cancer. In many cases, these drugs are administered in combination to enhance efficacy. Some of the currently-approved drug therapies are branded and subject to patent protection and may be established as the standard of care for treatment of indications for which we may choose to seek regulatory approvals. Many of these approved drugs are well-established therapies and are widely accepted by physicians, patients and third-party payors, and, even if our product candidates were to be approved, there can be no assurance that our product candidates would displace existing treatments. In addition to currently marketed therapies, there are also a number of drugs in late-stage clinical development to treat cancer, including the indications for which we are developing product candidates. These clinical-stage product candidates may provide efficacy, safety, convenience and other benefits that are not provided by currently-marketed therapies. As a result, they may provide significant competition for any of our product candidates for which we obtain regulatory approval.

We are developing ATRN-119, which is an orally bioavailable small molecule product candidate that targets Ataxia Telangiectasia and Rad3-related (“ATR”) protein within the DNA damage response pathway. We are aware of other product candidates that are in clinical development for the treatment of various cancers through similar mechanisms of action, including product candidates in clinical development being tested by Artios Pharma Ltd., AstraZeneca Plc, Bayer AG, IMPACT Therapeutics, Inc., and Repare Therapeutics, Inc., among others. If ATRN-119 were to be approved, it will compete with currently marketed drugs or drugs that may be approved for marketing by the FDA or comparable foreign regulatory authorities in the future and such competition will not be limited to drugs with similar mechanisms of action.

Our business and operations would suffer in the event of IT system failures, cybersecurity attacks, data breaches, or vulnerabilities in our or our third-party vendors’ information security program or defenses.

Our business relies upon information technology systems operated by us and by our third party service providers. These systems may fail or experience operational disruption, experience cybersecurity attacks, or be damaged by computer viruses and unauthorized access. In the ordinary course of business, we collect, store and transmit confidential information (including but not limited to intellectual property, proprietary business information and personal information). It is critical that we do so in a secure manner to maintain the confidentiality and integrity of such confidential information. We have developed, and continue to mature our policies and procedures to ensure the security and integrity of our information technology systems and confidential and proprietary information. If we do not continue to mature our cybersecurity defensive technological safeguards, policies and procedures or those safeguards, policies and procedures are insufficient to ensure the protection of our information technology systems and confidential and proprietary information, we may be vulnerable to security breaches or disruptions and system breakdowns or other damage or interruptions, and face legal and reputational risk. We also have outsourced elements of our operations to third parties, and as a result we manage a number of third-party vendors and other contractors and consultants who have access to or store our confidential information. While we endeavor to select providers with reasonable and industry standard information security programs, we are reliant on these third-party vendors’ commitments regarding their information technology systems and cybersecurity programs. If our third-party vendors fail to protect their information technology systems and our confidential and proprietary information, we may be vulnerable to disruptions in service and unauthorized access to our confidential or proprietary information and we could incur liability and reputational damage and the further development and commercialization of our product candidates could be delayed. While we have not, to our knowledge, experienced any material IT system failures or cybersecurity attacks to date, we frequently must defend

against and respond to cybersecurity incidents and attacks and cannot assure you that our data protection efforts and our investment in information technology will prevent significant breakdowns, data leakages, compromises of personal information or confidential commercial information, other operationally significant breaches in our systems or those of our third-party vendors and other contractors and consultants, or other cyber incidents that could have a material adverse effect upon our reputation, business, operations or financial condition. If such an event were to occur and cause interruptions in our operations, it could result in a material disruption of our development programs, business operations, a breach of sensitive personal information or a loss or corruption of critical data assets including trade secrets or other proprietary information. For example, the loss of clinical trial data from future clinical trials could result in delays in our regulatory approval efforts and significantly increase our costs to recover or reproduce the data. Such IT system failures, cybersecurity attacks or vulnerabilities to our or our third-party vendors' information security programs or defenses could result in legal liability, reputational damage, business interruption, and our competitive position could be harmed and the further development and commercialization of our products or any future products could be delayed or disrupted. Moreover, containing and remediating any IT system failure, cybersecurity attack or vulnerability may require significant investment of resources. Furthermore, significant security breaches or disruptions of our internal information technology systems or those of our third-party vendors and other contractors and consultants could result in the loss, misappropriation and/or unauthorized access, use, or disclosure of, or the prevention of access to, confidential information (including trade secrets or other intellectual property, proprietary business information and personal information), which could result in financial, legal, business and reputational harm to us.

If, in the future, we are unable to establish sales and marketing capabilities or enter into agreements with third parties to sell and market our product candidates, we may not be successful in commercializing our product candidates if and when they are approved.

We do not have a sales or marketing infrastructure and have no experience in the sale or marketing of pharmaceutical drugs. We are not currently a party to a strategic collaboration that provides us with access to a collaborator's resources in selling or marketing drugs. To achieve commercial success for any approved drug for which sales and marketing is not the responsibility of any strategic collaborator that we may have in the future, we must either develop a sales and marketing organization or outsource these functions to other third parties. In the future, we may choose to build a sales and marketing infrastructure to market or co-promote some of our product candidates if and when they are approved, or enter into collaborations with respect to the sale and marketing of our product candidates.

There are risks involved with both establishing our own sales and marketing capabilities and entering into arrangements with third parties to perform these services. For example, recruiting and training a sales force is expensive and time-consuming and could delay any commercial launch of a product candidate. If the commercial launch of a product candidate for which we recruit a sales force and establish marketing capabilities is delayed or does not occur for any reason, we would have prematurely or unnecessarily incurred these commercialization expenses. This may be costly, and our investment would be lost if we cannot retain or reposition our sales and marketing personnel.

Factors that may inhibit our efforts to commercialize our product candidates on our own include:

- our inability to recruit and retain adequate numbers of effective sales and marketing personnel;
- limitations or restrictions on the ability of sales personnel to appropriately market the product to physicians or other healthcare professionals;
- the lack of complementary drugs to be offered by sales personnel, which may put us at a competitive disadvantage relative to companies with more extensive product lines;
- unforeseen costs and expenses associated with creating an independent sales and marketing organization; and
- inability to obtain sufficient coverage and reimbursement from third-party payors and governmental agencies.

If we enter into arrangements with third parties to perform sales and marketing services, our revenues from the sale of drugs or the profitability of these revenues to us are likely to be lower than if we were to market and sell any drugs that we develop ourselves. In addition, we may not be successful in entering into arrangements with third parties to sell and market our product candidates or may be unable to do so on terms that are favorable to us. Third parties may also fail to devote the necessary resources and attention to sell and market our product candidates effectively and we may not have sufficient control or oversight over third parties to ensure they sell and market our product candidates in compliance with

all applicable law. If we do not establish sales and marketing capabilities successfully, either on our own or in collaboration with third parties, we will not be successful in commercializing our product candidates.

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

Once an NDA is approved, the drug covered thereby becomes a "reference-listed drug" in the FDA's publication, "Approved Drug Products with Therapeutic Equivalence Evaluations." Manufacturers may seek marketing approval of generic versions of reference-listed drugs through submission of abbreviated new drug applications, or ANDAs, in the United States. In support of an ANDA, a generic manufacturer need not conduct clinical trials demonstrating safety and efficacy. Rather, the applicant generally must show that its drug is pharmaceutically equivalent to the reference listed drug, in that it has the same active ingredient(s), dosage form, strength, route of administration and conditions of use or labeling as the reference-listed drug, and that the generic version is bioequivalent to the reference-listed drug, meaning it is absorbed in the body at the same rate and to the same extent. Generic drugs may be significantly less costly to bring to market than the reference-listed drug and companies that produce generic drugs are generally able to offer them at lower prices. Thus, following the introduction of a generic drug, a significant percentage of the sales of any branded product or reference-listed drug is typically lost to the generic drug.

The FDA may not approve an ANDA for a generic drug until any applicable period of non-patent exclusivity for the reference-listed drug has expired. The Federal Food, Drug, and Cosmetic Act, or FDCA, provides a period of five years of non-patent exclusivity for a new drug containing a new chemical entity, or NCE. During the exclusivity period, the FDA may not accept for review an ANDA or a 505(b)(2) NDA submitted by another company for another version of such product candidate where the applicant does not own or have a legal right of reference to all the data required for approval. However, an application may be submitted after four years if it contains a certification of patent invalidity or non-infringement. The FDCA also provides three years of marketing exclusivity for an NDA, 505(b)(2) NDA or supplement to an approved NDA if new clinical investigations, other than bioavailability studies, that were conducted or sponsored by the applicant are deemed by the FDA to be essential to the approval of the application, for example, for new indications, dosages or strengths of an existing product candidate. This three-year exclusivity covers only the conditions associated with the new clinical investigations and does not prohibit the FDA from approving ANDAs for product candidates containing the original active agent for other conditions of use. Five-year and three-year exclusivity will not delay the submission or approval of a full NDA. However, an applicant submitting a full NDA would be required to conduct or obtain a right of reference to all of the nonclinical studies and adequate and well-controlled clinical trials necessary to demonstrate safety and effectiveness. Manufacturers may seek to launch these generic drugs following the expiration of the marketing exclusivity period, even if we still have patent protection for our drug competition that our product candidates may face from generic versions of our product candidates could materially and adversely impact our future revenue, profitability and cash flows and substantially limit our ability to obtain a return on the investments we have made in those product candidates. Our future revenues, profitability and cash flows could also be materially and adversely affected and our ability to obtain a return on the investments we have made in those product candidates may be substantially limited if our product candidates, if and when approved, are not afforded the appropriate periods of non-patent exclusivity.

Even if we obtain regulatory approval of any product candidate, the approved product may be subject to post-approval studies and will remain subject to ongoing regulatory requirements. If we fail to comply, or if concerns are identified in subsequent studies, our approval could be withdrawn, and our product sales could be suspended.

If we are successful at obtaining regulatory approval for ATRN-119 or any of our other product candidates, regulatory agencies in the United States and other countries where a product will be sold may require extensive additional clinical trials or post-approval clinical trials that are expensive and time-consuming to conduct. These trials may reveal side effects or other harmful effects in patients that use our products after they are on the market, which may result in the limitation or withdrawal of our drugs from the market. Alternatively, we may not be able to conduct such additional trials, which might force us to abandon our efforts to develop or commercialize certain product candidates. Even if post-approval studies are not requested or required, after our products are approved and on the market, there might be safety

issues that emerge over time that require a change in product labeling, additional post-market studies or clinical trials, imposition of distribution and use restrictions under a Risk Evaluation and Mitigation Strategy, or REMS, or withdrawal of the product from the market, which would cause our revenue to decline.

Additionally, any products that we may successfully develop will be subject to ongoing regulatory requirements after they are approved. These requirements will govern the manufacturing, packaging, marketing, distribution, and use of our products. If we fail to comply with such regulatory requirements, approval for our products may be withdrawn, and product sales may be suspended. We may not be able to regain compliance, or we may only be able to regain compliance after a lengthy delay, significant expense, lost revenues and damage to our reputation.

Even if we are able to commercialize any product candidate, such product candidate may become subject to unfavorable pricing regulations, third-party coverage and reimbursement policies or healthcare reform initiatives, which could harm our business.

The regulations that govern marketing approval, pricing, coverage and reimbursement for new drugs vary widely from country to country. Some countries require approval of the sale price of a drug before it can be marketed. In many countries, the pricing review period begins after marketing 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 might obtain marketing approval for a product in a particular country, but then be subject to price regulations that delay our commercial launch of the product, possibly for lengthy time periods, and negatively impact the revenues we are able to generate from the sale of the product in that country. Adverse pricing limitations may hinder our ability to recoup our investment in one or more product candidates, even if our product candidates obtain marketing approval.

Our ability to commercialize any products successfully also will depend in part on the extent to which reimbursement and coverage for these products and related treatments will be available from government authorities, private health insurers and other organizations, and if reimbursement and coverage is available, the level of reimbursement and coverage. Government authorities and third-party payors, 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 healthcare industry in the United States and elsewhere is cost containment. Government authorities and third-party payors have attempted to control costs by limiting coverage and the amount of reimbursement for particular medications. Increasingly, the third-party payors who reimburse patients or healthcare providers, such as government and private insurance plans, are requiring that drug companies provide them with predetermined discounts from list prices, and are seeking to reduce the prices charged or the amounts reimbursed for medical products. We cannot be sure that coverage and reimbursement will be available for any drug that we commercialize and, if coverage and reimbursement are available, we cannot be sure as to the level of reimbursement. Reimbursement may impact the demand for, or the price of, any product candidate for which we obtain marketing approval. If reimbursement is not available or is available only to limited levels, we may not be able to successfully commercialize any product candidate for which we obtain marketing approval.

There may be significant delays in obtaining reimbursement for newly approved drugs, and coverage may be more limited than the purposes for which the drug is approved by the FDA or comparable foreign regulatory authorities. Moreover, eligibility for reimbursement does not imply that any drug will be reimbursed in all cases or at a rate that covers our costs, including research, development, manufacture, sale and distribution. Interim reimbursement levels for new drugs, if applicable, may also not be sufficient to cover our 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, may be incorporated into existing payments for other items or services and may reflect budgetary constraints or imperfections in Medicare data. Net prices for drugs may be reduced by mandatory discounts or rebates required by government healthcare programs or private payors 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 United States. Third-party payors often rely upon Medicare coverage policy and payment limitations in setting their own reimbursement rates. Our inability to promptly obtain coverage and adequate reimbursement rates from both government-funded and private payors for new products that we develop and for which we obtain marketing approval could have a material adverse effect on our operating results, our ability to raise capital needed to commercialize products and our overall financial condition.

Product liability lawsuits against us could cause us to incur substantial liabilities and to limit commercialization of any drugs that we may develop. Our insurance policies may be inadequate and may potentially expose us to unrecoverable risk.

We face an inherent risk of product liability exposure related to the testing of our product candidates in clinical trials and will face an even greater risk if we commercially sell any drugs that we may develop. If we cannot successfully defend ourselves against claims that our product candidates or drugs caused injuries, we will incur substantial liabilities. Regardless of merit or eventual outcome, liability claims may result in:

- decreased demand for any product candidates or drugs that we may develop;
- injury to our reputation and significant negative media attention;
- withdrawal of clinical trial participants;
- significant costs to defend the related litigation;
- substantial monetary awards to trial participants or patients;
- loss of revenue;
- reduced resources of our management to pursue our business strategy; and
- the inability to commercialize any drugs that we may develop.

We currently hold clinical trial liability insurance coverage for up to $3.0 million, but that coverage may not be adequate to cover any and all liabilities that we may incur. We would need to increase our insurance coverage when we begin the commercialization of our product candidates, if ever. Insurance coverage is increasingly expensive. We may not be able to maintain insurance coverage at a reasonable cost or in an amount adequate to satisfy any liability that may arise.

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

In some countries, particularly member states of the EU, the pricing of prescription pharmaceuticals is subject to governmental control. In these countries, pricing negotiations with governmental authorities can take considerable time after the receipt of marketing approval for a product. In addition, there can be considerable pressure by governments and other stakeholders on prices and reimbursement levels, including as part of cost containment measures. Political, economic and regulatory developments may further complicate pricing negotiations, and pricing negotiations may continue after reimbursement has been obtained. Reference pricing used by various EU member states and parallel distribution, or arbitrage between low-priced and high-priced member states, can further reduce prices. In some countries, we, or our future collaborators, may be required to conduct a clinical trial or other studies that compare the cost-effectiveness of our product candidates to other available therapies in order to obtain or maintain reimbursement or pricing approval. Publication of discounts by third-party payors or authorities may lead to further pressure on the prices or reimbursement levels within the country of publication and other countries. If reimbursement of any product candidate approved for marketing is unavailable or limited in scope or amount, or if pricing is set at unsatisfactory levels, our business could be materially harmed.

An epidemic or pandemic disease outbreak, including the 2019 novel coronavirus (COVID-19), could disrupt our business operations as well as the business or operations of our single third-party manufacturer, our CROs, clinical data management organizations, medical institutions and clinical investigators, or other third parties with whom we conduct business which may have a material adverse effect on our business, results of operations, financial condition and prospects.

