UNITED STATES
SECURITIES AND EXCHANGE COMMISSION

WASHINGTON D.C. 20549

FORM 10-Q

(Mark One)

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

For the quarterly period ended March 31, 2019

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: 0-20859

GERON CORPORATION

(Exact name of registrant as specified in its charter)

DELAWARE	**75-2287752**
(State or other jurisdiction of incorporation or organization)	**(I.R.S. Employer Identification No.)**
149 COMMONWEALTH DRIVE, SUITE 2070, MENLO PARK, CA	**94025**
(Address of principal executive offices)	**(Zip Code)**

(650) 473-7700
(Registrant's telephone number, including area code)

N/A
(Former name, former address and former fiscal year, if changed since last report)

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, 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 ☒

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

Title of each class:	**Trading symbol(s):**	**Name of each exchange on which registered:**
Common Stock, $0.001 par value	GERN	The Nasdaq Stock Market LLC

Indicate the number of shares outstanding of each of the issuer's classes of common stock, as of the latest practicable date.

Class:	**Outstanding at April 29, 2019:**
Common Stock, $0.001 par value	186,516,047 shares

GERON CORPORATION

QUARTERLY REPORT ON FORM 10-Q
FOR THE QUARTER ENDED MARCH 31, 2019

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PART I. FINANCIAL INFORMATION

ITEM 1. CONDENSED FINANCIAL STATEMENTS (UNAUDITED)

GERON CORPORATION
CONDENSED BALANCE SHEETS
(IN THOUSANDS)

	MARCH 31, 2019 (UNAUDITED)	DECEMBER 31, 2018 (NOTE 1)
ASSETS		
Current assets:		
Cash and cash equivalents	$ 6,800	$ 10,575
Restricted cash	270	269
Marketable securities	145,180	152,714
Interest and other receivables	976	1,168
Prepaid assets	2,723	1,332
Total current assets	155,949	166,058
Noncurrent marketable securities	17,871	18,582
Property and equipment, net	89	59
Operating lease, right-of-use asset	571	—
Other assets	1,186	585
	$ 175,666	$ 185,284
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable	$ 913	$ 982
Accrued compensation and benefits	1,661	2,642
Amount due to Janssen Biotech, Inc.	2,071	2,610
Operating lease liability	571	—
Accrued liabilities	1,037	1,317
Total current liabilities	6,253	7,551
Commitments and contingencies		
Stockholders' equity:		
Common stock	186	186
Additional paid-in capital	1,190,651	1,189,194
Accumulated deficit	(1,021,523)	(1,011,464)
Accumulated other comprehensive gain (loss)	99	(183)
Total stockholders' equity	169,413	177,733
	$ 175,666	$ 185,284

See accompanying notes.

GERON CORPORATION
CONDENSED STATEMENTS OF OPERATIONS
(IN THOUSANDS, EXCEPT SHARE AND PER SHARE DATA)
(UNAUDITED)

	THREE MONTHS ENDED MARCH 31,	
	2019	**2018**
Revenues:		
License fees and royalties	$ 57	$ 318
Operating expenses:		
Research and development	5,906	2,440
General and administrative	5,452	5,315
Total operating expenses	11,358	7,755
Loss from operations	(11,301)	(7,437)
Interest and other income	1,162	394
Change in fair value of equity investment	98	(125)
Other expense	(18)	(18)
Net loss	$ (10,059)	$ (7,186)
Basic and diluted net loss per share	$ (0.05)	$ (0.04)
Shares used in computing basic and diluted net loss per share	186,393,128	160,525,947

See accompanying notes.

GERON CORPORATION
CONDENSED STATEMENTS OF COMPREHENSIVE LOSS
(IN THOUSANDS)
(UNAUDITED)

	THREE MONTHS ENDED MARCH 31,	
	2019	**2018**
Net loss	$ (10,059)	$ (7,186)
Net unrealized gain (loss) on marketable securities	282	(124)
Comprehensive loss	$ (9,777)	$ (7,310)

See accompanying notes.

GERON CORPORATION
CONDENSED STATEMENTS OF STOCKHOLDERS' EQUITY
(IN THOUSANDS, EXCEPT SHARE DATA)
(UNAUDITED)

	Common Stock		Additional Paid-In	Accumulated	Accumulated Other Comprehensive	Total Stockholders'
	Shares	Amount	Capital	Deficit	Gain (Loss)	Equity
Balance at December 31, 2017	159,877,239	$ 160	$ 1,089,684	$ (985,840)	$ (207)	$ 103,797
Cumulative effect of accounting principle change	—	—	—	1,393	—	1,393
Net loss	—	—	—	(7,186)	—	(7,186)
Other comprehensive loss	—	—	—	—	(124)	(124)
Issuance of common stock in connection with at market offering, net of issuance costs of $48	776,788	1	1,552	—	—	1,553
Stock-based compensation related to issuance of common stock and options in exchange for services	8,308	—	71	—	—	71
Stock-based compensation for equity-based awards to employees and directors	—	—	1,614	—	—	1,614
401(k) contribution	—	—	10	—	—	10
Balance at March 31, 2018	160,662,335	$ 161	$ 1,092,931	$ (991,633)	$ (331)	$ 101,128
Balance at December 31, 2018	186,392,682	$ 186	$ 1,189,194	$ (1,011,464)	$ (183)	$ 177,733
Net loss	—	—	—	(10,059)	—	(10,059)
Other comprehensive income	—	—	—	—	282	282
Stock-based compensation related to issuance of common stock in exchange for services	13,365	—	22	—	—	22
Stock-based compensation for equity-based awards to employees and directors	—	—	1,426	—	—	1,426
401(k) contribution	—	—	9	—	—	9
Balance at March 31, 2019	186,406,047	$ 186	$ 1,190,651	$ (1,021,523)	$ 99	$ 169,413

See accompanying notes.

GERON CORPORATION
CONDENSED STATEMENTS OF CASH FLOWS
(IN THOUSANDS)
(UNAUDITED)

	THREE MONTHS ENDED MARCH 31,	
	2019	**2018**
Cash flows from operating activities:		
Net loss	$ (10,059)	$ (7,186)
Adjustments to reconcile net loss to net cash used in operating activities:		
Depreciation and amortization	15	16
Accretion and amortization on investments, net	(482)	24
Change in fair value of equity investment, including foreign currency translation	(103)	125
Stock-based compensation for services by non-employees	22	71
Stock-based compensation for employees and directors	1,426	1,614
Amortization related to 401(k) contributions	9	10
Changes in assets and liabilities:		
Current and noncurrent assets	(1,532)	89
Current liabilities	(2,034)	(2,131)
Net cash used in operating activities	(12,738)	(7,368)
Cash flows from investing activities:		
Purchases of property and equipment	(45)	—
Purchases of marketable securities	(44,092)	(19,768)
Proceeds from maturities of marketable securities	53,101	17,160
Net cash provided by (used in) investing activities	8,964	(2,608)
Cash flows from financing activities:		
Proceeds from issuances of common stock, net of issuance costs	—	1,553
Net cash provided by financing activities	—	1,553
Net decrease in cash, cash equivalents and restricted cash	(3,774)	(8,423)
Cash, cash equivalents and restricted cash at the beginning of the period	10,844	16,603
Cash, cash equivalents and restricted cash at the end of the period	$ 7,070	$ 8,180

See accompanying notes.

1. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Basis of Presentation

The terms "Geron", the "Company", "we" and "us" as used in this report refer to Geron Corporation. The accompanying unaudited condensed financial statements have been prepared in accordance with generally accepted accounting principles for interim financial information and with the instructions to Form 10-Q and Article 10 of Regulation S-X. Accordingly, they do not include all of the information and footnotes required by U.S. generally accepted accounting principles for complete financial statements. In the opinion of management, all adjustments (consisting only of normal recurring accruals) considered necessary for a fair presentation have been included. Operating results for the three months ended March 31, 2019 are not necessarily indicative of the results that may be expected for the year ending December 31, 2019 or any other period. These financial statements and notes should be read in conjunction with the financial statements for each of the three years ended December 31, 2018, included in the Company's Annual Report on Form 10-K. The accompanying condensed balance sheet as of December 31, 2018 has been derived from audited financial statements at that date.

Net Loss Per Share

Basic net income (loss) per share is calculated by dividing net income (loss) by the weighted-average number of shares of common stock outstanding during the periods presented, without consideration for potential common shares. Diluted net income per share would be calculated by adjusting the weighted-average number of shares of common stock outstanding for the dilutive effect of potential common shares outstanding for the periods presented, as determined using the treasury-stock method. Potential dilutive securities consist of outstanding stock options and a warrant to purchase our common stock. Diluted net loss per share excludes potential dilutive securities outstanding for all periods presented as their effect would be anti-dilutive. Accordingly, basic and diluted net loss per share is the same for all periods presented in the accompanying condensed statements of operations. Since we incurred a net loss for the three months ended March 31, 2019 and 2018, the diluted net loss per share calculation excludes potential dilutive securities of 32,714,257 and 26,245,422, respectively, related to outstanding stock options and warrant as their effect would have been anti-dilutive.

Use of Estimates

The accompanying financial statements have been prepared in accordance with U.S. generally accepted accounting principles, or GAAP. The preparation of financial statements in conformity with GAAP requires us to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities as of the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. On an ongoing basis, we evaluate our estimates, including those related to accrued liabilities, revenue recognition, fair value of marketable securities and equity investments, income taxes, and stock-based compensation. We base our estimates on historical experience and on various other market specific and relevant assumptions that we believe to be reasonable under the circumstances. Actual results could differ from those estimates.

Fair Value of Financial Instruments

Cash Equivalents and Marketable Securities

We consider all highly liquid investments with an original maturity of three months or less to be cash equivalents. We are subject to credit risk related to our cash equivalents and marketable securities. Our marketable debt securities include commercial paper and corporate notes.

We classify our marketable debt securities as available-for-sale. We record available-for-sale securities at fair value with unrealized gains and losses reported in accumulated other comprehensive income (loss) in stockholders' equity. Realized gains and losses are included in interest and other income and are derived using the specific identification method for determining the cost of securities sold and have been insignificant to date. Dividend and interest income are recognized when earned and included in interest and other income in our condensed statements of operations. We recognize a charge when the declines in the fair values below the amortized cost bases of our available-for-sale securities are judged to be other-than-temporary. We consider various factors in determining whether to recognize an other-than-temporary charge, including whether we intend to sell the security or whether it is more likely than not that we would be required to sell the security before recovery of the amortized cost basis. Declines in market value judged as other-than-temporary result in a charge to interest and other income. We have not recorded any other-than-temporary

impairment charges on our available-for-sale securities for the three months ended March 31, 2019 and 2018. See Note 2 on Fair Value Measurements.

Equity Investments

With the adoption of ASU No. 2016-01, *Financial Instruments - Overall: Recognition and Measurement of Financial Assets and Financial Liabilities*, or ASU 2016-01, beginning January 1, 2018, we measure our investment in equity securities at fair value at each reporting period. Changes in fair value resulting from observable price changes are included in change in fair value of equity investment and changes in fair value resulting from foreign currency translation are included in other expense in our condensed statements of operations.

Leases

At the inception of an arrangement, we determine whether the arrangement is or contains a lease based on the unique facts and circumstances present. Operating leases are included in operating lease, right-of-use assets and lease liabilities in our condensed balance sheets. Right-of-use assets represent our right to use an underlying asset for the lease term and lease liabilities represent our obligation to make lease payments arising from the lease. Operating lease liabilities and their corresponding right-of-use assets are recorded based on the present value of remaining lease payments over the expected lease term. The interest rate implicit in lease contracts is typically not readily determinable. As such, to calculate the net present value of lease payments, we apply our 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 as of the lease commencement date. We may adjust the right-of-use assets for certain adjustments, such as initial direct costs paid or incentives received. In addition, we include any options to extend or terminate the lease in the expected lease term when it is reasonably certain that we will exercise any such option. Lease expense is recognized on a straight-line basis over the expected lease term.

For lease agreements entered into after January 1, 2019 that include lease and non-lease components, such components are generally accounted for separately. For our office space lease, as a result of us having elected to adopt the package of practical expedients under accounting transition guidance, we account for the lease and non-lease components, such as common area maintenance, as a single lease component. We have also elected not to recognize on our condensed balance sheets leases with terms of one year or less. See “New Accounting Pronouncements – Recently Adopted” in this Note 1 on Summary of Significant Accounting Policies for additional information on the adoption of the new accounting standard for leases.

Revenue Recognition

Beginning January 1, 2018, we recognize revenue in accordance with the provisions of Accounting Standards Codification Topic 606, *Revenue from Contracts with Customers*, or Topic 606. In determining the appropriate amount and timing of revenue to be recognized under this guidance, we perform the following five steps: (i) identify the contract(s) with our customer; (ii) identify the promised goods or services in the agreement and determine whether they are performance obligations, including whether they are distinct in the context of the agreement; (iii) measure the transaction price, including the constraint on variable consideration; (iv) allocate the transaction price to the performance obligations based on stand-alone selling prices; and (v) recognize revenue when (or as) we satisfy each performance obligation.

A performance obligation is a promise in an agreement to transfer a distinct good or service to the customer and is the unit of account in Topic 606. Significant management judgment is required to determine the level of effort required and the period over which completion of the performance obligations is expected under an agreement. If reasonable estimates regarding when performance obligations are either complete or substantially complete cannot be made, then revenue recognition is deferred until a reasonable estimate can be made. Revenue is then recognized over the remaining estimated period of performance using the cumulative catch-up method.

We allocate the total transaction price to each performance obligation based on the estimated relative stand-alone selling prices of the promised goods or services underlying each performance obligation. Estimated selling prices for license rights are calculated using an income approach model and include the following key assumptions, judgments and estimates: the development timeline, revenue forecast, commercialization expenses, discount rate and probabilities of technical and regulatory success.

Following is a description of the principal activities from which we generate revenue. License fees and royalty revenue primarily represent amounts earned under agreements that out-license our technology to various companies.

License and/or Collaboration Agreements

We have entered into several license agreements with various oncology, diagnostics, research tools and biologics production companies. Economic terms in these agreements may include non-refundable upfront license payments in cash or equity securities, annual license maintenance fees, cost sharing arrangements, milestone payments, royalties on future sales of products, or any combination of these items. Non-refundable upfront fees, annual license maintenance fees and funding of research and development activities are considered fixed, while milestone payments and royalties are identified as variable consideration.

Licenses of Intellectual Property. If we determine the license to intellectual property is distinct from the other performance obligations identified in the agreement and the licensee can use and benefit from the license, we recognize revenue from non-refundable upfront fees allocated to the license upon the completion of the transfer of the license to the licensee. For such licenses, we recognize revenue from annual license maintenance fees upon the start of the new license period. For licenses that are bundled with other performance obligations, we assess the nature of the combined performance obligation to determine whether the combined performance obligation is satisfied over time or at a point in time and, if over time, the appropriate method of measuring progress for purposes of recognizing revenue from non-refundable upfront fees or annual license maintenance fees. At each reporting period, we reassess the progress and, if necessary, adjust the measure of performance and related revenue recognition.

Milestone Payments. At the inception of each agreement that includes milestone payments, we evaluate whether the milestones are considered probable of being achieved and estimate the amount to be included in the transaction price using the most likely amount method. If it is probable that a significant revenue reversal would not occur, the value of the associated milestone is included in the transaction price. For milestones that we do not deem to be probable of being achieved, the associated milestone payments are fully constrained and the value of the milestone is excluded from the transaction price with no revenue being recognized. Milestone payments that are not within our control, such as regulatory-related accomplishments, are not considered probable of being achieved until those accomplishments have been communicated by the relevant regulatory authority. Once the assessment of probability of achievement becomes probable, we recognize revenue for the milestone payment. At each reporting period, we assess the probability of achievement of each milestone under our current agreements.

Royalties. For agreements with sales-based royalties, including milestone payments based on the level of sales, where the license is deemed to be the predominant item to which the royalties relate, we recognize revenue at the later of (a) when the related sales occur, or (b) when the performance obligation, to which some or all of the royalty has been allocated, has been satisfied (or partially satisfied). At each reporting period, we estimate the sales incurred by each licensee based on historical experience and accrue the associated royalty amount.