An epidemic or pandemic disease outbreak, including the 2019 novel coronavirus (COVID-19), could severely disrupt our operations or the operations of third parties that we depend on, including our single third-party contract manufacturer, our CROs, clinical data management organizations, medical institutions and clinical investigators, and have a material adverse effect on our business, results of operations, financial condition and prospects. In addition, supply chain disruptions due to response to *COVID-19* or otherwise could have a material adverse effect on the availability or cost of materials for the active pharmaceutical ingredients, or API for our product candidates. Quarantines, restrictions or bans in travel into and within the countries in which we operate, our manufacturer produces

the API for our product candidates or where we conduct our clinical trials could impede, delay, limit or prevent the production or delivery or release of our product candidates to our trial sites, and trial investigators, patients or other critical staff could be restricted from traveling to our trial sites. In addition, some of our clinical sites could slow or cease patient recruitment, patient treatment and/or access to patient data. We had observed a temporary decrease in both patient screening and patient enrollment in 2020 as a result of the COVID-19 pandemic and such decreases may reoccur in the future. Additionally, we and our employees have taken steps to avoid or reduce infection, including limiting travel and implementing remote work arrangements. It is possible that remote work arrangements will not be as efficient as physical operations, and this could adversely affect our business, operations and internal controls. Any or all of these factors could impede, delay, limit or prevent completion of our ongoing clinical trials, or require changes to our ongoing clinical trials, and ultimately lead to the delay or denial of regulatory approval of our product candidates, which would materially adversely affect our business, results of operations, financial conditions and prospects.

While there is significant uncertainty relating to the potential effect of the coronavirus on our business and operations, infections may become more widespread and travel restrictions may worsen, including in the United States, Sweden and other countries where our trials are conducted or the API for our product candidates is manufactured, any of which could have a material adverse effect our business, results of operations, financial conditions and prospects. Additionally, disruptions at the at FDA, the EMA and other regulators, caused by global health concerns, including the COVID-19 pandemic, including delays in inspections of clinical trial or manufacturing sites required as part of the drug application review process, could result in delays of reviews and approvals of our product candidate or our proposed clinical trials. For example, in response to the COVID-19 pandemic, on March 10, 2020, the FDA announced its intention to postpone most inspections of foreign manufacturing facilities and products inspections of domestic manufacturing facilities through April 2020. On March 18, 2020, the FDA announced its intention to temporarily postpone routine surveillance inspections of domestic manufacturing facilities and provided guidance regarding the conduct of clinical trials. On July 10, 2020, the FDA announced that it is working toward the goal of restarting on-site inspections it deems to be "mission critical." On August 19, 2020, the FDA published guidance clarifying how it intends to conduct inspections during the COVID-19 pandemic, including how it plans to determine which inspections are "mission critical." In May 2021, the FDA updated its guidance, first published in August 2020, clarifying how it intends to conduct inspections during the COVID-19 pandemic, including how it plans to determine which inspections are "mission critical." The FDA intends to use this risk-based assessment system to identify the categories of regulatory activity that can occur within a given geographic area, ranging from mission critical inspections to resumption of all regulatory activities. If global health concerns continue to prevent the FDA or other regulatory authorities from conducting their regular inspections, or impact reviews or other regulatory activities, it could significantly impact the ability of the FDA or other regulatory authorities to timely review and process our regulatory submissions, which could have a material adverse effect on our business.

FDA has since adjusted its inspection activities in response to the ongoing COVID-19 pandemic. On December 29, 2021, the Agency implemented temporary changes to its inspectional activities to ensure the safety of its employees and regulated firms. On February 2, 2022, FDA announced that it would resume domestic surveillance inspections across all product areas on February 7, 2022. We cannot predict whether, and when, FDA will decide to pause or resume inspections due to the COVID-19 pandemic.

It is unclear how FDA's policies and guidance will impact any inspections of our facilities, including our clinical trial sites. Regulatory authorities outside the United States may adopt similar restrictions or other policy measures in response to the COVID-19 pandemic.

The reactivation of p53 is a novel and unproven therapeutic approach and our development of eprenetapopt may never lead to a marketable product.

We are developing eprenetapopt for its ability to reactivate the tumor suppressor protein p53, the protein product of the *TP53* gene and the most commonly mutated gene in cancer. We are also developing a next-generation p53 reactivator, APR-548, initially for potential use in multiple hematologic malignancy indications. We believe that mutant p53 is an attractive target for novel cancer therapy due to the high incidence of p53 mutations across a range of cancer types and the universally inferior prognosis for cancer patients with mutated p53. However, to our knowledge, no one has advanced a product candidate with this mechanism of action into clinical development. The scientific evidence to support the feasibility of developing these product candidates is both preliminary and limited. For instance, even though

eprenetapopt has shown promising results in preclinical studies and early-stage clinical trials, we may not succeed in demonstrating safety and efficacy of eprenetapopt in larger-scale clinical trials. In December 2020, we announced that our pivotal Phase 3 trial failed to meet its predefined primary endpoint of complete remission (CR) rate. On August 4, 2021, the U.S. Food and Drug Administration (FDA) placed a partial clinical hold on the clinical trials of eprenetapopt in combination with azacitidine in our myeloid malignancy programs. On August 11, 2021, the FDA placed a clinical hold on our clinical trial evaluating eprenetapopt with acalabrutinib or with venetoclax and rituximab in lymphoid malignancies. In the first quarter of 2022, FDA notified us that it would continue the partial clinical hold on three ongoing clinical studies in our myeloid program. However, we received clearance from FDA to proceed under our existing IND with a new trial in R/R MDS and AML.

Given these results, FDA feedback and the costs of continuing the p53 reactivator development programs, we have shifted our primary focus of our activities to the assets acquired in Merger. Advancing eprenetapopt as a novel product to reactivate p53 creates significant challenges for us, including:

- obtaining marketing approval, as obtaining regulatory approval of a p53 reactivator from the FDA or comparable foreign regulatory authorities has never been done before;
- educating medical personnel regarding the potential efficacy and safety benefits, as well as the challenges, of incorporating our product candidates, if approved, into treatment regimens; and
- establishing the sales and marketing capabilities to gain market acceptance, if approved.

Risks related to our dependence on third parties

We rely on third parties to conduct our clinical trials and some aspects of our research and preclinical studies, and those third parties may not perform satisfactorily, including failing to meet deadlines for the completion of such trials, research and studies.

We currently rely on third parties, such as CROs, clinical data management organizations, medical institutions and clinical investigators, to conduct our clinical trials and expect to continue to rely upon third parties to conduct additional clinical trials. We currently rely and expect to continue to rely on third parties to conduct some aspects of our research and preclinical studies. Any of these third parties may terminate their engagements with us at any time. If we need to enter into alternative arrangements, it would delay our drug development activities.

Our reliance on these third parties for research and development activities will reduce our control over these activities but will not relieve us of our regulatory responsibilities. For example, we will remain responsible for ensuring that each of our clinical trials is conducted in accordance with the general investigational plan, study protocols for the trial, statistical analysis plan and other study-specific documents (for example, monitoring and blinding plans). Moreover, the FDA requires us to comply with standards, commonly referred to as Good Clinical Practice, or GCP, International Council for Harmonization of Technical Requirements for Pharmaceuticals for Human Use, or ICH, guidelines, and regulations regarding the informed consent process, safety reporting requirements, data collection guidelines, and other regulations for conducting, recording and reporting the results of clinical trials to assure that data and reported results are credible and accurate and that the rights, integrity and confidentiality of trial participants are protected. The EMA, also requires us to comply with similar standards. Regulatory authorities enforce these GCP requirements through periodic inspections of trial sponsors, principal investigators and trial sites. If we or any of our CROs fail to comply with applicable GCP requirements, the clinical data generated in our clinical trials may be deemed unreliable and the FDA, EMA or comparable foreign regulatory authorities may require us to perform additional clinical trials before approving our marketing applications. We cannot assure you that upon inspection by a given regulatory authority, such regulatory authority will determine that any of our clinical trials comply with GCP and other applicable regulations. In addition, our clinical trials must be conducted with product produced under current Good Manufacturing Practices, or cGMP, regulations. Our failure to comply with these regulations may require us to conduct new clinical trials, which would delay the marketing approval process. We also are required to register certain ongoing clinical trials and post the results of certain completed clinical trials on a government-sponsored database, ClinicalTrials.gov, within certain timeframes. Failure to do so can result in fines, adverse publicity and civil and criminal sanctions.

Furthermore, these third parties may also have relationships with other entities, some of which may be our competitors. If these third parties do not successfully carry out their contractual duties, meet expected deadlines or conduct our clinical trials in accordance with regulatory requirements or our stated protocols, we will not be able to obtain, or may be delayed in obtaining, marketing approvals for our product candidates and will not be able to, or may be delayed in our efforts to, successfully commercialize our product candidates.

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

Although we currently plan to retain all commercial rights to our product candidates, we may enter into strategic collaborations for the development, marketing and commercialization of our product candidates. If those collaborations are not successful, the development, marketing and/or commercialization of our product candidates that are the subject of such collaborations would be harmed.

As we further develop our product candidates, we may build a commercial infrastructure with the capability to directly market it to a variety of markets and geographies. Although we currently plan to retain all commercial rights to our product candidates, we may enter into strategic collaborations for the development, marketing and commercialization of our product candidates. Our likely collaborators for any collaboration arrangements include large and mid-size pharmaceutical companies, regional and national pharmaceutical companies and biotechnology companies. If we do enter into any such arrangements with any third parties, we will likely have limited control over the amount and timing of resources that our collaborators dedicate to the development, marketing and/or commercialization of our product candidates. Our ability to generate revenues from these arrangements will depend on our collaborators' abilities to successfully perform the functions assigned to them in these arrangements. In addition, any future collaborators may have the right to abandon research or development projects and terminate applicable agreements, including funding obligations, prior to or upon the expiration of the agreed upon terms.

Collaborations involving our product candidates would pose the following risks to us:

- collaborators have significant discretion in determining the efforts and resources that they will apply to these collaborations;
- collaborators may not perform their obligations as expected;
- collaborators may not pursue development, marketing and/or commercialization of our product candidates or may elect not to continue or renew development, marketing or commercialization programs based on clinical trial results, changes in the collaborator's strategic focus or available funding or external factors such as an acquisition that diverts resources or creates competing priorities;
- collaborators may delay clinical trials, provide insufficient funding for a clinical trial program, stop a clinical trial or abandon a product candidate, repeat or conduct new clinical trials or require a new formulation of a product candidate for clinical testing;
- collaborators could independently develop, or develop with third parties, drugs that compete directly or indirectly with our product candidates or product candidates;
- a collaborator with marketing and distribution rights to one or more drugs may not commit sufficient resources to the marketing and distribution of such drug or drugs;
- disagreements with collaborators, including disagreements over proprietary rights, contract interpretation or the preferred course of development, might cause delays or termination of the research, development or commercialization of product candidates, might lead to additional responsibilities for us with respect to product candidates, or might result in litigation or arbitration, any of which would be time-consuming and expensive;
- collaborators may not properly obtain, maintain, defend and enforce our intellectual property rights or may use our proprietary information in such a way as to invite litigation that could jeopardize or invalidate our proprietary information or expose us to potential litigation;
- collaborators may infringe, misappropriate or otherwise violate the intellectual property rights of third parties, which may expose us to litigation and potential liability;

- we may lose certain valuable rights under circumstances identified in any collaboration arrangement that we enter into, such as if we undergo a change of control;
- collaborations may be terminated and, if terminated, may result in a need for additional capital to pursue further development, marketing and/or commercialization of the applicable product candidates;
- collaborators may learn about our discoveries, data, proprietary information, trade secrets, or compounds and use this knowledge to compete with us in the future; and
- the number and type of our collaborations could adversely affect our attractiveness to future collaborators or acquirers.

Collaboration agreements may not lead to development or commercialization of product candidates in the most efficient manner, or at all.

We are currently dependent on a single third party manufacturer for the manufacture of the active pharmaceutical ingredient for our product candidates. This reliance on a single third party increases the risk that we will not have sufficient quantities of our product candidates or drugs or such quantities at an acceptable cost, which could delay, prevent or impair our development or commercialization efforts.

We do not have any manufacturing facilities or personnel, and we currently have no plans to build our own clinical or commercial scale manufacturing capabilities. We currently contract with third parties for the manufacture of our product candidates for certain preclinical trials and clinical trial materials, including raw materials and consumables necessary for their manufacture, consistent with applicable cGMP requirements. We intend to continue to contract for these materials in the future, including commercial manufacture if our product candidates receive marketing approval.

The API and drug product for our product candidates is currently manufactured by a single contract manufacturer. Although we may do so in the future, we do not currently have arrangements in place for redundant supply of the API and drug product for our product candidates.

We expect to rely on third-party manufacturers or third-party collaborators for the manufacture of our product candidates for commercial supply of any of our product candidates for which we or any of our future collaborators obtain marketing approval. We may be unable to establish any agreements with third-party manufacturers or to do so on acceptable terms. Even if we are able to establish agreements with third-party manufacturers, reliance on third-party manufacturers entails additional risks, including:

- the possible failure of the third party to manufacture our product candidate according to our schedule, or at all, including if our third-party contractors give greater priority to the supply of other products over our product candidates or otherwise do not satisfactorily perform according to the terms of the agreements between us and them;
- the possible termination or nonrenewal of agreements by our third-party contractors at a time that is costly or inconvenient for us;
- the possible breach by the third-party contractors of our agreements with them;
- the failure of third-party contractors to comply with applicable regulatory requirements;
- the possible failure of the third party to manufacture our product candidates according to our specifications;
- the impact of COVID-19 on the facilities of our manufacturers and their supply lines;
- the possible mislabeling of clinical supplies, potentially resulting in issues including the wrong dose amounts being supplied or active drug or placebo not being properly identified;
- the possibility of clinical supplies not being delivered to clinical sites on time, leading to clinical trial interruptions, or of drug supplies not being distributed to commercial vendors in a timely manner, resulting in lost sales; and
- the possible misappropriation of our proprietary information, including our trade secrets and know-how.

The facilities used by our contract manufacturers to manufacture our product candidates must be approved by the FDA or the EMA pursuant to inspections that will be conducted after we submit our NDA to the FDA or our MAA to the EMA. We do not have complete control over all aspects of the manufacturing process of, and are dependent on, our contract manufacturing partners for compliance with cGMP regulations for manufacturing both active drug substances and finished drug products. Third-party manufacturers may not be able to comply with cGMP regulations or similar

regulatory requirements outside of the United States. If our contract manufacturers cannot successfully manufacture material that conforms to our specifications and the strict regulatory requirements of the FDA or comparable foreign regulatory bodies, they will not be able to secure and/or maintain marketing approval for their manufacturing facilities. In addition, we do not have complete control over the ability of our contract manufacturers to maintain adequate quality control, quality assurance and qualified personnel. If the FDA, the EMA or a comparable foreign regulatory authority does not approve these facilities for the manufacture of our product candidates or if it withdraws any such approval in the future, we may need to find alternative manufacturing facilities, which would significantly impact our ability to develop, obtain marketing approval for or market our product candidates, if approved.

Our failure, or the failure of our third-party manufacturers, to comply with applicable regulations could result in sanctions being imposed on us, including fines, injunctions, civil penalties, delays, suspension or withdrawal of approvals, license revocation, seizures or recalls of product candidates or drugs, operating restrictions and criminal prosecutions, any of which could significantly and adversely affect supplies of our product candidates and harm our business and results of operations.

Any drugs that we may develop may compete with other product candidates and drugs for access to manufacturing facilities. There are a limited number of manufacturers that operate under cGMP regulations and that might be capable of manufacturing for us.

Any performance failure on the part of our existing or future manufacturers could delay clinical development or marketing approval.

We do not currently have arrangements in place for redundant supply of the API of our product candidates. If our current contract manufacturer cannot perform as agreed, we may be required to replace that manufacturer. Although we believe that there are several potential alternative manufacturers who could manufacture our product candidates, we may incur added costs and delays in identifying and qualifying any such replacement.

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

Risks related to our intellectual property

If we are unable to obtain and maintain intellectual property protection for our product candidates or for our technology, our competitors could develop and commercialize products or technology similar or identical to ours, and our ability to successfully commercialize any product candidates we may develop, and our technology may be adversely affected.

Our commercial success will depend in large part on obtaining and maintaining patent, trademark and trade secret protection of our proprietary technologies and our product candidates, their respective components, formulations, methods used to manufacture them and methods of treatment, as well as successfully defending these patents against third-party challenges. We seek to protect our proprietary position by filing patent applications in the United States and abroad relating to our product candidates as well as other technologies that are important to our business. Our ability to stop unauthorized third parties from making, using, selling, offering to sell or importing our product candidates is dependent upon the extent to which we have rights under valid and enforceable patents or trade secrets that cover these activities.