Cost Sharing Arrangements. Research and development and other expenses being shared by both parties under an agreement are recorded as earned or owed based on the performance obligations by both parties under the respective agreement. For arrangements in which we and our collaboration partner in the agreement are exposed to significant risks and rewards that depend on the commercial success of the activity, we recognize payments between the parties on a net basis and record such amounts as a reduction or addition to research and development expense. For arrangements in which we have agreed to perform certain research and development services for our collaboration partner and are not exposed to significant risks and rewards that depend on the commercial success of the activity, we recognize the respective cost reimbursements as revenue under the collaborative agreement over time in a manner proportionate to the costs we incurred to perform the services using the input method.

Restricted Cash

Restricted cash consists of funds maintained in a separate certificate of deposit account for credit card purchases.

Research and Development Expenses

Research and development expenses consist of expenses incurred in identifying, developing and testing product candidates resulting from our independent efforts as well as efforts associated with collaborations. These expenses include, but are not limited to, in-process research and development acquired in an asset acquisition and deemed to have no alternative future use, payroll and personnel expense, lab supplies, non-clinical studies, clinical trials, including support for investigator-sponsored clinical trials, raw

materials to manufacture clinical trial drugs, manufacturing costs for research and clinical trial materials, sponsored research at other labs, consulting, costs to maintain technology licenses, our proportionate share of research and development costs under cost sharing arrangements with collaboration partners and research-related overhead. Research and development costs are expensed as incurred, including costs incurred under our collaboration and/or license agreements.

Until the sponsorship responsibilities for imetelstat transfer from Janssen to us, including the U.S. Investigational New Drug, or IND, application and all foreign regulatory applications, Janssen will continue conducting ongoing clinical trials of imetelstat during the transition of the program to us. For the clinical development activities being conducted by Janssen under the collaboration and license agreement, or Collaboration Agreement, which was terminated effective September 28, 2018, we monitor patient enrollment levels and related activities to the extent possible through discussions with Janssen personnel and base our estimates of clinical trial costs on the best information available at the time. However, additional information may become available to us which would allow us to make a more accurate estimate in future periods. In this event, we may be required to record adjustments to research and development expenses in future periods when the actual level of activity becomes more certain.

Depreciation and Amortization

We record property and equipment at cost and calculate depreciation using the straight-line method over the estimated useful lives of the assets, generally four years. Leasehold improvements are amortized over the shorter of the estimated useful life or remaining term of the lease.

Stock-Based Compensation

We recognize stock-based compensation expense based on grant-date fair values of service-based instruments on a straight-line basis over the requisite service period, which is generally the vesting period. For performance-based stock options with vesting based on the achievement of certain strategic milestones, stock-based compensation expense is recognized over the period from the date the performance condition is determined to be probable of occurring through the date the applicable condition is expected to be met and is reduced for estimated forfeitures, as applicable. If the performance condition is not considered probable of being achieved, no stock-based compensation expense is recognized until such time as the performance condition is considered probable of being met, if at all. If that assessment of probability of the performance condition changes, the impact of the change in estimate would be recognized in the period of the change. The following table summarizes the stock-based compensation expense included in operating expenses on our condensed statements of operations related to stock options and employee stock purchases for the three months ended March 31, 2019 and 2018 which was allocated as follows:

	Three Months Ended March 31,	
(In thousands)	2019	2018
Research and development	$ 240	$ 155
General and administrative	1,186	1,459
Stock-based compensation expense included in operating expenses	$ 1,426	$ 1,614

As stock-based compensation expense recognized in our condensed statements of operations for the three months ended March 31, 2019 and 2018 is based on awards ultimately expected to vest, it has been reduced for estimated forfeitures, but at a minimum, reflects the grant-date fair value of those awards that actually vested in the period. Forfeitures have been estimated at the time of grant based on historical data and revised, if necessary, in subsequent periods if actual forfeitures differ from those estimates. We have not recognized any stock-based compensation expense for performance-based stock options in our condensed statements of operations for the three months ended March 31, 2019 and 2018, as the achievement of specified strategic milestones was not considered probable at that time.

Stock Options

We grant service-based and performance-based options under our equity plans to employees, non-employee directors and consultants. The service-based vesting period for employee options is generally four years from the date of the option grant. Performance-based options vest upon the achievement of specified strategic milestones. The fair value of service-based and performance-based options granted during the three months ended March 31, 2019 and 2018 has been estimated at the date of grant using the Black Scholes option-pricing model with the following assumptions:

	Three Months Ended March 31,	
	2019	2018
Dividend yield	0%	0%
Expected volatility range	0.925 to 0.980	0.821
Risk-free interest rate range	2.24% to 2.56%	2.55%
Expected term range	5.25 yrs to 6.44 yrs	5.25 yrs

Employee Stock Purchase Plan

The fair value of employees' purchase rights during the three months ended March 31, 2019 and 2018 has been estimated using the Black Scholes option-pricing model with the following assumptions:

	Three Months Ended March 31,	
	2019	2018
Dividend yield	0%	0%
Expected volatility range	1.333 to 1.653	0.437 to 0.475
Risk-free interest rate range	2.56% to 2.63%	1.53% to 1.76%
Expected term range	6 mos to 12 mos	6 mos to 12 mos

Dividend yield is based on historical cash dividend payments. The expected volatility is based on historical volatilities of our stock since traded options on our common stock do not correspond to option terms and the trading volume of options is limited. The risk-free interest rate range is based on the U.S. Zero Coupon Treasury Strip Yields for the expected term in effect on the date of grant for an award. The expected term of options is derived from actual historical exercise and post-vesting cancellation data and represents the period of time that options granted are expected to be outstanding. The expected term of employees' purchase rights is equal to the purchase period.

Non-Employee Stock-Based Awards

For our non-employee stock-based awards, the measurement date on which the fair value of the stock-based award is calculated is equal to the earlier of: (i) the date at which a commitment for performance by the counterparty to earn the equity instrument is reached or (ii) the date at which the counterparty's performance is complete. We recognize stock-based compensation expense for the fair value of the vested portion of non-employee stock-based awards in our condensed statements of operations.

Segment Information

Our executive management team represents our chief decision maker. We view our operations as a single segment, the development of therapeutic products for oncology. As a result, the financial information disclosed herein materially represents all of the financial information related to our principal operating segment.

Recent Accounting Pronouncements

New Accounting Pronouncements – Recently Adopted

In February 2016, the Financial Accounting Standards Board, or FASB, issued ASU 2016-02, *Leases (Topic 842)*, or ASU 2016-02. ASU 2016-02 requires an entity to recognize a right-of-use asset and lease liability for all lease arrangements with terms of more than 12 months, measured at the present value of the lease payments. Recognition, measurement and presentation of expenses will depend on classification as a finance or operating lease. In July 2018, the FASB issued ASU 2018-11, *Leases (Topic*

842): Targeted Improvements, or ASU 2018-11. In issuing ASU 2018-11, the FASB decided to provide another transition method in addition to the existing transition method by allowing entities to initially apply the new leases standard at the adoption date and recognize a cumulative-effect adjustment to the opening balance of retained earnings in the period of adoption.

We adopted Topic 842 on January 1, 2019 using the modified retrospective approach as allowed under ASU 2018-11, and we elected to utilize the available practical expedients. Financial results for the reporting periods beginning after January 1, 2019 are presented under Topic 842, while prior period amounts have not been adjusted and continue to be reported in accordance with our historical accounting under Accounting Standards Codification Topic 840, *Leases*, or Topic 840.

In connection with the adoption of Topic 842 as of January 1, 2019, we recorded an operating lease, right-of-use asset and a corresponding operating lease liability of approximately $736,000 for the net present value of remaining lease payments of our current operating lease for our office space. The adoption of Topic 842 did not have a material impact on our condensed statements of operations. See Note 4 on Operating Lease for further discussion of our operating lease obligation.

As of January 1, 2019 we also adopted ASU 2018-07, *Improvements to Nonemployee Share-Based Payment Accounting*, or ASU 2018-07, to simplify the accounting for share-based payments to nonemployees by aligning it with the accounting for share-based payments to employees, with certain exceptions. The new guidance applies to nonemployee awards issued in exchange for goods or services used or consumed in an entity's own operations. Since all of our share-based payments to nonemployees were fully vested as of January 1, 2019, the adoption of ASU 2018-07 did not have a material impact on our financial statements.

In August 2018, the Securities and Exchange Commission issued Release No. 33-10532 that amends and clarifies certain financial reporting requirements. The principal change to our financial reporting is the inclusion of the annual disclosure requirement of changes in stockholders' equity in Rule 3-04 of Regulation S-X to interim periods. With the adoption of this new rule on January 1, 2019, condensed statements of stockholders' equity for the current reporting period and the corresponding prior period are presented.

New Accounting Pronouncements – Issued But Not Yet Adopted

In June 2016, the FASB issued ASU 2016-13, *Measurement of Credit Losses on Financial Instruments*, or ASU 2016-13. The main objective of ASU 2016-13 is to provide financial statement users with more decision-useful information about an entity's expected credit losses on financial instruments and other commitments to extend credit at each reporting date. To achieve this objective, the amendments in this update replace the incurred loss impairment methodology currently used today with a methodology that reflects expected credit losses and requires consideration of a broader range of reasonable and supportable information to develop credit loss estimates. Subsequent to issuing ASU 2016-13, the FASB issued ASU 2018-19, *Codification Improvements to Topic 326, Financial Instruments - Credit Losses*, for the purpose of clarifying certain aspects of ASU 2016-13. ASU 2018-19 has the same effective date and transition requirements as ASU 2016-13. ASU 2016-13 will be effective for fiscal years beginning after December 15, 2019, using a modified retrospective approach. Early adoption is permitted. We do not expect the adoption of this standard to have a material impact on our financial statements.

In August 2018, the FASB issued ASU 2018-13, *Disclosure Framework — Changes to the Disclosure Requirements for Fair Value Measurement,* which modifies the disclosure requirements on fair value measurements. The new standard is effective for fiscal years beginning after December 15, 2019, and early adoption is permitted. We plan to adopt ASU 2018-13 as of January 1, 2020. While we continue to assess the potential impact of this standard, we do not expect the adoption of this standard to have a material impact on our financial statements.

In November 2018, the FASB issued ASU 2018-18, *Collaborative Arrangements (Topic 808): Clarifying the Interaction Between Topic 808 and Topic 606*. The amended guidance precludes presenting consideration from a transaction in a collaborative arrangement as revenue from contracts with customers if the counterparty is not a customer for that transaction. The new guidance is effective for fiscal years beginning after December 15, 2019, and interim periods within those fiscal years. Early adoption is permitted. We plan to adopt ASU 2018-18 as of January 1, 2020. We do not expect the adoption of ASU 2018-18 to have a material impact on our financial statements given the termination of the Collaboration Agreement in September 2018.

2. FAIR VALUE MEASUREMENTS

Cash Equivalents and Marketable Securities

Cash equivalents, restricted cash and marketable securities by security type at March 31, 2019 were as follows:

(In thousands)	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Estimated Fair Value
Included in cash and cash equivalents:				
Money market funds	$ 4,750	$ —	$ —	$ 4,750
Restricted cash:				
Certificate of deposit	$ 270	$ —	$ —	$ 270
Marketable securities:				
Commercial paper (due in less than one year)	$ 56,474	$ 45	$ (19)	$ 56,500
Corporate notes (due in less than one year)	88,648	45	(13)	88,680
Corporate notes (due in one to two years)	17,830	46	(5)	17,871
	$ 162,952	$ 136	$ (37)	$ 163,051

Cash equivalents, restricted cash and marketable securities by security type at December 31, 2018 were as follows:

(In thousands)	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Estimated Fair Value
Included in cash and cash equivalents:				
Money market funds	$ 7,003	$ —	$ —	$ 7,003
Restricted cash:				
Certificate of deposit	$ 269	$ —	$ —	$ 269
Marketable securities:				
Commercial paper (due in less than one year)	$ 57,594	$ 22	$ (29)	$ 57,587
Corporate notes (due in less than one year)	95,238	7	(118)	95,127
Corporate notes (due in one to two years)	18,647	—	(65)	18,582
	$ 171,479	$ 29	$ (212)	$ 171,296

Cash equivalents and marketable securities with unrealized losses that have been in a continuous unrealized loss position for less than 12 months and 12 months or longer at March 31, 2019 and December 31, 2018 were as follows:

	Less Than 12 Months		12 Months or Longer		Total	
(In thousands)	Estimated Fair Value	Gross Unrealized Losses	Estimated Fair Value	Gross Unrealized Losses	Estimated Fair Value	Gross Unrealized Losses
As of March 31, 2019:						
Commercial paper (due in less than one year)	$ 15,792	$ (19)	$ —	$ —	$ 15,792	$ (19)
Corporate notes (due in less than one year)	27,115	(5)	13,226	(8)	40,341	(13)
Corporate notes (due in one to two years)	1,999	(5)	—	—	1,999	(5)
	$ 44,906	$ (29)	$ 13,226	$ (8)	$ 58,132	$ (37)
As of December 31, 2018:						
Commercial paper (due in less than one year)	$ 22,628	$ (29)	$ —	$ —	$ 22,628	(29)
Corporate notes (due in less than one year)	66,557	(82)	14,221	(36)	80,778	(118)
Corporate notes (due in one to two years)	18,582	(65)	—	—	18,582	(65)
	$ 107,767	$ (176)	$ 14,221	$ (36)	$ 121,988	$ (212)

The gross unrealized losses related to commercial paper and corporate notes as of March 31, 2019 and December 31, 2018 were due to changes in interest rates and not credit risk. We determined that the gross unrealized losses on our marketable securities as of March 31, 2019 and December 31, 2018 were temporary in nature. We review our investments quarterly to identify and evaluate whether any investments have indications of possible other-than-temporary impairment. Factors considered in determining whether a loss is temporary include the length of time and extent to which the fair value has been less than the amortized cost basis and whether we intend to sell the security or whether it is more likely than not that we would be required to sell the security before recovery of the amortized cost basis. We currently do not intend to sell these securities before recovery of their amortized cost bases.

Fair Value on a Recurring Basis

We categorize financial instruments recorded at fair value on our condensed balance sheets based upon the level of judgment associated with inputs used to measure their fair value. The categories are as follows:

Level 1 — Inputs are unadjusted, quoted prices in active markets for identical assets or liabilities at the measurement date. An active market for an asset or liability is a market in which transactions for the asset or liability occur with sufficient frequency and volume to provide pricing information on an ongoing basis.

Level 2 — Inputs (other than quoted market prices included in Level 1) are either directly or indirectly observable for the asset or liability through correlation with market data at the measurement date and for the duration of the instrument's anticipated life.

Level 3 — Inputs reflect management's best estimate of what market participants would use in pricing the asset or liability at the measurement date. Consideration is given to the risk inherent in the valuation technique and the risk inherent in the inputs to the model.

A financial instrument's categorization within the valuation hierarchy is based upon the lowest level of input that is significant to the fair value measurement. Below is a description of the valuation methodologies used for financial instruments measured at fair value on our condensed balance sheets, including the category for such financial instruments.

Money market funds are categorized as Level 1 within the fair value hierarchy as their fair values are based on quoted prices available in active markets. Commercial paper, corporate notes and equity investments are categorized as Level 2 within the fair value hierarchy as their fair values are estimated by using pricing models, quoted prices of securities with similar characteristics or discounted cash flows.

The following table presents information about our financial instruments that are measured at fair value on a recurring basis as of March 31, 2019 and December 31, 2018 and indicates the fair value category assigned.

	Fair Value Measurements at Reporting Date Using			
(In thousands)	Quoted Prices in Active Markets for Identical Assets Level 1	Significant Other Observable Inputs Level 2	Significant Unobservable Inputs Level 3	Total
As of March 31, 2019:				
Money market funds(1)	$ 4,750	$ —	$ —	$ 4,750
Commercial paper(2)	—	56,500	—	56,500
Corporate notes(2)(3)	—	106,551	—	106,551
Equity investment(4)	—	688	—	688
Total	$ 4,750	$ 163,739	$ —	$ 168,489
As of December 31, 2018:				
Money market funds(1)	$ 7,003	$ —	$ —	$ 7,003
Commercial paper(2)	—	57,587	—	57,587
Corporate notes(2)(3)	—	113,709	—	113,709
Equity investment(4)	—	585	—	585
Total	$ 7,003	$ 171,881	$ —	$ 178,884

(1) Included in cash and cash equivalents on our condensed balance sheets.

(2) Included in current portion of marketable securities on our condensed balance sheets.

(3) Included in noncurrent portion of marketable securities on our condensed balance sheets.

(4) Included in other assets on our condensed balance sheets. See further discussion below of this equity investment.