The chemical structure of eprenetapopt is in the public domain. Accordingly, we do not own or license any composition of matter patents claiming the compound of eprenetapopt and will not in the future own or license any composition of matter patents claiming the chemical structure of eprenetapopt as described in the public domain. Our patent portfolio for eprenetapopt currently consists of method-of-use and formulation patent claims, and dosing, manufacturing processes, crystalline solid form, and combination therapy patent application claims. Our existing patents and any future patents we obtain may not be sufficiently broad to prevent others from using our technology or from developing competing products and technologies. Any failure to obtain or maintain patent protection with respect to eprenetapopt

and our other product candidates could have a material adverse effect on our business, financial condition, results of operations and growth prospects. If it is later determined that our activities or product candidates infringe, misappropriate or otherwise violate the intellectual property of third parties we may be liable for damages, enhanced damages or subjected to an injunction, any of which could have a material adverse effect on our business.

The patenting process is expensive and time-consuming, and we may not be able to file and prosecute all necessary or desirable patent applications at a reasonable cost or in a timely manner. In addition, we may not pursue or obtain patent protection in all relevant markets. During the course of business, we have decided not to pursue certain products or processes and have not pursued certain corresponding intellectual property. However, we may decide to pursue such products or processes again in the future. It is also possible that we will fail to identify patentable aspects of our research and development output before it is too late to obtain patent protection.

The patent position of pharmaceutical and biotechnology companies generally is highly uncertain and involves complex legal and factual questions for which many legal principles remain unresolved. In recent years patent rights have been the subject of significant litigation. As a result, the issuance, scope, validity, enforceability and commercial value of our patent rights are highly uncertain. Our pending and future patent applications may not result in patents being issued in the United States or in other jurisdictions which protect our technology or products or which effectively prevent others from commercializing competitive technologies and products.

Our ability to obtain and maintain valid and enforceable patents depends on whether the differences between our inventions and the prior art, including our own previously filed patent applications and scientific publications, allow our inventions to be patentable over the prior art. We are aware of certain scientific publications by our inventors and other third parties that disclose subject matter, including the composition of eprenetapopt, relating to certain of our patents, that may be used by third parties to challenge the validity and enforceability of our patents and patent applications. If such third parties are successful, we could lose valuable patent rights. In the United States, an inventor's own publication cannot be used as prior art to the inventor's patent application on the same subject matter when published less than one year before the effective filing date of the patent application. Such a publication may be considered prior art in certain jurisdictions that do not provide such a grace period. Publications of discoveries in the scientific literature often lag behind the actual discoveries, and patent applications in the United States and other jurisdictions are typically not published until 18 months after filing, or in some cases not at all. Therefore, we cannot be certain that we were the first to make the inventions claimed in our patents or pending patent applications, or that we were the first to file for patent protection of such inventions. In addition, the U.S. Patent and Trademark Office, or USPTO, might require that the term of a patent issuing from a pending patent application be disclaimed and limited to the term of another patent that is commonly owned or names a common inventor. Although we enter into non-disclosure and confidentiality agreements with parties who have access to confidential or patentable aspects of our research and development output, such as our employees, corporate collaborators, outside scientific collaborators, CROs, contract manufacturers, consultants, advisors, and other third parties, certain of these parties have and others may in the future breach the agreements and disclose such output before a patent application is filed, thereby jeopardizing our ability to seek patent protection.
Moreover, the coverage claimed in a patent application can be significantly reduced before the patent is issued, and its scope can be reinterpreted after issuance. Even if our patent applications issue as patents, they may not issue in a form that will provide us with any meaningful protection, prevent competitors from competing with us or otherwise provide us with any competitive advantage. Our competitors may be able to circumvent our patents by developing similar or alternative technologies or products in a non-infringing manner.

The issuance of a patent is not conclusive as to its inventorship, scope, validity or enforceability, and our patents may be challenged in the courts or patent offices in the United States and abroad. Such challenges may result in the patent claims of our patents being narrowed, invalidated or held unenforceable, which could limit our ability to stop or prevent us from stopping others from using or commercializing similar or identical technology and products, or limit the duration of the patent protection of our technology and products. In addition, some of our owned patents and patent applications may in the future be co-owned with third parties. If we do not have exclusive control of the grant of licenses under any such third-party co-owners' interest in such patents or patent applications or we are otherwise unable to secure such exclusive rights, such co-owners may be able to license their rights to other third parties, including our competitors, and our competitors could market competing products and technology. In addition, we may need the cooperation of any such co-

owners of our co-owned patents in order to enforce such patents against third parties, and such cooperation may not be provided to us.

Given the amount of time required for the development, testing and regulatory review of new product candidates, which may be extended due to epidemic or pandemic disease outbreaks, such as COVID-19 or other public health situations, patents protecting such candidates might expire before or shortly after such candidates are commercialized. As a result, our patent portfolio may not provide us with sufficient rights to exclude others from commercializing products similar or identical to ours or otherwise provide us with a competitive advantage. Upon the expiration of our current patents, we may lose the right to exclude others from practicing these inventions based on patent exclusivity. The expiration of these patents could also have a similar material adverse effect on our business, results of operations, financial condition and prospects.

Our proprietary position for eprenetapopt depends upon patents that consist of method-of-use and formulation patent claims, which may not prevent a competitor or other third party from using the same product candidate for another use or in another formulation.

Composition-of-matter patent claims on the active pharmaceutical ingredient, or API, in pharmaceutical drug products are generally considered to be the favored form of intellectual property protection for drug products because such patents may provide protection without regard to any particular method of use or manufacture or formulation of the API used. The chemical structure of eprenetapopt is in the public domain. Accordingly, we do not own or license any composition of matter patents claiming the compound of eprenetapopt and will not in the future own or license any composition of matter patents claiming the chemical structure of eprenetapopt as described in the public domain.

Method-of-use patent claims protect the use of a product for the specified method and dosing or formulation patent claims cover dosing regimens or formulations of the API. These types of patent claims do not prevent a competitor or other third party from marketing an identical API for an indication that is outside the scope of the method claims or from developing a different dosing regimen or formulation that is outside the scope of the dosing or formulation claims. Moreover, with respect to method-of-use patents, even if competitors or other third parties do not actively promote their product for our targeted indications or uses for which we may obtain patents, physicians may recommend that patients use these products off-label, or patients may do so themselves. Although off-label use may infringe or contribute to the infringement of method-of-use patents, the practice is common and such infringement is difficult to prevent or prosecute.

In addition, there are numerous publications and other prior art that may be relevant to our patents and may be used to challenge the validity of such patents in litigation or other intellectual property-related proceedings. If such challenges are successful, our patents may be narrowed or found to be invalid and we may lose valuable intellectual property rights. Any of the foregoing could have a material adverse effect on our business, financial conditions and results of operations and prospects.

Issued patents covering our product candidates and other technologies could be narrowed or found invalid or unenforceable if challenged in court or before administrative bodies in the United States or abroad.

If we seek to enforce a patent covering our product candidates or other technologies against a third party, that third party could assert that such patent is invalid or unenforceable. In patent litigation in the United States, challenges to validity or enforceability are commonplace. Grounds for a validity challenge could be an alleged failure to meet any of several statutory requirements, including lack of patentable subject matter, lack of novelty, obviousness, inadequate written description, indefiniteness, or lack of enablement. Grounds for an unenforceability assertion could be an allegation that relevant information was withheld from or a misleading statement was made to the USPTO during prosecution.

In addition, third parties may raise claims challenging the validity or enforceability of our patents before administrative bodies in the United States or abroad, even outside the context of litigation. Such mechanisms include preissuance submission of prior art to the USPTO and re-examination, post-grant review, *inter partes* review, interference proceedings, derivation proceedings, and equivalent proceedings in foreign jurisdictions (*e.g.*, opposition proceedings). Moreover, we may have to participate in interference proceedings declared by the USPTO to determine priority of invention or in post-grant challenge proceedings, such as oppositions in a foreign patent office, that challenge our

priority of invention or other features of patentability with respect to our patents and patent applications. An adverse determination in any such submission, proceeding or litigation could reduce the scope of, or invalidate or render unenforceable, our patent rights, allow third parties to commercialize our product candidates or other technologies and compete directly with us, without payment to us.

In the United States, an inventor's own publication may not be effective prior art to the inventor's patent application on the same subject matter when published less than one year before the effective filing date of the patent application. Such a publication might be considered prior art in certain jurisdictions that do not provide such a grace period. For those non-US jurisdictions, reliance on non-patent exclusivity may provide sufficient competitive protection to exclude others from commercializing generic versions of our products.

Such proceedings also may result in substantial cost and require significant time from our scientists and management, even if the eventual outcome is favorable to us. If we are unsuccessful in any such proceeding or other priority or inventorship dispute, we may be required to obtain and maintain licenses from third parties, including parties involved in any such interference proceedings or other priority or inventorship disputes. Such licenses may not be available on commercially reasonable terms or at all, or may be non-exclusive. If we are unable to obtain and maintain such licenses, we may need to cease the development, manufacture, and commercialization of one or more of the product candidates we may develop. The loss of exclusivity or the narrowing of our patent claims could limit our ability to stop others from using or commercializing similar or identical technology and products. Any of the foregoing could have a material adverse effect on our business, results of operations, financial condition and prospects.

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

We may also be subject to claims that former employees, collaborators or other third parties have an interest in our patents, trade secrets, or other intellectual property as an inventor or co-inventor. For example, we may have inventorship disputes arise from conflicting obligations of employees, consultants or others who are involved in developing our product candidates or other technologies. Litigation may be necessary to defend against these and other claims challenging inventorship of our patents, trade secrets or other intellectual property. If we fail in defending any such claims, in addition to paying monetary damages, we may lose valuable intellectual property rights, such as exclusive ownership of, or right to use, intellectual property that is important to our product candidates and other technologies. Even if we are successful in defending against such claims, litigation could result in substantial costs and be a distraction to management and other employees. Any of the foregoing could have a material adverse effect on our business, financial condition, results of operations and growth prospects.

If we do not obtain patent term extension or data exclusivity for any product candidates we may develop, our business may be materially harmed.

Depending upon the timing, duration and specifics of any FDA marketing approval of any product candidates we may develop, one or more of our U.S. patents may be eligible for limited patent term extension under the Drug Price Competition and Patent Term Restoration Act of 1984, commonly referred to as the Hatch-Waxman Act. The Hatch-Waxman Act permits a patent term extension of up to five years as compensation for patent term lost during the FDA regulatory review process. A patent term extension cannot extend the remaining term of a patent beyond a total of 14 years from the date of product approval, only one patent may be extended and only those claims covering the approved drug, a method for using it, or a method for manufacturing it may be extended. Similar extensions as compensation for patent term lost during regulatory review processes are also available in certain foreign countries and territories, such as in Europe under a Supplementary Patent Certificate. However, we may not be granted an extension in the United States and/or foreign countries and territories because of, for example, failing to exercise due diligence during the testing phase or regulatory review process, 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 the term of any such extension is shorter than what we request, our competitors may obtain approval of competing products following our patent expiration, and our business, financial condition, results of operations and growth prospects could be materially harmed.

We may not be successful in obtaining, through acquisitions, in-licenses or otherwise, rights that may be necessary to our product candidates or other technologies.

The growth of our business may depend in part on our future ability to acquire or in-license any relevant third-party proprietary rights that we may identify as necessary or important to our business operations. For example, our programs may involve additional product candidates that may require the use of additional proprietary rights held by third parties. Our product candidates may also require specific formulations to work effectively and efficiently. These formulations may be covered by intellectual property rights held by others. We may develop products containing our compounds and pre-existing pharmaceutical compounds. These pharmaceutical compounds may be covered by intellectual property rights held by others. We may be required by the FDA or comparable foreign regulatory authorities to provide a companion diagnostic test or tests with our product candidates. These diagnostic test or tests may be covered by intellectual property rights held by others. We may be unable to acquire or in-license such third-party intellectual property rights. We may fail to obtain any of these licenses at a reasonable cost or on reasonable terms, if at all, which would harm our business. We may need to cease use of the compositions or methods covered by such third-party intellectual property rights, and may need to seek to develop alternative approaches that do not infringe, misappropriate or otherwise violate intellectual property rights which may entail additional costs and development delays, even if we were able to develop such alternatives, which may not be feasible. Even if we are able to obtain a license to such intellectual property rights, any such license may be non-exclusive, which may allow our competitors access to the same technologies licensed to us.

Additionally, we sometimes collaborate with academic institutions and clinical research organizations to accelerate our research or development under written agreements with these institutions and organizations. In certain cases, these institutions and organizations may own or jointly own with us inventions that are created under such collaborations and provide us with an option to negotiate a license to any of the institution's rights in such inventions. Regardless of such option, we may be unable to negotiate a license within the specified timeframe or under terms that are acceptable to us. If we are unable to do so, the institution or organization may offer the intellectual property rights to others, potentially blocking our ability to pursue our program and allowing third parties to compete with us.

The licensing and acquisition of third-party intellectual property rights is a competitive practice, and companies that may be more established, or have greater resources than we do, may also be pursuing strategies to license or acquire third-party intellectual property rights that we may consider necessary or attractive in order to commercialize our product candidates. More established companies may have a competitive advantage over us due to their larger size and cash resources or greater clinical development and commercialization capabilities. In addition, companies that perceive us to be a competitor may be unwilling to assign or license rights to us. We also may be unable to license or acquire third-party intellectual property rights on terms that would allow us to make an appropriate return on our investment or at all. There can be no assurance that we will be able to successfully complete such negotiations and ultimately acquire the rights to the intellectual property surrounding the additional product candidates that we may seek to acquire. If we are unable to successfully obtain rights to third-party intellectual property that may be necessary, we may have to abandon development of such program and our business, results of operations, financial condition and prospects could suffer.

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

Recent or future patent reform legislation could increase the uncertainties and costs surrounding the prosecution of our patent applications and the enforcement or defense of our issued patents. Assuming that other requirements for patentability are met, prior to March 2013, in the United States, the first to invent the claimed invention was entitled to the patent, while outside the United States, the first to file a patent application was entitled to the patent regardless of whether another inventor had made the invention earlier. In March 2013, under the Leahy-Smith America Invents Act, or America Invents Act, the United States moved from a "first-to-invent" to a "first-to-file" system. Under a "first-to-file" system, assuming the other requirements for patentability are met, the first inventor to file a patent application generally will be entitled to a patent on the invention regardless of whether another inventor had made the invention earlier. A third party that files a patent application in the USPTO after March 2013, but before us, could therefore be awarded a patent covering an invention of ours even if we had made the invention before it was made by such third party. Since patent applications in the United States and most other countries are confidential for a period of time after

filing or until issuance, we cannot be certain that we were the first to either (i) file any patent application related to our product candidates or other technologies or (ii) invent any of the inventions claimed in our patents or patent applications.

The America Invents Act includes a number of other significant changes to U.S. patent law, including provisions that affect the way patent applications are prosecuted, redefine prior art and establish a new post-grant review system. These include allowing third party submission of prior art to the USPTO during patent prosecution and additional procedures to attack the validity of a patent by USPTO-administered post-grant proceedings, including post-grant review, *inter partes* review, and derivation proceedings. Because of a lower evidentiary standard in USPTO proceedings compared to the evidentiary standard in United States federal courts necessary to invalidate a patent claim, a third party could potentially provide evidence in a USPTO proceeding sufficient for the USPTO to hold a claim invalid even though the same evidence would be insufficient to invalidate the claim if first presented in a district court action. Accordingly, a third party may attempt to use the USPTO procedures to invalidate our patent claims that would not have been invalidated if first challenged by the third party in a district court action. An adverse determination in any such proceeding could reduce the scope of, or invalidate, our patent rights, allow third parties to commercialize our technology or products and compete directly with us, without payment to us, or result in our inability to manufacture or commercialize products without infringing third-party patent rights, all of which could have a material adverse effect on our business and financial condition. Accordingly, the America Invents Act and its implementation could increase the uncertainties and costs surrounding the prosecution of our patent applications and the enforcement or defense of our issued patents.

In addition, the patent positions of companies in the development and commercialization of biologics and pharmaceuticals are particularly uncertain. Recent U.S. Supreme Court rulings have narrowed the scope of patent protection available in certain circumstances and weakened the rights of patent owners in certain situations. This combination of events has created uncertainty with respect to the validity and enforceability of patents, once obtained. Depending on future actions by the U.S. Congress, the federal courts, and the USPTO, the laws and regulations governing patents could change in unpredictable ways that could have a material adverse effect on our existing patent portfolio and our ability to protect and enforce our intellectual property in the future.