Equity Investment

In December 2007, we received 13,842,625 ordinary shares in Sienna in connection with a license we granted to them for our human telomerase reverse transcriptase, or hTERT, technology for use in human diagnostics. Upon receipt, the shares were recorded at a zero cost basis under the cost method of accounting. With the adoption of ASU 2016-01 on January 1, 2018, our equity investment in Sienna must be reported at fair value at each reporting date and any resulting change in fair value is recognized in our condensed statements of operations. As of March 31, 2019, the fair value of our shares in Sienna was $688,000. For the three months ended March 31, 2019 and 2018, we recognized an increase in fair value of equity investment of $98,000 and a decrease in fair value of $108,000, respectively, related to observable price changes. For the three months ended March 31, 2019 and 2018, we also recognized a gain of $5,000 and a loss of $17,000, respectively, related to foreign currency translation, which are included in other expense in our condensed statements of operations.

3. FORMER COLLABORATION AGREEMENT

On November 13, 2014, we and Janssen entered into the Collaboration Agreement under which we granted to Janssen exclusive worldwide rights to develop and commercialize imetelstat for all human therapeutic uses, including hematologic myeloid malignancies. Under the Collaboration Agreement, Janssen has been conducting two clinical trials of imetelstat: a Phase 2 trial in myelofibrosis, referred to as IMbark, and a Phase 2/3 trial in myelodysplastic syndromes, referred to as IMerge. Development costs for IMbark and IMerge were shared between us and Janssen on a 50/50 basis. Additionally, under the terms of the Collaboration Agreement, we remained responsible for prosecuting, at Janssen's direction, the patents licensed to Janssen at the time we entered into the Collaboration Agreement, with costs shared between us and Janssen on a 50/50 basis.

Janssen terminated the Collaboration Agreement effective September 28, 2018. Upon the effective date of termination, we regained the global rights to the imetelstat program and plan to continue development of imetelstat on our own. As a result of the termination of the Collaboration Agreement, we will not receive any further milestone payments or royalties from Janssen for the development or commercialization of imetelstat, including any clinical development or sales milestones, and Janssen has no further obligations to us or any third parties, such as clinical sites or vendors, to fund any potential future imetelstat clinical trials. Under the

termination provisions of the Collaboration Agreement, Janssen is required to provide certain operational support for the imetelstat program during transition of the program to us. The transition process is expected to occur through September 2019 to enable the orderly transfer of all ongoing clinical, regulatory, medical affairs and non-clinical activities to us, including the transfer of the sponsorship of ongoing imetelstat clinical trials from Janssen to us. Each company is responsible for its own costs incurred related to transition activities unless otherwise specified in the Collaboration Agreement. In addition, we expect Janssen will be able to supply imetelstat to us until September 2020 while we establish our own manufacturing supply chain, and such supply will be charged to us at Janssen's cost plus a premium.

Until the sponsorship responsibilities for imetelstat transfer from Janssen to us, including the U.S. Investigational New Drug, or IND, application and all foreign regulatory applications, Janssen will continue conducting ongoing clinical trials of imetelstat. Since September 28, 2018, our responsibility for imetelstat development costs incurred by Janssen, including continuing conduct of ongoing clinical trials of imetelstat, and costs for the prosecution of patents that were licensed to Janssen under the Collaboration Agreement increased from 50% to 100%. As of March 31, 2019, the amount due to Janssen of $2,071,000 on our condensed balance sheet primarily represents the amount owed to Janssen for operational support of the imetelstat program for the three months ended March 31, 2019.

4. OPERATING LEASE

As described in Note 1 on Summary of Significant Accounting Policies – New Accounting Pronouncements Recently Adopted, we adopted Topic 842 as of January 1, 2019. Prior period amounts have not been adjusted and continue to be reported in accordance with historical accounting under Topic 840.

We have an operating lease for our office space at 149 Commonwealth Drive, Menlo Park, California, that commenced in February 2018 and expires in January 2020. We have an option to extend the lease for one additional period of two years, which we did not include in determining the right-of-use asset or lease liability as we did not consider it reasonably certain that we would exercise such option. Since the operating lease is a net lease, as the non-lease components (i.e., common area maintenance) are paid separately from rent based on actual costs incurred, such non-lease components were not included in the right-of-use asset and liability and are reflected as an expense in the period incurred.

The components of lease costs included in operating expenses in our condensed statements of operations were as follows:

	Three Months Ended March 31,	
(In thousands)	2019	2018
Operating lease costs	$ 173	$ 168
Variable lease costs (1)	2	24
Total lease costs	$ 175	$ 192

(1) Variable lease costs represent non-lease components, such as common area maintenance charges.

The operating lease liability on the condensed balance sheet reflects the present value of the remaining lease payments over the remaining lease term. In determining the present value of lease payments, we applied our incremental borrowing rate based on the information available as of the January 1, 2019 adoption date. As of March 31, 2019, future minimum payments under the operating lease were as follows (in thousands):

2019	$ 525
2020	58
Total lease payments	583
Less: imputed interest	(12)
Total	$ 571

As of March 31, 2019, the weighted average remaining lease term is 10 months and the weighted average discount rate used to determine the operating lease liability was 5%.

We have performed an evaluation of our other contracts with vendors in accordance with Topic 842 and have determined that, except for the operating lease described above and a nominal financing lease for office equipment, none of our contracts contain a lease.

5. STOCKHOLDERS' EQUITY

At Market Issuance Sales Agreement

On August 28, 2015, we entered into an At Market Issuance Sales Agreement, or the 2015 Sales Agreement, with MLV & Co. LLC, or MLV, under which we could elect to issue and sell shares of our common stock having an aggregate offering price of up to $50,000,000. Pursuant to the 2015 Sales Agreement, common stock was sold at market prices prevailing at the time of sale through MLV as our sales agent. We paid MLV an aggregate commission rate equal to up to 3.0% of the gross proceeds of the sales price per share for common stock sold through MLV under the 2015 Sales Agreement. For the three months ended March 31, 2018, we issued an aggregate of 776,788 shares of our common stock under the 2015 Sales Agreement, resulting in net cash proceeds to us of approximately $1,553,000, after deducting sales commissions and offering expenses payable by us. We completed use of the 2015 Sales Agreement in April 2018 and no further shares of common stock may be sold under the 2015 Sales Agreement.

2018 Inducement Award Plan

In December 2018, our board of directors approved the adoption of the 2018 Inducement Award Plan, or the Inducement Plan, pursuant to which we reserved 3,000,000 shares of our common stock (subject to customary adjustments in the event of a change in capital structure) to be used exclusively for grants of inducement awards to individuals who were not previously Geron employees or directors, other than following a bona fide period of non-employment. In January 2019, our Compensation Committee approved an amendment to increase the reserve of shares of our common stock under the 2018 Inducement Award Plan from 3,000,000 to 8,000,000 shares of common stock. The Inducement Plan provides for the grant of nonstatutory stock options, stock appreciation rights, restricted stock awards, restricted stock units and other stock awards, and all awards under the Inducement Plan are intended to meet the standards under Rule 5635(c)(4) of the Nasdaq Listing Rules. The terms and conditions of the Inducement Plan and the inducement awards to be granted thereunder are substantially similar to our stockholder-approved 2018 Equity Incentive Plan. As of March 31, 2019, we have granted nonstatutory stock options covering an aggregate of 1,978,400 shares of our common stock at an average exercise price of $1.07 per share under the Inducement Plan.

6. SUBSEQUENT EVENT

In April 2019, we entered into an operating lease agreement for office space located at 3 Sylvan Way, Parsippany, New Jersey. The initial term of the lease is 11 years with an option to extend for an additional five years and a one-time option to terminate the lease without cause as of the 103rd month anniversary of the commencement date of the lease. We have not yet occupied the space as it is being renovated for our use. The lease term commences upon the earlier of the date of completion of the construction work or the date upon which we occupy and use the space for its intended purpose. Since we do not yet have control of the space, as defined by Topic 842, during the construction period and do not expect to gain control of the space until on or near the construction completion date, we will not record a right-of-use asset and corresponding lease liability until we occupy the space, which we expect to occur by the end of the third quarter of 2019. Upon the commencement of the lease, the aggregate minimum future lease payments for the initial lease term is approximately $3,700,000, net of a seven-month rent abatement period. Under the lease, we are also obligated to pay certain variable expenses separately from the base rent, including electricity and common area maintenance. Such costs will be expensed in the period they are incurred.