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

Competitors may infringe our patents, or we may be required to defend against claims of infringement. In addition, our patents also may become involved in inventorship, priority, validity or unenforceability disputes. To counter or defend against such claims can be expensive and time consuming. We may not prevail in any lawsuits that we initiate, and the damages or other remedies awarded, if any, may not be commercially meaningful. For example, in an infringement proceeding, a court may decide that a patent owned by us is invalid or unenforceable. There is also the risk that, even if the validity of these patents is upheld, the court will refuse to stop the third party on the ground that such third party's activities do not infringe our owned patents, including finding that the other party's use of our patented technology falls under the safe harbor to patent infringement under 35 U.S.C. § 271(e)(1). Even if resolved in our favor, these lawsuits are expensive and would consume time and other resources, including distracting our personnel from their normal responsibilities. In addition, there could be public announcements of the results of hearings, motions, or other interim proceedings or developments, and if securities analysts or investors perceive these results to be negative, it could have a substantial adverse effect on the price of our common stock. Such litigation or proceedings could substantially increase our operating losses and reduce the resources available for development activities or any future sales, marketing, or distribution activities. We may not have sufficient financial or other resources to conduct such litigation or proceedings adequately. Some of our competitors may be able to sustain the costs of such litigation or proceedings more effectively than we can because of their greater financial resources and more mature and developed intellectual property portfolios. Uncertainties resulting from the initiation and continuation of patent litigation or other proceedings could have a material adverse effect on our ability to compete in the marketplace. 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.

We may not be able to detect infringement against our patents which may be more difficult for formulation patents. Even if we detect infringement by a third party of our patents, we may choose not to pursue litigation against or settlement with the third party. If we later sue such third party for patent infringement, the third party may have certain legal

defenses available to it, which otherwise would not be available except for the delay between when the infringement was first detected and when the suit was brought. Such legal defenses may make it impossible for us to enforce our patents against such third party.

If another party questions the patentability of any of our claims in our U.S. patents, the third party can request that the USPTO review the patent claims such as in an *inter partes* review, *ex parte* re-exam or post-grant review proceedings. These proceedings are expensive and may result in a loss of scope of some claims or a loss of the entire patent. In addition to potential USPTO review proceedings, we may become a party to patent opposition proceedings in the European Patent Office, or EPO, or similar proceedings in other foreign patent offices, where either our foreign patents are challenged. The costs of these opposition or similar proceedings could be substantial, and may result in a loss of scope of some claims or a loss of the entire patent. An unfavorable result at the USPTO, EPO or other patent office may result in the loss of our right to exclude others from practicing one or more of our inventions in the relevant country or jurisdiction, which could have a material adverse effect on our business.

If we are sued for infringing, misappropriating or otherwise violating patents or other intellectual property rights of third parties, it will be costly and time consuming, and an unfavorable outcome in that litigation would have a material adverse effect on our business.

Our commercial success depends upon our ability to develop, manufacture, market and sell our product candidates and use our proprietary technologies without infringing, misappropriating or otherwise violating the intellectual property rights of third parties. There is a substantial amount of litigation involving patents and other intellectual property rights in the biotechnology and pharmaceutical industries. We may be exposed to, or threatened with, future litigation by third parties having patent or other intellectual property rights alleging that our product candidates and/or proprietary technologies infringe, misappropriate or otherwise violate their intellectual property rights. We cannot guarantee that our product candidates and other technologies that we have developed, are developing or may develop in the future will not infringe existing or future patents owned by third parties. U.S. and foreign issued patents and pending patent applications, which are owned by third parties, exist in the fields relating to our product candidates. As the biotechnology and pharmaceutical industries expand and more patents are issued, the risk increases that others may assert our product candidates infringe the patent rights of others. Moreover, it is not always clear to industry participants, including us, which patents cover various types of drugs, products or their methods of use or manufacture. Thus, because of the large number of patents issued and patent applications filed in our fields, there may be a risk that third parties may allege they have patent rights encompassing our product candidates, technologies or methods. It is also possible that patents owned by third parties of which we are aware, but which we do not believe are relevant to our product candidates or other technologies, could be found to be infringed by our product candidates or other technologies. In addition, because some patent applications in the United States may be maintained in secrecy until the patents are issued, patent applications in the United States and many foreign jurisdictions are typically not published until 18 months after filing, and publications in the scientific literature often lag behind actual discoveries, we cannot be certain that others have not filed patent applications covering our product candidates or technology. If any such patent applications issue as patents, and if such patents have priority over our patent applications or patents, we may be required to obtain rights to such patents owned by third parties which may not be available on commercially reasonable terms or at all, or may only be available on a non-exclusive basis.

If a third party claims that we infringe its intellectual property rights, we may face a number of issues even if we believe such claims are without merit, including, but not limited to:

- infringement and other intellectual property claims which, regardless of merit, may be expensive and time-consuming to litigate, may divert our management's attention from our core business and may impact our reputation;
- substantial damages for infringement, which we may have to pay if a court decides that the product candidate or technology at issue infringes on or violates the third party's rights, and, if the court finds that the infringement was willful, we could be ordered to pay treble damages and the patent owner's attorneys' fees;
- a court prohibiting us from developing, manufacturing, marketing or selling our product candidates, or from using our proprietary technologies, unless the third party licenses its patent rights to us, which it is not required to do;

- if a license is available from a third party, we may have to pay substantial royalties, upfront fees and other amounts, and/or grant cross-licenses to intellectual property rights for our product candidates or such license is only available on a non-exclusive basis; and
- redesigning our product candidates or processes so they do not infringe, which may not be possible or may require substantial monetary expenditures and time.

Some of our competitors may be able to sustain the costs of complex patent litigation more effectively than we can because they have substantially greater resources. In addition, any uncertainties resulting from the initiation and continuation of any litigation could have a material adverse effect on our ability to raise the funds necessary to continue our operations or could otherwise have a material adverse effect on our business, results of operations, financial condition and prospects. The occurrence of any of the foregoing could have a material adverse effect on our business, financial condition, results of operations or growth prospects.

We may choose to challenge the patentability of claims in a third party's U.S. patent by requesting that the USPTO review the patent claims in an *ex-parte* re-exam, *inter partes* review or post-grant review proceedings. These proceedings are expensive and may consume our time or other resources. We may choose to challenge a third party's patent in patent opposition proceedings in the EPO, or other foreign patent office. The costs of these opposition proceedings could be substantial, and may consume our time or other resources. If we fail to obtain a favorable result at the USPTO, EPO or other patent office then we may be exposed to litigation by a third party alleging that the patent may be infringed by our product candidates or proprietary technologies.

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

Filing, prosecuting and defending patents on all of our product candidates throughout the world would be prohibitively expensive, and the laws of some foreign countries may not protect our rights to the same extent as the laws of the United States. Competitors may use our technology 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 where enforcement is not as strong as in the United States. These products may compete with our product candidates in jurisdictions where we do not have any issued patents and our patent claims or other intellectual property rights may not be effective or sufficient to prevent them from so competing. Many companies have encountered significant problems in protecting and defending intellectual property rights in foreign jurisdictions. The legal systems of certain countries, particularly certain developing countries, do not favor the enforcement of patents and other intellectual property protection, particularly those relating to biopharmaceuticals, which could make it difficult for us to stop the infringement of our patents or marketing of competing products against third parties in violation of our proprietary rights generally. The initiation of proceedings to enforce our intellectual property rights or proceedings by third parties to challenge the scope or validity of our patent rights in foreign jurisdictions could result in substantial cost and divert our efforts and attention from other aspects of our business and could put our patents at risk of being invalidated or interpreted narrowly.

Many countries have compulsory licensing laws under which a patent owner may be compelled to grant licenses to third parties. In addition, many countries limit the enforceability of patents against government agencies or government contractors. In these countries, the patent owner may have limited remedies, which could materially diminish the value of such patent. If we are forced to grant a license to third parties with respect to any patents relevant to our business, our competitive position may be impaired, and our business, financial condition, results of operations, and growth prospects may be adversely affected.

Obtaining and maintaining our patent protection depends upon compliance with various procedural, document submission, fee payment and other requirements imposed by governmental patent agencies, and our patent protection could be reduced or eliminated for non-compliance with these requirements.

The USPTO and various foreign governmental patent agencies require compliance with a number of procedural, documentary, fee payment and other provisions during the patent prosecution process and following the issuance of a patent. In some cases, an inadvertent failure to comply with such requirements can be cured by payment of a late fee or by other means in accordance with the applicable rules. There are situations, however, in which non-compliance could

result in abandonment or lapse of a patent or patent application, resulting in partial or complete loss of patent rights in the relevant jurisdiction. In such an event, competitors might be able to enter the market earlier than would otherwise have been the case if our patent were in force, which would have a material adverse effect on our business.

We may be subject to claims that our employees, consultants or advisors have wrongfully used or disclosed alleged trade secrets of their current or former employers or claims asserting ownership of what we regard as our own intellectual property.

As is common in the biotechnology and pharmaceutical industries, we employ individuals who were previously employed at other biotechnology or pharmaceutical companies, including our competitors or potential competitors. Although no claims against us are currently pending, we may be subject to claims that these employees, consultants or advisors or we have inadvertently or otherwise used or disclosed trade secrets or other proprietary information of their current or former employers. Litigation may be necessary to defend against these claims. If we fail in defending any such claims, in addition to paying monetary damages, we may lose valuable intellectual property rights or personnel. Even if we are successful in defending against such claims, litigation or other legal proceedings relating to intellectual property claims may cause us to incur significant expenses, and could distract our technical and management personnel from their normal responsibilities. In addition, there could be public announcements of the results of hearings, motions or other interim proceedings or developments, and, if securities analysts or investors perceive these results to be negative, it could have a substantial adverse effect on the price of our common stock. This type of litigation or proceeding could substantially increase our operating losses and reduce our resources available for development activities. We may not have sufficient financial or other resources to adequately conduct such litigation or proceedings. Some of our competitors may be able to sustain the costs of such litigation or proceedings more effectively than we can because of their substantially greater financial resources. Uncertainties resulting from the initiation and continuation of patent litigation or other intellectual property related proceedings could adversely affect our ability to compete in the marketplace.

In addition, while it is our policy to require our employees and contractors who may be involved in the conception or development of intellectual property to execute agreements assigning such intellectual property to us, we may be unsuccessful in executing such an agreement with each party who, in fact, conceives or develops intellectual property that we regard as our own. The assignment of intellectual property rights may not be self-executing, or the assignment agreements may be breached, and we may be forced to bring claims against third parties, or defend claims that they may bring against us, to determine the ownership of what we regard as our intellectual property. Such claims could have a material adverse effect on our business, financial condition, results of operations, and growth prospects.

Confidentiality agreements with employees and third parties may not prevent unauthorized disclosure of trade secrets and other proprietary information.

In addition to the protection afforded by patents, we rely on trade secret protection and confidentiality agreements to protect proprietary know-how that is not patentable or that we elect not to patent, processes for which patents are difficult to enforce and any other elements of our platform technology and discovery and development processes that involve proprietary know-how, information or technology that is not covered by patents. However, trade secrets can be difficult to protect and we have limited control over the protection of trade secrets used by our collaborators and suppliers. Although we seek to protect our proprietary technology and processes, in part, by entering into confidentiality agreements with parties who have access them, such as our employees, consultants, and outside scientific advisors, contractors and collaborators, we cannot guarantee that we have entered into such agreements with each party that may have or have had access to our trade secrets or proprietary technology and processes. Despite our efforts, any of these parties might breach the agreements and intentionally or inadvertently disclose our trade secret information and we may not be able to obtain adequate remedies for such breaches. In addition, competitors may otherwise gain access to our trade secrets or independently develop substantially equivalent information and techniques. Moreover, our competitors or other third parties may independently develop equivalent knowledge, methods and know-how.

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 inside and outside the United States sometimes are less willing or unwilling to protect trade secrets. If we choose to go to court to stop a third party from using any of our trade

secrets, we may incur substantial costs. These lawsuits may consume our time and other resources even if we are successful. If any of our trade secrets were determined to be lawfully obtained or independently developed by a competitor or other third party, we may not be able to prevent them from using that technology or information to compete with us. If any of our trade secrets were to be disclosed to or independently developed by a competitor or other third party, our competitive position, business, results of operations and prospects would be materially and adversely harmed.

Intellectual property rights do not necessarily address all potential threats.

The degree of future protection for our proprietary rights is uncertain because legal means afford only limited protection and may not adequately protect our rights or permit us to gain or keep our competitive advantage. For example:

- others may be able to make or use compounds that are similar to the pharmaceutical compounds used in our product candidates but that are not covered by the claims of our patents;
- the APIs in our current product candidates will eventually become commercially available in generic drug products, and no patent protection may be available with regard to formulation or method of use;
- we, or our future licensors or collaborators, might not have been the first to file patent applications for these inventions;
- we, or our future licensors or collaborators, might not have been the first to make the inventions covered by our issued patents or pending patent applications;
- others may independently develop similar or alternative technologies or duplicate any of our technologies;
- it is possible that our current or future pending or licensed patent applications will not result in issued patents;
- it is possible that public disclosures or publications, including disclosures or publications made by us, could be used in an attempt to invalidate our patents;
- issued patents that we hold rights to may be held invalid or unenforceable, including as a result of legal challenges by our competitors or other third parties;
- our competitors or other third parties 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;
- it is possible that others may circumvent our patents;
- it is possible that there are unpublished applications or patent applications maintained in secrecy that may later issue with claims covering our products or technology similar to ours;
- the laws of foreign countries may not protect our proprietary rights to the same extent as the laws of the United States;
- the claims of our issued patents or patent applications, if and when issued, may not cover our product candidates;
- our issued patents may not provide us with any competitive advantages, may be narrowed in scope, or be held invalid or unenforceable as a result of legal challenges by third parties;
- the inventors of our patents or patent applications may become involved with competitors, develop products or processes which design around our patents, or become hostile to us or the patents or patent applications on which they are named as inventors;
- we have engaged in scientific collaborations in the past and will continue to do so in the future. Such collaborators may develop adjacent or competing products to ours that are outside the scope of our patents;
- we may not develop additional proprietary technologies for which we can obtain patent protection;
- we may choose not to pursue patent protection in order to maintain certain trade secrets or know-how, and a third party may subsequently obtain a patent covering such intellectual property;
- it is possible that product candidates or diagnostic tests we develop may be covered by third parties' patents or other exclusive rights; or
- the patents of others may have an adverse effect on our business.

Should any of these events occur, they could have a material adverse effect on our business, financial condition, results of operations and growth prospects.

Risks related to regulatory and marketing approval and other legal compliance matters

We have never obtained marketing approval for a product candidate and we may be unable to obtain, or may be delayed in obtaining, marketing approval for any of our product candidates.

We have never obtained marketing approval for a product candidate. The time required to obtain approval by the FDA and comparable foreign regulatory authorities is unpredictable but typically takes many years following the commencement of preclinical studies and clinical trials and depends upon numerous factors, including the substantial discretion of the regulatory authorities. In addition, extraneous factors, including an epidemic or pandemic disease outbreak such as COVID-19, or other public health situations, could impact the timeline for FDA and comparable foreign regulatory authorities to review an application for one of our product candidates. It is possible that the FDA and comparable foreign regulatory authorities may refuse to accept for filing and substantive review any new drug applications, or NDAs, marketing authorization applications, or MAA, that we submit for our product candidates or may conclude after review of our data that our application is insufficient to obtain marketing approval of our product candidates. If the FDA, or comparable foreign regulatory authorities do not accept or approve our NDAs or MAAs for our product candidates, it may require that we conduct additional clinical, nonclinical or manufacturing validation studies and submit that data before it will reconsider our applications. Depending on the extent of these or any other regulatory authority-required studies, approval of any NDA, MAA or other application that we submit may be delayed by several years, or may require us to expend more resources than we have available. It is also possible that additional studies, if performed and completed, may not be considered sufficient by the FDA or comparable foreign regulatory authorities to approve our NDAs or our MAAs.

Any delay in obtaining, or an inability to obtain, marketing approvals would prevent us from commercializing our product candidates, generating revenues and achieving and sustaining profitability. If any of these outcomes occur, we may be forced to abandon our development efforts for our product candidates, which could significantly harm our business.

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

The research, testing, manufacturing, labeling, approval, selling, marketing, promotion and distribution of drugs are subject to extensive regulation by the FDA and comparable foreign regulatory authorities, whose laws and regulations may differ from country to country. We, and any future collaborators, are not permitted to market our product candidates in the United States or in other countries until we or they receive approval of an NDA from the FDA or marketing approval from comparable foreign regulatory authorities. Our product candidates are in early stages of development and are subject to the risks of failure inherent in drug development. We have not submitted an application for or received marketing approval for any of our product candidates in the United States or in any other jurisdiction. We have limited experience in conducting and managing the clinical trials necessary to obtain marketing approvals, including FDA approval of an NDA.

The process of obtaining marketing approvals, both in the United States and abroad, is a lengthy, expensive and uncertain process. It may take many years, if approval is obtained at all, and can vary substantially based upon a variety of factors, including the type, complexity and novelty of the product candidates involved. Securing marketing approval requires the submission of extensive preclinical and clinical data and supporting information to regulatory authorities for each therapeutic indication to establish the product candidate’s safety and efficacy. Securing marketing approval also requires the submission of information about the product manufacturing process to, and inspection of manufacturing facilities by, the regulatory authorities. The FDA or other comparable foreign regulatory authorities have substantial discretion and may determine that our product candidates are not safe and effective, only moderately effective or have undesirable or unintended side effects, toxicities or other characteristics that preclude our obtaining marketing approval or prevent or limit commercial use. Any marketing approval we ultimately obtain may be limited or subject to restrictions or post-approval commitments that render the approved product not commercially viable.

Our product candidates could fail to receive marketing approval, or marketing approval for our product candidates could be limited or delayed, for many reasons, including the following:

- the FDA or comparable foreign regulatory authorities may disagree with the design or implementation of our clinical trials;
- we may be unable to demonstrate to the satisfaction of the FDA or comparable foreign regulatory authorities that 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 or comparable foreign regulatory authorities for approval;
- we may be unable to demonstrate that a product candidate's clinical and other benefits outweigh its safety risks;
- the FDA or comparable foreign regulatory authorities may disagree with our interpretation of data from preclinical studies or clinical trials;
- the data collected from clinical trials of our product candidates may not be sufficient to support the submission of an NDA or other submission and applications or to obtain marketing approval in the United States or elsewhere;
- the FDA or comparable foreign regulatory authorities may fail to approve the manufacturing processes or facilities of third-party manufacturers with which we contract for clinical and commercial supplies;
- the FDA or comparable foreign regulatory authorities may fail to approve any companion diagnostics that may be required in connection with approval of our therapeutic product candidates
- the FDA or the applicable foreign regulatory agency may fail to approve the formulation, labeling and/or the specifications for our product candidate
- changes in marketing approval policies during the development period, changes in or the enactment or promulgation of additional statutes, regulations or guidance or changes in regulatory review for each submitted drug application; and
- the approval policies or regulations of the FDA or comparable foreign regulatory authorities may significantly change in a manner rendering our clinical data insufficient for approval.

This lengthy approval process as well as the unpredictability of clinical trial results may result in our failing to obtain marketing approval to market ATRN-119, which would significantly harm our business, results of operations and prospects. Regulatory authorities have substantial discretion in the approval process and may refuse to accept any application or may decide that our data are insufficient for approval and require additional preclinical studies, clinical trials or other studies and testing. In addition, varying interpretations of the data obtained from preclinical studies and clinical trials could delay, limit or prevent marketing approval of a product candidate. Any marketing approval we, or any collaborators we may have in the future, ultimately obtain may be limited or subject to restrictions or post-approval commitments that render the approved drug not commercially viable.

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

Failure to obtain marketing approval in foreign jurisdictions would prevent our product candidates from being marketed abroad. Any approval we are granted for our product candidates in the United States would not assure approval of our product candidates in foreign jurisdictions.

In order to market and sell our product candidates in the EU and many other jurisdictions, we, and any collaborators we may have in the future, must obtain separate marketing approvals and comply with numerous and varying regulatory requirements. The approval procedure varies among countries and can involve additional testing. The time required to obtain approval may differ substantially from that required to obtain FDA approval. The marketing approval process outside of the United States generally includes all of the risks associated with obtaining FDA approval. In addition, in many countries outside of the United States, it is required that the drug be approved for reimbursement before the drug can be approved for sale in that country. We, and any collaborators we may have in the future, may not obtain approvals from regulatory authorities outside of the United States on a timely basis, if at all. Approval by the FDA does not ensure approval by regulatory authorities in other countries or jurisdictions, and approval by one regulatory authority outside of the United States does not ensure approval by regulatory authorities in other countries or jurisdictions or by the FDA.

The U.K. having left the EU, the TCA and the Northern Ireland Protocol is likely to continue to affect European and worldwide economic conditions and could contribute to greater instability in the global financial markets. These effects could have an adverse effect on our business, investments, and future operations in Europe. There is a risk that trade between U.K. and EU businesses will be materially adversely affected, particularly in relation to highly regulated products such as pharmaceuticals and products of animal-origin, due to the additional regulatory burdens being imposed on exporters/importers which may affect the availability of these products.

The consequences for the economies of the U.K. and the EU member states as a result of the U.K.'s withdrawal from the EU are still largely unknown and unpredictable. Given the lack of comparable precedent, it is unclear what the broader macro-economic and financial implications the U.K. having left the EU will have.

We, or any future collaborators, may not be able to obtain or maintain orphan drug exclusivity for our product candidates and, even if we do, that exclusivity many not prevent the FDA or the European Commission from approving competing products.

Regulatory authorities in some jurisdictions, including the United States and the EU, may designate drugs for relatively small patient populations as orphan drugs. Under the Orphan Drug Act, the FDA may designate a product as an orphan drug if it is a drug intended to treat a rare disease or condition, which is generally defined as a patient population of fewer than 200,000 individuals annually in the United States, or a patient population greater than 200,000 in the United States where there is no reasonable expectation that the cost of developing the drug will be recovered from sales in the United States. Eprenetapopt has received orphan drug designation from the FDA for use in the treatment of high-risk myelodysplastic syndromes, or MDS, and orphan drug designation from the European Commission for MDS, AML, and ovarian cancer. We may seek orphan drug designations for eprenetapopt for other indications or for other of our product candidates. There can be no assurances that we will be able to obtain such designations.

In the United States, orphan drug designation entitles a party to financial incentives such as opportunities for grant funding towards clinical trial costs, tax advantages and user-fee waivers. In addition, the company that obtains the first FDA approval for a designated orphan drug for a rare disease receives marketing exclusivity for use of that drug for the designated condition for a period of seven years. Once a product receives orphan drug exclusivity, a second product that is considered to be the same drug for the same indication generally may be approved during the exclusivity period only if the second product is shown to be "clinically superior" to the original orphan drug in that it is more effective, safer or otherwise makes a "major contribution to patient care" or the holder of exclusive approval cannot assure the availability of sufficient quantities of the orphan drug to meet the needs of patients with the disease or condition for which the drug was designated.

The European Commission can grant orphan drug product designation to products for which the sponsor can establish that it is intended for the diagnosis, prevention, or treatment of (1) a life-threatening or chronically debilitating condition affecting not more than five in 10,000 people in the European Union, or (2) a life threatening, seriously debilitating or serious and chronic condition in the European Union and that without incentives it is unlikely that sales of the drug in the European Union would generate a sufficient return to justify the necessary investment. In addition, it must be established that there is no other satisfactory method approved in the European Union of diagnosing, preventing or treating the condition, or if such a method exists, the proposed orphan drug will be of significant benefit to patients. Orphan drug designation is not a marketing authorization. It is a designation that provides a number of benefits, including fee reductions, regulatory assistance, and the possibility to apply for a centralized EU marketing authorization, as well as 10 years of market exclusivity following a marketing authorization. During this market exclusivity period, neither the EMA nor the European Commission nor the EU member states can accept an application or grant a marketing authorization for a 'similar medicinal product.' A 'similar medicinal product' is defined as a medicinal product containing a similar active substance or substances as contained in an authorized orphan medicinal product, and which is intended for the same therapeutic indication. The market exclusivity period for the authorized therapeutic indication may be reduced to six years if, at the end of the fifth year, it is established that the orphan designation criteria are no longer met, including where it is shown that the product is sufficiently profitable not to justify maintenance of market exclusivity. In addition, a competing similar medicinal product may in limited circumstances be authorized prior to the expiration of the market exclusivity period, including if it is shown to be safer, more effective or otherwise clinically

superior to our product. Our product can lose orphan designation, and the related benefits, prior to us obtaining a marketing authorization if it is demonstrated that the orphan designation criteria are no longer met.

Even if we, or any future collaborators, obtain orphan drug designation for a product candidate, we, or they, may not be able to obtain or maintain orphan drug exclusivity for that product candidate. We may not be the first to obtain marketing approval of any product candidate for which we have obtained orphan drug designation for the orphan-designated indication due to the uncertainties associated with developing drug products. If this happens, marketing approval for our product candidate may be delayed due to the first-approved product's orphan drug exclusivity, unless we demonstrate clinical superiority. We may not be able to demonstrate that our product is clinically superior to a first-approved product with orphan drug exclusivity, i.e., that it provides greater safety or efficacy or a major contribution to patient care. In addition, exclusive marketing rights in the United States may be limited if we seek approval for an indication broader than the orphan-designated indication or may be lost if the FDA later determines that the request for designation was materially defective or if we are unable to assure sufficient quantities of the product to meet the needs of patients with the rare disease or condition. Further, even if we, or any future collaborators, obtain orphan drug exclusivity for a product, that exclusivity may not effectively protect the product from competition because different drugs with different active moieties may be approved for the same condition. Even after an orphan drug is approved, the FDA can subsequently approve the same drug with the same active moiety for the same condition if the FDA concludes that the later drug is clinically superior in that it is shown to be safer, more effective or makes a major contribution to patient care or the manufacturer of the product with orphan exclusivity is unable to maintain sufficient product quantity. Orphan drug designation neither shortens the development time or regulatory review time of a drug nor gives the drug any advantage in the regulatory review or approval process.

In the United States, Congress is also considering updates to the orphan drug provisions of the FDCA in response to a recent 11th Circuit decision. Any changes to the orphan drug provisions could change our opportunities for, or likelihood of success in obtaining, orphan drug exclusivity and could materially adversely affect our business, financial condition, results of operations, cash flows and prospects.

Even if we, or any collaborators we may have in the future, obtain marketing approvals for our product candidates, the terms of approvals and ongoing regulation of our product candidates could require substantial expenditure of resources and may limit how we, or they, manufacture and market our product candidates, which could materially impair our ability to generate revenue.

Once marketing approval has been granted, an approved drug and its manufacturer and marketer are subject to ongoing review and extensive regulation. These requirements include submissions of safety and other post-marketing information and reports, user fee requirements, registration and listing requirements, requirements relating to manufacturing, quality control, quality assurance and corresponding maintenance of records and documents, requirements regarding the distribution of samples to physicians and recordkeeping. We, and any collaborators we may have in the future, must also comply with requirements concerning advertising and promotion for any of our product candidates for which we or they obtain marketing approval. Promotional communications with respect to prescription drugs are subject to a variety of legal and regulatory restrictions and must be consistent with the information in the drug's approved labeling. Thus, we, and any collaborators we may have in the future, may not be able to promote any drugs we develop for indications or uses for which they are not approved.

The FDA or comparable foreign regulatory authorities may also impose requirements for costly post-marketing studies or clinical trials and surveillance to monitor the safety or efficacy of a drug. For example, the approval may be subject to limitations on the indicated uses for which the drug may be marketed or to the conditions of approval, including the requirement to implement a REMS or comparable foreign equivalents, like the EU Risk Management Plan, or RMP, which could include requirements for a restricted distribution system. Manufacturers of approved drugs and those manufacturers' facilities are also required to comply with extensive FDA or comparable foreign regulatory authorities requirements, including ensuring that quality control and manufacturing procedures conform to cGMPs, which include requirements relating to quality control and quality assurance as well as the corresponding maintenance of records and documentation and reporting requirements. We, our contract manufacturers, our future collaborators and their contract manufacturers could be subject to periodic unannounced inspections by the FDA or comparable foreign regulatory authorities to monitor and ensure compliance with cGMPs.

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

If we, and our future collaborators, are not able to comply with post-approval regulatory requirements, regulatory agencies or enforcement authorities may:

- issue warning letters;
- impose civil or criminal penalties;
- suspend regulatory approval;
- suspend any of our ongoing clinical trials;
- refuse to approve pending applications or supplements to approved applications submitted by us or our collaborators;
- impose restrictions on our operations, including closing our or our collaborators' manufacturing facilities; or
- seize or detain products or require a recall.

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

The regulatory requirements and policies may change, and additional government regulations may be enacted for which we may also be required to comply. We cannot predict the likelihood, nature or extent of government regulation that may arise from future legislation or administrative action, either in the United States or in other countries. If we or any future collaboration partner are not able to maintain regulatory compliance, we or such collaboration partner, as applicable, may face government enforcement action and our business will suffer. Moreover, our or our future collaborators' ability to market any future drugs could be limited, which could adversely affect our ability to achieve or sustain profitability. Further, the cost of compliance with post-approval regulations may have a negative effect on our operating results and financial condition.

The FDA's and other comparable regulatory authorities' policies may change and additional government regulations may be enacted that could prevent, limit or delay regulatory approval of our product candidates, which would impact our ability to generate revenue.

We also cannot predict the likelihood, nature or extent of government regulation that may arise from future legislation or administrative or executive action, either in the United States or abroad. The policies of the FDA and of comparable foreign regulatory authorities may change and additional government regulations may be enacted that could prevent, limit or delay regulatory licensure of our product candidates. We cannot predict the likelihood, nature or extent of government regulation that may arise from future legislation or administrative action, either in the United States or abroad. If we are slow or unable to adapt to changes in existing requirements or the adoption of new requirements or policies, or if we are not able to maintain regulatory compliance, we may lose any marketing licensure that we may have obtained and we may not achieve or sustain profitability. If these actions impose constraints on FDA's ability to engage in oversight and implementation activities in the normal course, our business may be negatively impacted.

Any of our product candidates for which we, or our future collaborators, obtain marketing approval in the future will be subject to substantial penalties if we, or they, fail to comply with regulatory requirements or if we, or they, experience unanticipated problems with our product candidates following approval.

Any of our product candidates for which we, or our future collaborators, obtain marketing approval in the future, will be subject to continual review by the FDA or comparable foreign regulatory authorities.

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

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

- litigation involving patients taking our drug;
- restrictions on such drugs, manufacturers or manufacturing processes;
- restrictions on the labeling or marketing of a drug;
- restrictions on drug distribution or use;
- requirements to conduct post-marketing studies or clinical trials;
- warning letters or untitled letters;
- withdrawal of the drugs from the market;
- refusal to approve pending applications or supplements to approved applications that we submit;
- recall of drugs;
- fines, restitution or disgorgement of profits or revenues;
- suspension or withdrawal of marketing approvals;
- damage to relationships with any potential collaborators;
- restrictions on coverage by third-party payors;
- unfavorable press coverage and damage to our reputation;
- refusal to permit the import or export of drugs;
- drug seizure; or
- injunctions or the imposition of civil or criminal penalties.

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

In the United States and some foreign jurisdictions, there have been and continue to be a number of legislative and regulatory changes and proposed changes regarding the healthcare system that could prevent or delay marketing approval of our product candidates, restrict or regulate post-approval activities and affect our ability, or the ability of our future collaborators, to effectively sell any drugs for which we, or they, obtain marketing approval. We expect that current laws, as well as other healthcare reform measures that may be adopted in the future, may result in more rigorous coverage criteria and additional downward pressure on the price that we, or our future collaborators, may receive for any approved drugs.

In the United States, the Congress and recent presidential administrations have enacted or are considering a number of legislative and regulatory proposals to change the healthcare system in ways that could affect our ability to sell our products, if approved, and to do so effectively. Among policy makers and payors in the United States and elsewhere, there is significant interest in promoting changes in healthcare systems with the stated goals of containing healthcare costs, improving quality and expanding access.

In the United States, the pharmaceutical industry has been a particular focus of efforts to reform the healthcare system and has been significantly affected by major legislative initiatives, including the PPACA, which contains provisions that may potentially affect the profitability of our products, including, for example, increased rebates for products sold to Medicaid programs, extension of Medicaid rebates to Medicaid managed care plans, mandatory discounts for certain

Medicare Part D beneficiaries and annual fees based on pharmaceutical companies' share of sales to federal health care programs, and expansion of the entities eligible for discounts under the 340B pricing program. The framework of the PPACA continues to evolve as a result of executive, legislative, regulatory and administrative developments that have challenged the law and contribute to legal uncertainty that could affect the profitability of our products. See Part I, Item 1, "Government Regulation – U.S. Healthcare Reform" for further information.