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

FORWARD-LOOKING STATEMENTS

This Form 10-Q contains forward-looking statements that involve risks and uncertainties, as well as assumptions that, if they never materialize or prove incorrect, could cause our results to differ materially from those expressed or implied by such forward-looking statements. All statements other than statements of historical fact are statements that could be deemed forward-looking statements. In some cases, forward-looking statements can be identified by the use of terminology such as "may," "expects," "plans," "intends," "will," "should," "projects," "believes," "predicts," "anticipates," "estimates," "potential" or "continue," or the negative thereof or other comparable terminology. These statements are within the meaning of the "safe harbor" provisions of the Private Securities Litigation Reform Act of 1995. These statements appear throughout the Form 10-Q and are statements regarding our intent, belief, or current expectations, primarily with respect to our business and related industry developments. You should not place undue reliance on these forward-looking statements, which apply only as of the date of this Form 10-Q. Our actual results could differ materially from those anticipated in these forward-looking statements for many reasons, including the risks faced by us and described in Part II, Item 1A, entitled "Risk Factors," and in "Management's Discussion and Analysis of Financial Condition and Results of Operations" in Part I, Item 2 of this Form 10-Q.

OVERVIEW

The following discussion should be read in conjunction with the unaudited condensed financial statements and notes thereto included in Part I, Item 1 of this Form 10-Q and with the sections entitled "Business" and "Management's Discussion and Analysis of Financial Condition and Results of Operations" contained in our Annual Report on Form 10-K for the year ended December 31, 2018, as filed with the Securities and Exchange Commission, or SEC, on March 7, 2019.

Business Overview

We are a late-stage clinical biopharmaceutical company that is focused on the development and commercialization of innovative therapeutics for hematologic myeloid malignancies. We have global rights to imetelstat, a first-in-class telomerase inhibitor, that was discovered and developed at Geron. We believe clinical data from two Phase 2 clinical trials of imetelstat (IMerge and IMbark, discussed below) conducted by Janssen Biotech, Inc., or Janssen, support further development of imetelstat in hematologic myeloid malignancies. We are working with Janssen to transition the entire imetelstat program to us. In connection with the transition of the imetelstat program, we expect sponsorship of the U.S. IND for the ongoing imetelstat clinical trials, IMerge and IMbark, to be transferred from Janssen to us by the end of the second quarter of 2019. See further discussion below regarding our past and current relationship with Janssen.

We plan to open patient screening and enrollment by mid-year of 2019 in a Phase 3 clinical trial (Part 2 of IMerge) to evaluate imetelstat in transfusion dependent patients with Low or Intermediate-1 risk myelodysplastic syndromes, or MDS, who have relapsed after or are refractory to prior treatment with an erythropoiesis stimulating agent, or ESA, have not received prior treatment with either a hypomethylating agent or lenalidomide and do not have a deletion 5q chromosomal abnormality. To be eligible for IMerge, patients were required to be transfusion dependent, defined as requiring at least four units of packed red blood cells over an eight week period during the 16 weeks before entry into the trial. This target population of lower risk MDS patients depend on serial red blood cell transfusions to manage symptoms of anemia and fatigue. However, dependency on transfusions is associated with poor survival, because of toxicity due to iron overload, as well as potential infections and allergic reactions. The ultimate goal for most trials of investigational agents in lower risk MDS is to enable patients to become transfusion independent for as long as possible.

In December 2018, we reported results from a combined cohort of 38 patients (comprised from an initial cohort of 13 patients and an expansion cohort of 25 patients) in the Phase 2 portion of IMerge, using a clinical data cut-off date of October 26, 2018, in which 37% of patients in the combined cohort experienced red blood cell transfusion independence for at least 8 consecutive weeks, or an 8-week RBC-TI rate, and 26% of patients in the combined cohort experienced red blood cell transfusion independence for at least 24 consecutive weeks, or a 24-week RBC TI-rate. Patients in the combined cohort had a high transfusion burden, with a baseline median red blood cell transfusion burden of eight units per eight weeks (range of four to 14 units), an indicator of a hard to treat population. These results compare favorably to currently used treatments in a similar patient population, such as hypomethylating agents, or HMAs, which have a reported 8-week RBC-TI rate of 17%, or lenalidomide, which has a reported 8-week RBC-TI rate of 27%. In addition, among the patients in the combined cohort who achieved durable transfusion independence in the Phase 2 portion of IMerge, as reflected by achieving a 24-week RBC-TI, all showed a hemoglobin rise of ≥3.0 g/dL compared to baseline during the transfusion-free interval. We believe these data suggest potential disease-modifying activity of imetelstat treatment. We expect more mature data from the Phase 2 portion of IMerge to be available in 2019 and anticipate submitting such data for presentation at a future medical conference in 2019.

Regarding our myelofibrosis, or MF, program, in December 2018, we reported data from the IMbark Phase 2 clinical trial, including the median overall survival of 29.9 months observed in the 9.4 mg/kg dosing arm using a data cut-off date of October 22, 2018, in comparison to the median overall survival of 14 – 16 months for patients previously treated with janus kinase, or JAK, inhibitors, as reported in medical literature. We plan to discuss the IMbark data with experts in MF, as well as regulatory authorities, to consider how these results compare with other therapies currently available to MF patients, and to gain a better understanding of the potential significance of these results to patients and physicians. Because IMbark is the first clinical trial to apply rigorous, objective eligibility criteria to define patients considered relapsed or refractory to JAK inhibitors, we believe feedback from these discussions could provide important information on the feasibility, scope and design, including possible outcome measures, of any potential future clinical trials for imetelstat in Intermediate-2 or High-risk MF patients who have relapsed after or are refractory to prior treatment with a JAK inhibitor. We expect to outline our decision whether to continue late-stage development of imetelstat in MF by the end of the third quarter of 2019. This decision will be influenced by our assessment of what would be required to achieve clinical and regulatory success in MF, including the cost and duration of any potential clinical trials.

Status of Former Collaboration Agreement with Janssen

On November 13, 2014, we entered into a collaboration and license agreement, or the Collaboration Agreement, pursuant to which we granted Janssen the exclusive rights to develop and commercialize imetelstat worldwide for all indications in oncology, including hematologic myeloid malignancies, and all other human therapeutic uses. Janssen terminated the Collaboration Agreement effective September 28, 2018. Upon the effective date of termination, we regained the global rights to the imetelstat program. As a result of the termination of the Collaboration Agreement, we will not receive any further milestone payments or royalties from Janssen for the development or commercialization of imetelstat, including any clinical development or sales milestones, and Janssen has no further obligations to us or any third parties, such as clinical sites or vendors, to fund any of the ongoing or any potential future imetelstat clinical trials.

Under the termination provisions of the Collaboration Agreement, Janssen is required to provide certain operational support for the imetelstat program through September 2019 during transition of the program to us. Each company is responsible for its own costs incurred related to transition activities unless otherwise specified in the Collaboration Agreement. We expect the transition process to be completed by September 2019 to enable the orderly transfer of all ongoing clinical, regulatory, medical affairs and non-clinical activities to us, including transfer of the sponsorship of ongoing imetelstat clinical trials from Janssen to us. We also expect Janssen will be able to supply imetelstat to us until September 2020 while we establish our own manufacturing supply chain. Such supply will be charged to us at Janssen's cost plus a premium.

Until the sponsorship responsibilities for imetelstat transfer from Janssen to us, including the U.S. Investigational New Drug, or IND, application, and all foreign regulatory applications, Janssen will continue conducting IMbark and the Phase 2 portion of IMerge. Patients currently enrolled in IMbark and the Phase 2 portion of IMerge continue to receive treatment and follow-up under the respective trial protocols. After September 28, 2018, the effective termination date of the Collaboration Agreement, our responsibility for imetelstat development costs, including ongoing conduct of IMbark and the Phase 2 portion of IMerge, and costs for the prosecution of patents that were licensed to Janssen under the Collaboration Agreement increased from 50% to 100%.

For a further discussion of the former Collaboration Agreement with Janssen, see Note 3 on Former Collaboration Agreement in Notes to Condensed Financial Statements of this Form 10-Q. Information about the transition of the imetelstat program from Janssen to us should be reviewed in the context of the section entitled "Risks Related to Transition of the Imetelstat Program from Janssen to Geron" included in Part II, Item 1A, "Risk Factors" of this Form 10-Q.

Financial Overview

We had approximately $170.1 million in cash, cash equivalents, restricted cash and current and noncurrent marketable securities as of March 31, 2019 . We will require substantial additional capital in order to further advance the imetelstat program, including conducting the research and development and clinical and regulatory activities necessary to bring imetelstat to market, such as completing the planned Phase 3 portion of IMerge and potential clinical trials in other indications, and establishing sales and marketing capabilities to commercialize imetelstat in the United States on our own, if regulatory approval is granted. If approved for marketing by regulatory authorities, we plan to seek potential commercialization partners for territories outside of the United States. While we reported a small profit for the year ended December 31, 2015 due to our recognition of revenue in connection with the upfront payment from Janssen under the Collaboration Agreement, until 2015 we had never been profitable, and have not reported any profit since. We have incurred significant net losses since our inception in 1990, resulting principally from costs incurred in connection with our research and development activities and from general and administrative costs associated with our operations. As of March 31, 2019, we had an accumulated deficit of approximately $1.0 billion. Since our inception, we primarily have financed our

operations through the sale of equity securities, interest income on our marketable securities and payments we received under our collaborative and licensing arrangements.

Substantially all of our revenues to date have been payments under collaborative agreements, and milestones, royalties and other revenues from our licensing arrangements. We currently have no source of product revenue. The significance of future losses, future revenues and any potential future profitability will depend primarily on the clinical and commercial success of imetelstat. In any event, imetelstat will require significant additional clinical testing prior to possible regulatory approval in the United States and other countries. In addition, as a result of the termination of the Collaboration Agreement, we expect research and development expenses, general and administrative expenses, and losses to substantially increase in future periods as we undertake sole financial responsibility for the imetelstat development program. We do not expect imetelstat to be commercially available for many years, if at all.

CRITICAL ACCOUNTING POLICIES AND ESTIMATES

There have been no significant changes in our critical accounting policies and estimates during the three months ended March 31, 2019, as compared to the critical accounting policies and estimates disclosed in our Annual Report on Form 10-K for the year ended December 31, 2018, other than the adoption of the new accounting pronouncement on January 1, 2019 as described below.

Our condensed financial statements have been prepared in accordance with U.S. generally accepted accounting principles for interim financial information. The preparation of these financial statements requires management to make estimates and assumptions that affect the reported assets and liabilities and disclosure of contingent assets and liabilities as of the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Note 1 of Notes to Condensed Financial Statements of this Form 10-Q describes the significant accounting policies used in the preparation of the condensed financial statements.

Estimates and assumptions about future events and their effects cannot be determined with certainty. We base our estimates on historical experience and on various other assumptions believed to be applicable and reasonable under the circumstances. These estimates may change as new events occur, as additional information is obtained and as our operating environment changes. These changes historically have been minor and have been included in the condensed financial statements as soon as they became known. Based on a critical assessment of our accounting policies and the underlying judgments and uncertainties affecting the application of those policies, management believes that our condensed financial statements are fairly stated in accordance with accounting principles generally accepted in the United States, and present a meaningful presentation of our financial condition and results of operations.

New Accounting Pronouncement – Recently Adopted

Leases

We adopted Topic 842 on January 1, 2019 using the modified retrospective approach as allowed under ASU 2018-11, and we elected to utilize the available practical expedients. Financial results for the reporting periods beginning after January 1, 2019 are presented under Topic 842, while prior period amounts have not been adjusted and continue to be reported in accordance with our historical accounting under Accounting Standards Codification Topic 840, *Leases*, or Topic 840.

In connection with the adoption of Topic 842 as of January 1, 2019, we recorded an operating lease, right-of-use asset and a corresponding operating lease liability for the net present value of remaining lease payments of our current operating lease for our office space. To calculate the net present value of lease payments, we apply our 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 as of the lease commencement date. We may adjust the right-of-use asset for certain adjustments, such as initial direct costs paid or incentives received. In addition, we include any options to extend or terminate the lease in the expected lease term when it is reasonably certain that we will exercise any such option. Lease expense is recognized on a straight-line basis over the expected lease term. The adoption of Topic 842 did not have a material impact on our condensed statements of operations. See Note 4 on Operating Lease in Notes to Condensed Financial Statements of this Form 10-Q for further discussion of our operating lease obligation.

RESULTS OF OPERATIONS

Our results of operations have fluctuated from period to period and may continue to fluctuate in the future, especially in light of the termination of the Collaboration Agreement with Janssen effective September 28, 2018. Results of operations for any period may be unrelated to results of operations for any other period. Thus, historical results should not be viewed as indicative of future operating results. For example, in 2015 we reported net income for the first time due to recognition of revenue in connection with the upfront payment from Janssen under the Collaboration Agreement. Effective September 28, 2018, the Collaboration Agreement with Janssen was terminated. As a result, we will not receive any further milestone payments or royalties from Janssen for the development or commercialization of imetelstat. In addition, we expect to incur increasing operating losses in the future as we undertake sole financial

responsibility for the development of imetelstat to enable potential commercialization of imetelstat in the United States and other countries. We are subject to risks common to companies in our industry and at our stage of development, including, but not limited to, risks inherent in research and development efforts, including the transition of the imetelstat program from Janssen to us, the development, manufacture, regulatory approval for and commercialization of, imetelstat, uncertainty of non-clinical and clinical trial results or regulatory approvals or clearances, the future development of imetelstat by us, including any future efficacy or safety results that may cause the benefit-risk profile of imetelstat to become unacceptable, our need for future capital, enforcement of our patent and proprietary rights, reliance upon our consultants, licensees, investigators and other third parties, and potential competition. In order for imetelstat to be commercialized, we must conduct non-clinical tests and clinical trials to demonstrate the safety and efficacy of imetelstat, obtain regulatory approvals or clearances and enter into manufacturing, distribution and marketing arrangements, as well as obtain market acceptance. We do not expect to receive revenue based on sales of imetelstat for many years, if at all.

Revenues

We have entered into several license or collaboration agreements with companies involved with oncology, diagnostics, research tools and biologics production, whereby we have granted certain rights to our non-imetelstat related technologies. In connection with these agreements, we are eligible to receive license fees, option fees, milestone payments and royalties on future sales of products, or any combination thereof.

We recognized license fee revenues of $248,000 for the three months ended March 31, 2018 related to our various agreements. No comparable amounts were recognized for the three months ended March 31, 2019. The decrease in license fee revenues for the three months ended March 31, 2019 compared to the same period in 2018 reflects a reduction in the number of active license agreements in the first quarter of 2019 for research licenses related to our human telomerase reverse transcriptase, or hTERT, technology as a result of patent expirations on the underlying technology. We recognized royalty revenues of $57,000 for the three months ended March 31, 2019, compared to $70,000 for the same period in 2018. The decrease in royalty revenues for the three months ended March 31, 2019 compared to the same period in 2018 reflects expiration of licenses which eliminated the obligation to remit royalties on product sales.

Future license fee and royalty revenues are dependent on additional agreements being signed, if any, current agreements being maintained and the underlying patent rights for the licenses remaining active. We expect license fee and royalty revenues under our license agreements related to our hTERT technology to be lower in 2019 than in previous years, and to be eliminated by the end of 2019, due to upcoming patent expirations on such technology. Current revenues may not be predictive of future revenues.

Research and Development Expenses

During the three months ended March 31, 2019 and 2018, imetelstat was the sole research and development program we supported. For the imetelstat research and development program, we incur direct external, personnel related and other research and development costs. For the three months ended March 31, 2019, direct external expenses included costs for our contract research organization, or CRO, and consultants and 100% of clinical development costs incurred by Janssen for operational support of the imetelstat program during the transition period. For the three months ended March 31, 2018, direct external expenses primarily consisted of our 50% share of clinical development costs incurred by Janssen under the Collaboration Agreement. Personnel related expenses primarily consist of salaries and wages, stock-based compensation, payroll taxes and benefits for Geron employees involved with ongoing research and development efforts. Other research and development expenses primarily consist of research related overhead associated with allocated expenses for rent and maintenance of facilities and other supplies.