We expect that these and other healthcare reform measures that may be adopted in the future may result in more rigorous coverage criteria and/or new payment methodologies, and place additional downward pressure on the price that we receive for any approved product and/or the level of reimbursement physicians receive for administering any approved product we might bring to market. Reductions in reimbursement levels and imposition of more rigorous coverage criteria or new payment methodologies may negatively impact the prices we receive or the frequency with which our products are prescribed or administered. Any coverage or reimbursement policies instituted by Medicare or other federal health care programs may result in similar policies from private payors. The implementation of cost containment measures or other healthcare reforms may affect our ability to generate revenue, attain or maintain profitability, or commercialize our product candidates. We expect that additional state and federal healthcare reform measures will be adopted in the future, any of which could limit the amounts that federal and state governments will pay for healthcare products and services, which could result in reduced demand for our product candidates or additional pricing pressures.

The pricing of prescription pharmaceuticals is also subject to governmental control outside the United States. In countries outside of the United States, 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 may be required to conduct a clinical trial that compares the cost-effectiveness of our product candidates to that of other available therapies. If reimbursement of our products is unavailable or limited in scope or amount, or if pricing is set at unsatisfactory levels, our ability to generate revenues and become profitable could be impaired.

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

Regulatory proposals have been made to allow the importation of prescription drugs into the United States that are approved for marketing in Canada, and potentially other countries. If such proposal are implemented, and if any of our product candidates or other similar or equivalent drug products are approved in another ex-US jurisdiction, these regulatory proposals may impact the competition our product may face, if approved. 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.

We may seek a breakthrough therapy designation for ATRN-119 or one or more of our other product candidates, but we might not receive such designation, and even if we do, such designation may not lead to a faster development or regulatory review or approval process.

We may seek a breakthrough therapy designation for ATRN-119 or one or more of our other product candidates. A breakthrough therapy is defined as a drug that is intended, alone or in combination with one or more other drugs, to treat a serious or life-threatening condition, and preliminary clinical evidence indicates that the drug may demonstrate substantial improvement over existing therapies on one or more clinically significant endpoints, such as substantial treatment effects observed early in clinical development. For drugs and biologics that have been designated as breakthrough therapies, interaction and communication between the FDA and the sponsor of the trial can help to identify the most efficient path for clinical development while minimizing the number of patients placed in ineffective control regimens. Drugs designated as breakthrough therapies by the FDA may also be eligible for priority review if supported by clinical data at the time the NDA is submitted to the FDA, and parts of the NDA may be submitted and reviewed on a rolling basis.

Designation as a breakthrough therapy is within the discretion of the FDA. Accordingly, even if we believe that one of our product candidates meets the criteria for designation as a breakthrough therapy, the FDA may disagree and instead determine not to make such designation. Even if we receive breakthrough therapy designation, the receipt of such designation for a product candidate may not result in a faster development or regulatory review or approval process compared to drugs considered for approval under conventional FDA procedures and does not assure ultimate approval by the FDA. In addition, even if one or more of our product candidates qualify as breakthrough therapies, the FDA may later decide that the product candidates no longer meet the conditions for qualification or decide that the time period for FDA review or approval will not be shortened. For example, in June 2022, FDA published a draft guidance document outlining considerations for the Agency in rescinding Breakthrough Therapy designation for products that no longer meet the requirements for that designation.

A fast track designation by the FDA for eprenetapopt, ATRN-119 or any of our product candidates may not actually lead to a faster development or regulatory review or approval process.

If a drug is intended, whether alone or in combination with one or more other drugs, for the treatment of a serious or life-threatening condition and nonclinical or clinical data demonstrate the potential to address unmet medical need for this condition, a drug sponsor may apply for FDA fast track designation. Although we have received a fast track designation for eprenetapopt for the treatment of patients with myelodysplastic syndrome having a *TP53* mutation, this does not ensure that we will receive marketing approval or that approval will be granted within any particular timeframe. We may not experience a faster development or regulatory review or approval process for eprenetatopt or for any other product candidates, if any, for which we obtain fast track designation compared to conventional FDA procedures. In addition, the FDA may withdraw fast track designation if it believes that the designation is no longer supported by data from our clinical development program. Fast track designation alone does not guarantee qualification for the FDA's priority review procedures.

We may seek priority review designation for one or more of our other product candidates, but we might not receive such designation, and even if we do, such designation may not lead to a faster development or regulatory review or approval process.

If the FDA determines that a product candidate offers a treatment for a serious condition and, if approved, the product would provide a significant improvement in safety or effectiveness, the FDA may designate the product candidate for priority review. A priority review designation means that the goal for the FDA to review an application is six months from the 60-day filing date, rather than the standard review period of ten months. We may request priority review for our product candidates. The FDA has broad discretion with respect to whether or not to grant priority review status to a product candidate, so even if we believe a particular product candidate is eligible for such designation or status, the FDA may decide not to grant it. Moreover, a priority review designation does not necessarily mean a faster development or regulatory review or approval process or necessarily confer any advantage with respect to approval compared to conventional FDA procedures. Receiving priority review from the FDA does not guarantee approval within the six-month review cycle or at all.

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

Although we do not currently have any products on the market, we are subject to a variety of regulatory requirements, including healthcare statutory and regulatory requirements and enforcement by the U.S. federal and state governments and the foreign governments of the countries in which we conduct our business. Even though we are not in a position to make patient referrals and do not bill Medicare, Medicaid, or other government or commercial third-party payors, our relationships with healthcare providers, physicians and third-party payors will subject us to healthcare statutory and regulatory requirements and enforcement by the U.S. federal government and the states and foreign governments in which we conduct our business. Our future arrangements with healthcare providers, physicians and third-party payors and patients may expose us to broadly applicable fraud and abuse and other healthcare laws and regulations that may constrain the business or financial arrangements and relationships through which we market, sell and distribute our

products for which we obtain marketing approval. See Part I, Item 1, “Government Regulation – Healthcare Law and Regulation” for more detail.

Efforts to ensure that our business arrangements with third parties will comply with applicable healthcare laws and regulations will involve substantial costs. It is possible that governmental authorities will conclude that our business practices may not comply with current or future statutes, regulations, guidance, case law or other applicable law. If our operations are found to be in violation of any of these laws or any other governmental regulations that may apply to us, we may be subject to significant civil, criminal and administrative penalties, damages, fines, individual imprisonment, exclusion from participation in federal healthcare programs, such as Medicare and Medicaid, disgorgement, reputational harm, additional oversight and reporting obligations pursuant to a corporate integrity agreement or similar agreement to resolve allegations of non-compliance with applicable laws and regulations, and the curtailment or restructuring of our operations, any of which could adversely affect our ability to market our products, if approved, and adversely impact our financial results. Although effective compliance programs can mitigate the risk of investigation and prosecution for violations of these laws and regulations, these risks cannot be entirely eliminated. Any action against us for an alleged or suspected violation could cause us to incur significant legal expenses and could divert our management’s attention from the operation of our business, even if our defense is successful. If any of the physicians or other healthcare providers or entities with whom we expect to do business is found not to be in compliance with applicable laws, it may be costly to us in terms of money, time and resources, and they may be subject to criminal, civil or administrative sanctions, including exclusions from government-funded healthcare programs.

Our employees may engage in misconduct or other improper activities, including non-compliance with regulatory standards and requirements, which could cause significant liability for us and harm our reputation.

We are exposed to the risk of employee fraud or other misconduct, including intentional failures to comply with FDA regulations or similar regulations of comparable foreign regulatory authorities, provide accurate information to the FDA or comparable foreign regulatory authorities, comply with manufacturing standards we may establish, comply with federal and state healthcare fraud and abuse laws and regulations and similar laws and regulations established and enforced by comparable foreign regulatory authorities, 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, kickbacks, self-dealing and other abusive practices. These laws and regulations may restrict or prohibit a wide range of pricing, discounting, marketing and promotion, sales commission, incentive programs and other business arrangements. Employee misconduct could also involve the improper use of information obtained in the course of clinical trials, which could result in regulatory sanctions and serious harm to our reputation. It is not always possible to identify and deter employee misconduct, and the precautions we take to detect and prevent this activity may not be effective in controlling unknown or unmanaged risks or losses or in protecting us from governmental investigations or other actions or lawsuits stemming from a failure to be in compliance with such laws, standards or 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 and results of operations, including the imposition of significant fines or other sanctions.

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

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

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

asserted against us in connection with our storage or disposal of hazardous and flammable materials, including chemicals and biological materials.

In addition, we may incur substantial costs in order to comply with current or future environmental, health and safety laws and regulations. These current or future laws and regulations may impair our research, development or commercialization efforts. Failure to comply with these laws and regulations also may result in substantial fines, penalties or other sanctions.

Laws and regulations governing any international operations we may have in the future may preclude us from developing, manufacturing and selling certain product candidates outside of the United States and require us to develop and implement costly compliance programs.

If we expand our operations outside of the United States, we must comply with numerous laws and regulations in each jurisdiction in which we plan to operate, such as the applicable anti-bribery, anti-corruption, anti-money laundering regulations. The creation and implementation of international business practices compliance programs is costly and such programs are difficult to enforce, particularly where reliance on third parties is required.

The Foreign Corrupt Practices Act, or FCPA, prohibits any U.S. individual or business from paying, offering, authorizing payment or offering of anything of value, directly or indirectly, to any foreign official, political party or candidate for the purpose of influencing any act or decision of the foreign entity in order to assist the individual or business in obtaining or retaining business. The FCPA also obligates companies whose securities are listed in the United States to comply with certain accounting provisions requiring the company to maintain books and records that accurately and fairly reflect all transactions of the corporation, including international subsidiaries, and to devise and maintain an adequate system of internal accounting controls for international operations. The anti-bribery provisions of the FCPA are enforced primarily by the DOJ. The Securities and Exchange Commission, or SEC, is involved with enforcement of the books and records provisions of the FCPA.

Compliance with the FCPA is expensive and difficult, particularly in countries in which corruption is a recognized problem. In addition, the FCPA presents particular challenges in the pharmaceutical industry, because, in many countries, hospitals are operated by the government, and doctors and other hospital employees are considered foreign officials. Certain payments to hospitals in connection with clinical trials and other work have been deemed to be improper payments to government officials and have led to FCPA enforcement actions.

Violation of the FCPA can result in significant civil and criminal penalties. Indictment alone under the FCPA can lead to suspension of the right to do business with the U.S. government until the pending claims are resolved. Conviction of a violation of the FCPA can result in long-term disqualification as a government contractor. The termination of a government contract or relationship as a result of our failure to satisfy any of our obligations under laws governing international business practices would have a negative impact on our operations and harm our reputation and ability to procure government contracts. The SEC also may suspend or bar issuers from trading securities on U.S. exchanges for violations of the FCPA's accounting provisions.

We are also subject to other laws and regulations governing our international operations, including applicable import and export control regulations, economic sanctions on countries and persons administered or enforced by the U.S. government (including, without limitation, the Office of Foreign Assets Control of the U.S. Department of the Treasury), anti-money laundering laws, customs requirements and currency exchange regulations, collectively referred to as the trade control laws. We can provide no assurance that we will be completely effective in ensuring our compliance with all applicable legal requirements, including trade control laws. If we are not in compliance with applicable trade control laws, we may be subject to criminal and civil penalties, disgorgement and other sanctions and remedial measures, and legal expenses, which could have an adverse impact on our business, results of operations, financial condition and prospects. Likewise, any investigation of any potential violations of these trade control laws by U.S. or other authorities could also have an adverse impact on our reputation, our business, results of operations, financial condition and prospects.

Various laws, regulations and executive orders also restrict the use and dissemination outside of the United States, or the sharing with certain non-U.S. nationals, of information classified for national security purposes, as well as certain products and technical data relating to those products. If we expand our presence outside of the United States, it will require us to dedicate additional resources to comply with these laws, and these laws may preclude us from developing, manufacturing, or selling certain drugs and product candidates outside of the United States, which could limit our growth potential and increase our development costs. The failure to comply with laws governing international business practices may result in substantial penalties, including suspension or debarment from government contracting.

Security breaches, loss of data and other disruptions could compromise sensitive information related to our business or prevent us from accessing critical information and expose us to liability, which could adversely affect our business and our reputation.

In the ordinary course of our business, we collect and store sensitive data, including personally identifiable information, intellectual property and proprietary business information owned or controlled by ourselves and other parties. We manage and maintain our applications and data utilizing a combination of on-site systems, managed data centers and cloud-based data centers. We utilize external security and infrastructure vendors to manage our information technology systems and data centers. These applications and data encompass a wide variety of business-critical information, including research and development information, commercial information, and business and financial information. We face a number of risks relative to protecting this critical information, including loss of access or disruptions to our IT systems, inappropriate use or disclosure of protected information, inappropriate modification, and the risk of our being unable to adequately monitor, audit and modify our controls over our critical information. This risk extends to the third-party vendors and subcontractors we use to manage this sensitive data.

The secure processing, storage, maintenance and transmission of this critical information are vital to our operations and business strategy. Although we take measures to protect sensitive data from unauthorized access, use or disclosure, including the development of policies and procedures to protect our information technology systems and confidential and proprietary information, there is no guarantee we can protect our data from data security incidents, and our information technology and infrastructure may be vulnerable to attacks by hackers or viruses or breached due to employee or vendor error, malfeasance or other malicious or inadvertent disruptions from internal or external threats. Any such breach or interruption could compromise our networks and the information stored there could be accessed by unauthorized parties, manipulated, publicly disclosed, lost or stolen. Any such access, breach or other loss of information could result in legal claims or proceedings, and liability under federal or state laws that protect the privacy of personal information, such as the Health Insurance Portability and Accountability Act of 1996, or HIPAA, the Health Information Technology for Economic and Clinical Health Act, or HITECH, and regulatory penalties. Notice of breaches must be made to affected individuals, the Secretary of the Department of Health and Human Services, and notice may need to be made to the media or other data protection regulators. Such incidents, and the publicity they may generate, could harm our reputation and our ability to compete. Unauthorized access, loss or dissemination could also damage our reputation or disrupt our operations, including our ability to conduct our analyses, process claims and appeals, conduct research and development activities, collect, process and prepare company financial information, provide information about our tests and other patient and physician education and outreach efforts through our website, and manage the administrative aspects of our business.

Penalties for violations of these laws vary. For instance, penalties for failure to comply with a requirement of HIPAA and HITECH vary significantly, and include civil monetary penalties of up to (as recently adjusted for inflation) $55,910 per violation, not to exceed approximately $1.68 million per calendar year for each provision of HIPAA that is violated and, in certain circumstances, criminal penalties with fines up to $250,000 per violation and/or imprisonment. However, a single breach incident can result in multiple violations, which can lead to significant financial penalties. In addition, numerous breach incidents could lead to possible penalties in excess of $1.68 million. A person who knowingly obtains or discloses individually identifiable health information in violation of HIPAA may face a criminal penalty of up to $50,000 and up to one-year imprisonment. The criminal penalties increase if the wrongful conduct involves false pretenses or the intent to sell, transfer or use identifiable health information for commercial advantage, personal gain or malicious harm.

Further, various states, such as California and Massachusetts, have implemented similar privacy laws and regulations, such as the California Confidentiality of Medical Information Act, that impose restrictive requirements regulating the use and disclosure of health information and other personally identifiable information. These laws and regulations are not necessarily preempted by HIPAA, particularly if a state affords greater protection to individuals than HIPAA. Where state laws are more protective, we have to comply with the stricter provisions. In addition to fines and penalties imposed upon violators, some of these state laws also afford private rights of action to individuals who believe their personal information has been misused. California's patient privacy laws, for example, provide for penalties of up to $250,000 and permit injured parties to sue for damages. The interplay of federal and state laws may be subject to varying interpretations by courts and government agencies, creating complex compliance issues for us and data we receive, use and share, potentially exposing us to additional expense, adverse publicity and liability.

Further, as regulatory focus on privacy issues continues to increase and laws and regulations concerning the protection of personal information expand and become more complex, these potential risks to our business could intensify. Moreover, privacy and cybersecurity laws and regulations are evolving, and may continue to add additional compliance costs and legal risks. For example, the California legislature passed the California Consumer Protection Act (CCPA), which came into effect January 1, 2020. The CCPA requires companies doing business in California to disclose information regarding the collection, use and sharing of a consumer's personal data, and comply with certain qualified privacy rights requests, including rights to request deletion of or to stop the sale of their personal information. While the CCPA includes certain exemptions for data protected by HIPAA or in certain research contexts, the law covers a wide range of data we may process in other contexts. The CCPA also permits the imposition of civil penalties and expands existing state security laws by providing a private right of action for consumers in certain circumstances where consumer data is subject to a breach. Interpretations of the CCPA may continue to evolve with regulatory guidance and enforcement actions from the California Attorney General. The California Privacy Rights Act (CPRA), which expands the CCPA, passed in November 2020. The CPRA will, among other things, impose additional data protection obligations on companies doing business in California, including additional consumer rights processes, limitations on data uses, new audit requirements for higher risk data, and opt outs for certain uses of sensitive data. It has also created a new California data protection agency authorized to issue substantive regulations and could result in increased privacy and information security enforcement. That rulemaking process is ongoing. Following the CPRA, Virginia, Colorado, Utah and Connecticut have enacted similar, but not completely consistent, comprehensive privacy legislation that will also go into effect in January and July 2023, respectively. Many other states are considering similar legislation in addition to the consideration of comprehensive privacy legislation at the federal level. If passed, such laws will require additional resources to ensure compliance, and may have potentially conflicting requirements that would make compliance challenging.

Compliance with U.S. and international data protection laws and regulations could cause us to incur substantial costs or require us to change our business practices and compliance procedures in a manner adverse to our business. Moreover, complying with these various laws could require us to take on more onerous obligations in our contracts, restrict our ability to collect, use and disclose data, or in some cases, impact our ability to operate in certain jurisdictions. We have policies and procedures in place, and have conducted an independent third-party audit, to support our compliance with all applicable data protection laws and regulations, and are continually improving our data protection program to address compliance risks and evolving requirements. Nevertheless, our efforts to comply with data protection laws and evaluate as well as oversee our third party vendors' compliance with data protection laws and our contractual requirements may be insufficient to mitigate all data protection risks or compliance obligations, which could result in regulatory scrutiny, legal liability, reputational risk or operational disruption. Failure by us or by our third-party vendors to comply with U.S. and international data protection laws and regulations could result in government enforcement actions (which could include civil or criminal penalties), private litigation and/or adverse publicity and could negatively affect our operating results and business. Claims that we or our third-party vendors have violated individuals' privacy rights, failed to comply with data protection laws, or breached our contractual obligations, even if we or our third-party vendor, as applicable, are not found liable, could be expensive and time consuming to defend and could result in adverse publicity that could harm our business.

Any clinical trial programs we conduct or research collaborations we enter into in the European Economic Area ("EEA")/UK may subject us to the EU General Data Protection Regulation 2016/679 (the "EU GDPR") as implemented by countries within the EEA. In addition, where we conduct programs and collaborations in the UK we may be subject to the UK Data Protection Act 2018 and the UK General Data Protection Regulation, (together the "UK GDPR").

We are subject to the EU GDPR, which applies extra-territorially and implements stringent operational requirements on controllers (e.g., sponsors) and processors (e.g., CROs, laboratories) of personal data. For controllers this includes, for example, high standards for obtaining valid consent from individuals to process their personal data (where consent is the legal ground relied upon), the requirements to provide detailed disclosures to individuals, short timelines for personal data breach notifications to data protection authorities and data subjects, limitations on retention of personal data, additional considerations where processing health data and other "special categories of personal data" and specific obligations where third-party processors are engaged. The EU GDPR also prohibits the international transfer of personal data from the EEA to countries outside of the EEA unless made to a country deemed to have "adequate" data privacy laws by the European Commission or a data transfer mechanism has been put in place. Until recently, one such data transfer mechanism was the EU-US Privacy Shield. However, in July 2020 the Court of Justice of the European Union ("CJEU") declared the Privacy Shield to be invalid for purposes of international transfers. The CJEU also imposed further restrictions on use of standard contractual clauses (SCCs) (i.e., an EU-style data transfer agreement) including, a requirement for companies to carry out a transfer privacy impact assessment, which among other things, assesses laws governing access to personal data in the recipient country and considers whether supplementary measures that provide privacy protections additional to those provided under SCCs will need to be implemented to ensure an essentially equivalent level of data protection to that afforded in the EEA. Moreover, new versions of the SCCs (new EU SCCs) have recently been published requiring additional compliance and implementation efforts. In turn, the findings of the CJEU will have significant implications for cross-border data flows.

Further, the EU GDPR provides that EU Member States may establish their own laws and regulations further restricting the processing of genetic data, biometric data, health data and other personal data, which could limit our ability to use and share such personal data or could cause our costs to increase. The EU GDPR imposes onerous accountability obligations requiring controllers and processors to maintain a record of their data processing activities and policies and procedures to demonstrate compliance with the EU GDPR. The EU GDPR also grants certain privacy rights to individuals (e.g., the right to access or erase their personal data). While we have established some data protection policies and have a maturing compliance program, additional resources will be needed to fully comply with the EU GDPR, including for evolving regulatory guidance. If our or our vendors' or service providers' privacy or data security measures fail to comply with the EU GDPR requirements, we may be subject to litigation, regulatory investigations, enforcement notices requiring us to stop or change the way we use personal data and/or fines of up to 20 million Euros of the total worldwide annual turnover of the preceding financial year, whichever is higher, as well as compensation claims for financial or non-financial loss by affected individuals, negative publicity, reputational harm and a potential loss of business and goodwill. It is possible that these laws may be interpreted and applied in a manner that is inconsistent with our practices.

Relatedly, following the UK's withdrawal from the EU (i.e., Brexit), the EU GDPR has been implemented in the United Kingdom (as the UK GDPR). The UK GDPR site alongside the UK Data Protection Act 2018 which implements certain derogations in the EU GDPR into UK law. The requirements of the UK GDPR are (at this time) largely aligned with those under the EU GDPR and as such, may lead to similar compliance and operational costs with potential fines for non-compliance of up to £17.5 million or 4% of annual worldwide turnover. As a result, we are potentially exposed to two parallel data protection regimes, each of which authorizes fines and the potential for divergent enforcement actions. It should also be noted that reliance on the new EU SCCs for transfers from the UK requires additional documentation in the form of a UK Addendum.

Risks related to employee matters and managing growth

Our future success depends on our ability to retain our Chairman, our President and Chief Executive Officer, our Senior Vice President and Chief Financial Officer, our Senior Vice President and Chief Operating Officer, and our Chief Business Officer and other key executives and to attract, retain and motivate qualified personnel.

We are highly dependent on Christian S. Schade, our Chairman, Oren Gilad, Ph.D., our President and Chief Executive Officer, Scott M. Coiante, our Senior Vice President and Chief Financial Officer, Gregory A. Korbel, Ph.D., our Senior Vice President and Chief Operating Officer, and Ze'ev Weiss, CPA, B.Sc., our Chief Business Officer, as well as the other principal members of scientific team. Our agreements with Mr. Schade, Mr. Gilad, Mr. Coiante, Dr. Korbel and Mr. Weiss do not prevent them from terminating their employment with us at any time. We do not maintain "key person" insurance for any of our executives or other employees. However, the loss of the services of any of these persons could impede the achievement of our research, development and commercialization objectives.

Recruiting and retaining qualified scientific, clinical, manufacturing and sales and marketing personnel will also be critical to our success. We may not be able to attract and retain these personnel on acceptable terms given the competition among numerous pharmaceutical and biotechnology companies for similar personnel. We also experience competition for the hiring of scientific and clinical personnel from universities and research institutions. In addition, we rely on consultants and advisors, including scientific and clinical advisors, to assist us in formulating our research and development and commercialization strategy. Our consultants and advisors may be employed by employers other than us and may have commitments under consulting or advisory contracts with other entities that may limit their availability to us.

We expect to expand our development and regulatory capabilities and potentially our sales and marketing capabilities, and as a result, we may encounter difficulties in managing our growth, which could disrupt our operations.

We expect to experience growth in the number of our employees and the scope of our operations, particularly in the areas of drug development, clinical operations, regulatory affairs and, potentially, sales and marketing. To manage our anticipated future growth, we must continue to implement and improve our managerial, operational and financial systems, expand our facilities and continue to recruit and train additional qualified personnel. Due to our limited financial resources and the limited experience of our management team in managing a company with such anticipated growth, we may not be able to effectively manage the expansion of our operations or recruit and train additional qualified personnel. The physical expansion of our operations may lead to significant costs and may divert our management and business development resources. Any inability to manage growth could delay the execution of our business plans or disrupt our operations.

Risks related to tax matters

We have significant deferred tax assets, which may become devalued if we do not generate sufficient future taxable income, applicable corporate tax rates are reduced or if we experience an ownership change.

Our total gross deferred tax assets as of December 31, 2021 were $42.1 million. Of that amount, $26.4 million relates to gross deferred tax assets in Aprea AB. Our anticipated activities are also expected to result in future significant net operating losses in the United States and Sweden resulting in additional deferred tax assets. Utilization of most deferred tax assets is dependent on generating sufficient future taxable income in the appropriate jurisdiction and/or entity. The company has provided a valuation allowance of $42.1 million on our net deferred tax assets as of December 31, 2021, because, based on all available evidence, it is considered more likely than not that all the recorded deferred tax assets will not be realized in a future period. Additionally, most of our deferred tax assets are determined by reference to applicable corporate income tax rates in Sweden or the United States. Accordingly, in the event of a reduction of any such corporate income tax rates, the carrying value of certain of our deferred tax assets would decrease.

Moreover, our ability to use our net operating losses and other deferred tax assets to offset future taxable income in Sweden and the United States may be significantly limited if we experience an ownership change. For Swedish income

tax purposes, an ownership change will generally occur when one, or several shareholders together, acquire shares representing more than 50 percent of the voting power over a five year period (under special provisions in Chapter 40 of the Swedish Income Tax Act; 1999:1229). Such an ownership change results in the forfeiture of tax losses carried forward exceeding 200 percent of the cost of the change of control. In this calculation, capital contributions to the company prior to the ownership change and in the preceding two years should reduce the cost of the change of control. Due to potential ownership changes under the Swedish Income Tax Act, we may be limited in our ability to realize a tax benefit on our deferred tax assets, whether or not we attain profitability in future years.

For U.S. federal income tax purposes, an ownership change will generally occur when the percentage of our stock (by value) owned by one or more "5 percent shareholders" (as defined in the U.S. Internal Revenue Code of 1986, as amended) has increased by more than 50% over the lowest percentage owned by such shareholders at any time during the prior three years (calculated on a rolling basis). We anticipate that we will incur losses in the United States in the foreseeable future related to our research and development activities. Due to potential ownership changes under Section 382 of the Code, we may be limited in our ability to realize a tax benefit from the use of our deferred tax assets, whether or not we attain profitability in future years. We believe the Merger likely resulted in an ownership change under Section 382 of the Code, and, accordingly, our net operating losses and other deferred tax assets are subject to limitations.

In addition, our ability to utilize any future net operating losses may be limited by Pub. L. 115-97, commonly known as the Tax Cuts and Jobs Act of 2017 ("TCJA"). Under the TCJA, as amended by the CARES Act, the amount of our net operating losses incurred in taxable years beginning after December 31, 2020 that we are permitted to deduct in any taxable year is limited to 80% of our taxable income in such year, where taxable income is determined without regard to the net operating loss deduction itself, while allowing unused net operating losses to be carried forward indefinitely. Under the CARES Act, net operating losses arising in taxable years beginning before January 1, 2021 are not subject to the 80% limitation.

For these reasons, a material devaluation in our deferred tax assets due to insufficient taxable income, lower corporate income tax rates or ownership change would have an adverse effect on our results of operations and financial condition.

We may have taxable income as a result of the purging election made following the Holdco Reorganization

While not entirely clear, we intend to treat Aprea AB as having been a passive foreign investment company, or PFIC, for U.S. federal income tax purposes prior to the Holdco Reorganization and treat the Company as having succeeded to the tax basis and holding periods of those shareholders in Aprea AB that exchanged their shares for our common stock. Based on such treatment, and absent a purging election as described below, the stock of Aprea AB held by the Company would have retained its status as stock of a PFIC with respect to all periods prior to the Holdco Reorganization (the "PFIC Taint") and therefore, absent a prior election by those shareholders to treat Aprea AB as a qualified electing fund, the Company, would have been subject to certain adverse U.S. federal income tax consequences with respect to distributions received on such stock and gain recognized on the disposition of such stock. In order to purge the PFIC Taint on the stock of Aprea AB, and avoid such adverse tax consequences, following the Holdco Reorganization we made a purging election in the form of a deemed dividend election under which, for U.S. federal income tax purposes, Aprea AB will be deemed to have made a distribution to the Company of all of its current and accumulated earnings and profits as determined for U.S. federal income tax purposes. Because Aprea AB did not have any accumulated or current year earnings and profits as of December 31, 2019, we do not expect the purging election to result in any incremental U.S. federal income taxes.

We may be subject to current taxation on some of the income of our foreign subsidiaries even absent any cash distributions

Because we hold directly or indirectly all of the shares of our foreign subsidiaries, including Aprea AB, such subsidiaries are treated as controlled foreign corporations ("CFC") for U.S. federal income tax purposes. For U.S. federal income tax purposes, the Company will therefore need to include in its taxable income each year Aprea AB's "subpart F income," and "global intangible low-taxed income", if any, even if no distributions are made.

Our foreign subsidiaries may directly become subject to U.S. federal income tax and be subject to a branch profits tax in the United States, which could reduce our after-tax returns and the value of our shares.

We currently intend to conduct substantially all of our businesses and operations in a manner such that our foreign subsidiaries will not be treated as engaged in a trade or business in the United States and will not be subject to additional U.S. income tax or branch profits tax. However, it is not entirely clear when a foreign subsidiary is treated as being engaged in a trade or business in the United States for U.S. federal income tax purposes and the COVID-19 pandemic and related travel restrictions may further limit our ability to reduce the risk of our foreign subsidiaries being treated as engaged in a U.S. trade or business. Accordingly, we cannot assure you that the Internal Revenue Service ("IRS") will not contend, perhaps successfully, that our foreign subsidiaries were engaged in a trade or business in the United States or are subject to more U.S. income tax than they currently incur. A foreign corporation deemed to be so engaged would be subject to U.S. federal income tax, as well as branch profits tax, on its income that is treated as effectively connected with the conduct of that trade or business unless the corporation is entitled to relief under an applicable tax treaty, which is determined on an annual basis.

The ongoing effects of the 2017 Tax Cuts and Jobs Act and GILTI could make our results difficult to predict.

Our effective tax rate may fluctuate in the future as a result of the TCJA, which included significant enacted changes in U.S. income tax law many aspects of which are not entirely clear and with respect to which some guidance has not yet been finalized. The enacted tax legislation included, among other new provisions, a reduction in the corporate tax rate, new limitations on the deductibility of net interest, the base erosion and anti-abuse minimum tax and new rules related to the global intangible low-taxed income of our foreign subsidiaries ("GILTI"). GILTI may require us to include in taxable income certain income of our foreign subsidiaries that are CFCs, though we may be eligible to claim foreign tax credits with respect to some of the taxes paid by such subsidiaries. While the U.S. tax authorities issued proposed and final regulations for GILTI, there are still certain aspects of the TCJA that remain unclear. We will continue to review the impact of GILTI and the other changes resulting from the TCJA as further guidance is issued. Any further guidance may result in changes to the interpretations and assumptions we made and actions we may take, which as a result may impact the amounts recorded with respect to international provisions of the TCJA, possibly materially.

Changes in U.S. federal income tax law and other jurisdictions could materially adversely affect an investment in our common shares.

It is possible that tax laws in the United States and other jurisdictions will be changed. It remains difficult to predict whether or when there will be any tax law changes or further guidance by the authorities in the U.S. or elsewhere in the world that will have a material adverse effect on our business.

Risks related to our common stock

There is no guarantee that the Merger will increase stockholder value.

We cannot guarantee that the Merger and the related transactions will not impair stockholder value or otherwise adversely affect our business. The acquisition poses significant integration challenges between our businesses and management teams which could result in management and business disruptions, any of which could harm our results of operation, business prospects, and impair the value of such acquisition to our stockholders. Additionally, our preclinical studies or clinical trials may not replicate or advance the results of the research programs and pre-clinical studies that were completed by Atrin prior to the Merger, which may also materially and adversely affect our business, results of operations and prospects.

Our executive officers, directors and principal stockholders will exert significant control over matters submitted to stockholders for approval. This may prevent new investors from influencing significant corporate decisions.

As of June 30, 2022, our executive officers and directors and our stockholders which own more than 5% of our outstanding common stock beneficially owned shares representing approximately 40.4% of our common stock. As a result, if these stockholders were to choose to act together, they would be able to exert significant control over matters submitted to our stockholders for approval, as well as our management and affairs. For example, these persons, if they

choose to act together, would control the election of directors and approval of any merger, consolidation or sale of all or substantially all of our assets. This concentration of voting power could delay or prevent an acquisition of our company, or other significant corporate decisions, on terms that other stockholders may desire.

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

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

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

Moreover, because we are incorporated in Delaware, we are governed by the provisions of Section 203 of the Delaware General Corporation Law, which prohibits a person who owns in excess of 15% of our outstanding voting stock from merging or combining with us for a period of three years after the date of the transaction in which the person acquired in excess of 15% of our outstanding voting stock, unless the merger or combination is approved in a prescribed manner.

If securities analysts do not or do not continue to publish research or reports about our business or if they publish negative evaluations of our business, the price of our stock could decline.

The trading market for our common stock is and will rely in part on the research and reports that industry or financial analysts publish about us or our business. If one or more of the analysts who currently cover our business downgrade their evaluations of our business, or in the event we obtain additional coverage and one or more of the new analysts issues an adverse evaluation of our business, the price of our stock could decline. If one or more of these analysts cease to cover our stock, we could lose visibility in the market for our stock, which in turn could cause our stock price to decline.

The price of our common stock has been and may continue to be volatile and fluctuate substantially.

Our stock price has been and is likely to continue to be volatile. The stock market in general and the market for pharmaceutical and biotechnology companies in particular have experienced extreme volatility that has often been unrelated to the operating performance of particular companies. As a result of this volatility, our stockholders may not be able to sell our common stock at or above the price they paid for it. The market price for our common stock may be influenced by many factors, including:

- the timing and results of clinical trials of any of our product candidates;
- regulatory actions with respect to our product candidates or our competitors' products and product candidates;
- the success of existing or new competitive products or technologies;
- announcements by us or our competitors of significant acquisitions, strategic partnerships, joint ventures, collaborations or capital commitments;
- establishment or termination of collaborations for our product candidates or development programs;
- failure or discontinuation of any of our development programs;
- results of clinical trials of product candidates of our competitors;
- regulatory or legal developments in the United States and other countries;
- developments or disputes concerning patent applications, issued patents or other proprietary rights;
- the recruitment or departure of key personnel;
- the level of expenses related to any of our product candidates or development programs;
- the results of our efforts to discover, develop, acquire or in-license additional product candidates or products;
- actual or anticipated changes in estimates as to financial results or development timelines;
- announcement or expectation of additional financing efforts;
- sales of our common stock by us, our insiders or other stockholders;
- variations in our financial results or those of companies that are perceived to be similar to us;
- changes in estimates or recommendations by securities analysts, if any, that cover our stock;
- changes in the structure of healthcare payment systems;
- market conditions in the pharmaceutical and biotechnology sectors;
- general economic, industry and market conditions; and
- the other factors described in this "Risk Factors" section.

In addition, the spread of COVID-19 has caused a broad impact globally. While the potential economic impact brought by, and the duration of, COVID-19 may be difficult to assess or predict, it has significantly disrupted global financial markets, and a recession or market correction resulting from the spread or continuation of COVID-19 could materially affect our business and the value of our common stock.

We could be subject to 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 pharmaceutical 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 our resources, which could harm our business.

We are an "emerging growth company" and a "smaller reporting company," and the reduced disclosure requirements applicable to emerging growth companies or smaller reporting companies may make our common stock 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. We may remain an emerging growth company for up to five years, or until such earlier time as we have more than $1.07 billion in annual revenue, the market value of our stock held by non-affiliates is more than $700 million or we issue more than $1 billion of non-convertible debt over a three-year period. For so long as we remain an emerging growth company, we are permitted and intend to rely on exemptions from certain disclosure requirements that are applicable to other public companies that are not emerging growth companies. These exemptions include not being required to comply with the auditor attestation requirements of Section 404 of the Sarbanes-Oxley Act of 2002, or Section 404, not being required to comply with any requirement that may be adopted by the Public Company Accounting Oversight Board regarding mandatory audit firm rotation or a supplement to the auditor's report providing additional information about the audit and the financial statements, being permitted to present only two years of audited financial statements and a correspondingly reduced "Management's Discussion and Analysis of Financial Condition and Results of Operations" disclosure, reduced disclosure obligations regarding executive compensation and exemptions from the requirements of holding a nonbinding advisory vote on executive compensation and shareholder approval of any golden parachute payments not previously approved. We cannot predict whether investors will find our common

stock less attractive if we rely on these exemptions. If some investors find our common stock less attractive as a result, there may be a less active trading market for our common stock and our stock price may be more volatile.
In addition, the JOBS Act provides that an emerging growth company can take advantage of an extended transition period for complying with new or revised accounting standards. An emerging growth company can therefore delay the adoption of certain accounting standards until those standards would otherwise apply to private companies. However, we are choosing 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 public companies that are not emerging growth companies. 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.

We are also a "smaller reporting company," as such term is defined in Rule 12b-2 of the Exchange Act, meaning that the market value of our common stock held by non-affiliates is less than $700 million and our annual revenue is less than $100 million during the most recently completed fiscal year. We may continue to be a smaller reporting company if either (i) the market value of our common stock held by non-affiliates is less than $250 million or (ii) our annual revenue is less than $100 million during the most recently completed fiscal year and the market value of our common stock held by non-affiliates is less than $700 million. If we are a smaller reporting company at the time we cease to be an emerging growth company, we may continue to rely on exemptions from certain disclosure requirements that are available to smaller reporting companies. Specifically, as a smaller reporting company we may choose to present only the two most recent fiscal years of audited financial statements in our Annual Report on Form 10-K and, similar to emerging growth companies, smaller reporting companies have reduced disclosure obligations regarding executive compensation.

We continue to incur increased costs as a result of operating as a public company as we become subject to additional laws, regulations and listing exchange standards, and our management will continue to be required to devote substantial time to new compliance initiatives.

As a public company, and particularly after we are no longer an "emerging growth company" or a "smaller reporting company," we will incur significant legal, accounting and other expenses that we did not incur as a private company. In addition, the Sarbanes-Oxley Act of 2002 and rules subsequently implemented by the SEC and NASDAQ have imposed various requirements on public companies, including establishment and maintenance of effective disclosure and financial controls and corporate governance practices. Our management and other personnel will need to devote a substantial amount of time to these compliance initiatives. Moreover, these rules and regulations will increase our legal and financial compliance costs and will make some activities more time-consuming and costly. For example, we expect that these rules and regulations may make it more difficult and more expensive for us to obtain director and officer liability insurance.

Pursuant to Section 404, we are required to furnish a report by our management on our internal control over financial reporting, including an attestation report on internal control over financial reporting issued by our independent registered public accounting firm. However, while we remain an emerging growth company, we will not be required to include an attestation report on internal control over financial reporting issued by our independent registered public accounting firm. To achieve compliance with Section 404 within the prescribed period, we will be engaged in a process to document and evaluate our internal control over financial reporting, which is both costly and challenging. In this regard, we will need to continue to dedicate internal resources, potentially engage outside consultants and adopt a detailed work plan to assess and document the adequacy of internal control over financial reporting, continue steps to improve control processes as appropriate, validate through testing that controls are functioning as documented and implement a continuous reporting and improvement process for internal control over financial reporting. There is a risk that neither we nor our independent registered public accounting firm will be able to conclude within the prescribed timeframe that our internal control over financial reporting is effective as required by Section 404. This could result in an adverse reaction in the financial markets due to a loss of confidence in the reliability of our financial statements.

Accounting principles and related pronouncements, implementation guidelines and interpretations we apply to a wide range of matters that are relevant to our business, including, but not limited to, revenue recognition, leases and stock-based compensation, are complex and involve subjective assumptions, estimates and judgments by our management. Changes in accounting pronouncements or their interpretation or changes in underlying assumptions, estimates or judgments by our management could significantly change our reported or expected financial performance.

Because we do not anticipate paying any cash dividends on our common stock for the foreseeable future, capital appreciation, if any, of our common stock may be investors' sole source of gain.

We have never declared or paid cash dividends on our common stock. 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 stock will be investors' sole source of gain for the foreseeable future.

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

Sales of a substantial number of shares of our common stock in the public market could occur at any time. These sales, or the perception in the market that the holders of a large number of shares intend to sell shares, could reduce the market price of our common stock. As of June 30, 2022, we have outstanding 23,401,846 shares of common stock. In addition, 29,466,300 shares of common stock are issuable upon the conversion of preferred stock issued in connection with the Merger.

Our certificate of incorporation designates the state courts in the State of Delaware or, if no state court located within the State of Delaware has jurisdiction, the federal court for the District of Delaware, as the sole and exclusive forum for certain types of actions and proceedings that may be initiated by our stockholders, which could discourage lawsuits against the company and our directors, officers and employees.

Our certificate of incorporation provides that, unless we consent in writing to the selection of an alternative forum, the Court of Chancery of the State of Delaware (or, if the Court of Chancery does not have jurisdiction, the federal district court for the District of Delaware) will be the sole and exclusive forum for any derivative action or proceeding brought on our behalf under Delaware law, any action asserting a claim of breach of a fiduciary duty owed by any of our directors, officers or employees to our company or our stockholders, any action asserting a claim against us arising pursuant to any provision of the Delaware General Corporation Law or our certificate of incorporation or bylaws, any action asserting a claim against us governed by the internal affairs doctrine, or any other action asserting an "internal corporate claim," as defined in Section 115 of the Delaware General Corporation Law. These exclusive-forum provisions do not apply to claims under the Securities Act of 1933, as amended, or the Securities Act, or the Exchange Act. This exclusive forum provision may limit the ability of our stockholders to bring a claim in a judicial forum that such stockholders find favorable for disputes with us or our directors, officers or employees, which may discourage such lawsuits against us and our directors, officers and employees. If a court were to find the exclusive-forum provision in our certificate of incorporation to be inapplicable or unenforceable in an action, we may incur additional costs associated with resolving the dispute in other jurisdictions, which could harm our results of operations.

Item 2. Unregistered Sales of Equity Securities and Use of Proceeds

Unregistered sales of equity securities

Other than as previously disclosed, we had no sales of unregistered equity securities during the period covered by these financial statements.

Use of proceeds from registered securities

On October 7, 2019, we completed our IPO, in which we sold 6,516,667 shares of common stock, $0.001 par value per share, which included the exercise in full by the underwriters of their option to purchase an additional 850,000 shares of common stock, at a price to the public of $15.00 per share. The offer and sale of the shares in the IPO was registered under the Securities Act pursuant to registration statements on Form S-1 (File No. 333-233662), which was filed with the SEC on September 6, 2019 and amended subsequently and declared effective on October 2, 2019, and Form S-

1MEF, which was filed and declared effective with the SEC on October 2, 2019. The underwriters of the offering were J.P. Morgan Securities LLC, Morgan Stanley & Co. LLC and RBC Capital Markets, LLC.

Our registration statements relating to the IPO registered common stock with a maximum aggregate offering price of up to $103,500,005. We raised approximately $90.9 million in net proceeds after deducting underwriting discounts and commissions of $6.8 million but before deducting other offering expenses. No offering expenses were paid directly or indirectly to any of our directors of officers (or their associates) or persons owning ten percent or more of any class of our equity securities or to any other affiliates.

Through June 30, 2022, we have used approximately $57.7 million of the net proceeds from our IPO for matters described in our final IPO prospectus filed with the SEC on October 4, 2019, or our IPO prospectus.

Repurchases of equity securities by the issuer

None.

Item 3. Defaults Upon Senior Securities

Not applicable.

Item 4. Mine Safety Disclosures

Not applicable.

Item 5. Other Information

None

Item 6. Exhibits.

Exhibit Index

Exhibit Number	Description of Document
2.1	Agreement and Plan of Merger, dated May 16, 2022 by and among Aprea, ATR Merger Sub I Inc., ATR Merger Sun II LLC and Atrin (1) (incorporated by reference to Exhibit 2.1 to the Current Report on Form 8-K filed on May 17, 2022)
3.1	Certificate of Designation of Series A Non-Voting Series A Preferred Stock (incorporated by reference to Exhibit 3.1 to the Current Report on Form 8-K filed on May 17, 2022)
10.1	Form of Registration Rights Agreement, by and among Aprea and certain securityholders (incorporated by reference to Exhibit 10.1 to the Current Report on Form 8-K filed on May 17, 2022)
31.1	Certification of the Registrant's Chief Executive Officer pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
31.2	Certification of the Registrant's Chief Financial Officer pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
32.1*	Certification of the Registrant's Chief Executive Officer pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
32.2*	Certification of the Registrant's Chief Financial Officer pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
101.INS	Inline XBRL Instance Document - the instance document does not appear in the Interactive Data File because its XBRL tags are embedded within the Inline XBRL document.
101.SCH	XBRL Schema Document.
101.CAL	XBRL Calculation Linkbase Document.
101.DEF	XBRL Definition Linkbase Document.
101.LAB	XBRL Label Linkbase Document.
101.PRE	XBRL Presentation Linkbase Document.
104	Cover Page Interactive Data File (formatted as Inline XBRL with applicable taxonomy extension information contained in Exhibits 101).

* The certifications furnished in Exhibit 32.1 and Exhibit 32.2 hereto are deemed to accompany this Quarterly Report and will not be deemed "filed" for purposes of Section 18 of the Securities Exchange Act of 1934, as amended, except to the extent that the registrant specifically incorporates it by reference.

(1) Schedules have been omitted from this filing pursuant to Item 601(b)(2) of Regulation S-K. Aprea agrees to furnish supplementally a copy of any omitted schedule to the SEC upon its request; provided, however, that Aprea may request confidential treatment pursuant to Rule 24b-2 of the Exchange Act for any schedule so furnished.

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: August 12, 2022

Aprea Therapeutics, Inc.

By: /s/ Christian S. Schade
Christian S. Schade
Executive Chairman (Principal Executive Officer)

Date: August 12, 2022

By: /s/ Scott M. Coiante
Scott M. Coiante
Senior Vice President and Chief Financial Officer
(Principal Financial and Accounting Officer)

CERTIFICATION OF PERIODIC REPORT
PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Christian S. Schade, certify that:

1. I have reviewed this quarterly report on Form 10-Q of Aprea Therapeutics, Inc.;

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

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

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

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

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

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

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

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

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

Date: August 12, 2022

/s/ Christian S. Schade
Christian S. Schade
Executive Chairman

CERTIFICATION OF PERIODIC REPORT PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Scott M. Coiante, certify that:

1. I have reviewed this quarterly report on Form 10-Q of Aprea Therapeutics, Inc.;

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

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

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

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

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

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

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

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

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

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

Date: August 12, 2022

/s/ Scott M. Coiante
Scott M. Coiante
Chief Financial Officer

STATEMENT OF CHIEF EXECUTIVE OFFICER OF
APREA THERAPEUTICS, INC.
PURSUANT TO 18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the quarterly report of Aprea Therapeutics, Inc. (the "Company") on Form 10-Q for the period ended June 30, 2022 as filed with the Securities and Exchange Commission (the "Report"), I, Christian S. Schade, Chief Executive Officer of the Company, certify, pursuant to 18 U.S.C. §1350, as adopted pursuant to §906 of the Sarbanes-Oxley Act of 2002, that, based on my knowledge:

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

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

Date: August 12, 2022

/s/ Christian S. Schade
Christian S. Schade
Executive Chairman

STATEMENT OF CHIEF ACCOUNTING OFFICER OF
APREA THERAPEUTICS, INC.
PURSUANT TO 18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the quarterly report of Aprea Therapeutics, Inc. (the "Company") on Form 10-Q for the period ended June 30, 2022 as filed with the Securities and Exchange Commission (the "Report"), I, Scott M. Coiante, Chief Accounting Officer of the Company, certify, pursuant to 18 U.S.C. §1350, as adopted pursuant to §906 of the Sarbanes-Oxley Act of 2002, that, based on my knowledge:

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

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

Date: August 12, 2022

/s/ Scott M. Coiante
Scott M. Coiante
Chief Financial Officer