Research and development expenses were $5.9 million for the three months ended March 31, 2019, compared to $2.4 million for the same period in 2018. The increase in research and development expenses for the three months ended March 31, 2019 compared to the same period in 2018 primarily reflects higher direct external costs for clinical development activities conducted by Janssen for the imetelstat program during the transition period and for our CRO and consultants to support the transition of the imetelstat program from Janssen to us and increased personnel related expenses for additional development headcount.

Research and development expenses for the three months ended March 31, 2019 and 2018 were as follows:

(In thousands)	Three Months Ended March 31, 2019	2018
	(Unaudited)	
Direct external expenses	$ 4,091	$ 1,887
Personnel related expenses	1,522	414
All other expenses	293	139
Total research and development expenses	$ 5,906	$ 2,440

Since cost sharing between Janssen and us for imetelstat clinical development ceased on September 28, 2018, the effective date of termination of the Collaboration Agreement, we expect research and development expenses to increase in future periods as we undertake sole financial responsibility for the imetelstat development program, including all ongoing or potential future clinical trials, engage third parties and other service providers to conduct clinical trials of imetelstat, and hire additional senior personnel to oversee the program. Under the terms of the Collaboration Agreement, Janssen is required to provide operational support for the imetelstat program, including continuing to conduct ongoing imetelstat clinical trials, during transition of the program to us. We reimburse Janssen for 100% of the costs for such operational support. However, costs associated with transition activities, such as transfer of the sponsorship of ongoing imetelstat clinical trials, moving databases and related systems and transmitting regulatory files, are being incurred by each company, unless otherwise specified in the Collaboration Agreement. We expect the transition process to be completed by the end of September 2019. In addition, we expect Janssen will be able to supply imetelstat to us until September 2020 while we establish our own manufacturing supply chain. Such supply will be charged to us at Janssen's cost plus a premium.

At this time, we cannot provide reliable estimates of how much time or investment will be necessary to advance imetelstat toward commercialization. For a more complete discussion of the risks and uncertainties associated with the development of imetelstat, see the sub-sections entitled "Risks Related to the Development of Imetelstat" and "Risks Related to Regulatory Approval and Commercialization of Imetelstat" in Part II, Item 1A entitled "Risk Factors" and elsewhere in this Form 10-Q.

General and Administrative Expenses

General and administrative expenses were $5.5 million for the three months ended March 31, 2019, compared to $5.3 million for the same period in 2018. The increase in general and administrative expenses for the three months ended March 31, 2019 compared to the same period in 2018 primarily reflects recruitment expenses for new members for the board directors. We expect general and administrative expenses to increase in the future since the cost sharing between Janssen and us for patent prosecution expenses related to the imetelstat program ceased upon termination of the Collaboration Agreement, and we expect to hire additional personnel to support our research and development activities for imetelstat.

Interest and Other Income

Interest and other income was $1.2 million for the three months ended March 31, 2019, compared to $394,000 for the same period in 2018. The increase in interest and other income for the three months ended March 31, 2019 compared to the same period in 2018 primarily reflects higher yields on our marketable securities portfolio and the increase in the size of our marketable securities portfolio resulting from the receipt of net cash proceeds from issuances of common stock pursuant to our At Market Issuance Sales Agreement, or the 2015 Sales Agreement, with MLV & Co. LLC, or MLV, and our At Market Issuance Sales Agreement, or the 2018 Sales Agreement, with B. Riley FBR, Inc., or B. Riley FBR in the first half of 2018. Interest earned in future periods will depend on the size of our marketable securities portfolio and prevailing interest rates.

Change in Fair Value of Equity Investment

With the adoption of ASU 2016-01 on January 1, 2018, we remeasure the fair value of our equity investment in Sienna at each reporting date and any resulting change in fair value based on observable price changes is included in our condensed statements of operations. For the three months ended March 31, 2019, the increase in the fair value of our equity investment in Sienna resulting from observable price changes in Sienna's stock was $98,000, compared to a loss of $125,000 for the same period in 2018. The fair value of our equity investment in Sienna fluctuates based on changes in Sienna's stock price and is therefore subject to volatility that could adversely affect our future operating results.

Other Expense

Other expense was $18,000 for each of the three months ended March 31, 2019 and 2018. Other expense reflects changes in the fair value of our equity investment in Sienna resulting from foreign currency translation and bank charges related to our cash operating accounts and marketable securities portfolio. Other expense for the three months ended March 31, 2019 included a gain of $5,000 related to foreign currency translation for our equity investment in Sienna, compared to a loss of $17,000 for the same period in 2018. The fair value of our equity investment in Sienna fluctuates based on changes in the exchange rate between the U.S. dollar and Australian dollar and is therefore subject to volatility that could adversely affect our future operating results.

LIQUIDITY AND CAPITAL RESOURCES

As of March 31, 2019, we had cash, restricted cash, cash equivalents, and current and noncurrent marketable securities of $170.1 million, compared to $182.1 million at December 31, 2018. The net decrease in cash, restricted cash, cash equivalents, and current and noncurrent marketable securities during the three months ended March 31, 2019 was the result of cash being used for operations. We estimate that our existing capital resources and future interest income will be sufficient to fund our current level of operations through at least the next 12 months. However, we expect to experience negative cash flow for the foreseeable future as we undertake sole financial responsibility for the development of the imetelstat program on our own.

We have an investment policy to invest our cash in liquid, investment grade securities, such as interest-bearing money market funds, certificates of deposit, municipal securities, U.S. government and agency securities, corporate notes and commercial paper. Our investment portfolio does not contain securities with exposure to sub-prime mortgages, collateralized debt obligations, asset-backed securities or auction rate securities and, to date, we have not recognized any other-than-temporary impairment charges on our marketable securities or any significant changes in aggregate fair value that would impact our cash resources or liquidity. To date, we have not experienced lack of access to our invested cash and cash equivalents; however, access to our invested cash and cash equivalents may be impacted by adverse conditions in the financial and credit markets.

In August 2015, we entered into the 2015 Sales Agreement with MLV, under which we could elect to issue and sell shares of our common stock having an aggregate offering price of up to $50 million. Pursuant to the 2015 Sales Agreement, common stock was sold at market prices prevailing at the time of sale through MLV as our sales agent. We paid MLV an aggregate commission rate equal to up to 3.0% of the gross proceeds of the sales price per share for common stock sold through MLV under the 2015 Sales Agreement. From January 2018 through April 2018, we sold an aggregate of 13,195,106 shares of our common stock under the 2015 Sales Agreement, resulting in net cash proceeds to us of approximately $47.7 million after deducting sales commissions and offering expenses payable by us. Under the 2015 Sales Agreement, we sold a cumulative total of 13,809,336 shares of our common stock resulting in net cash proceeds to us of approximately $48.7 million after deducting sales commissions and offering expenses payable by us. No further shares of common stock may be sold under the 2015 Sales Agreement.

In May 2018, we entered into the 2018 Sales Agreement with B. Riley FBR, pursuant to which we may elect to issue and sell shares of our common stock having an aggregate offering price of up to $100 million in such quantities and on such minimum price terms as we set from time to time through B. Riley FBR as our sales agent. Pursuant to the 2018 Sales Agreement, B. Riley FBR sells our common stock at market prices prevailing at the time of sale for which B. Riley FBR receives an aggregate commission rate equal to up to 3.0% of the gross proceeds. We sold an aggregate of 10,083,079 shares of our common stock under the 2018 Sales Agreement in 2018, resulting in net cash proceeds to us of approximately $38.4 million after deducting sales commissions and offering expenses payable by us. As of December 31, 2018 and March 31, 2019, approximately $60.5 million of our common stock remained available for issuance under the 2018 Sales Agreement. The 2018 Sales Agreement will expire upon the earlier of the remaining common stock being sold or May 2021.

We will require substantial additional capital in order to further advance the imetelstat program, including conducting the research and development and clinical and regulatory activities necessary to bring imetelstat to market, such as completion of the planned Phase 3 portion of IMerge and potential clinical trials in other indications, and to establish sales and marketing capabilities to commercialize imetelstat in the United States on our own, if regulatory approval is granted. Because the outcome of any clinical activities and/or regulatory approval process is highly uncertain, we cannot reasonably estimate whether any development activities we may undertake will succeed, and we may never recoup our investment in any imetelstat development, which would adversely affect our financial condition and our business and business prospects, and might cause us to cease operations. Our future capital requirements are difficult to forecast and will depend on many factors, including:

- the accuracy of the assumptions underlying our estimates for our capital needs;
- the progress, timing, magnitude, scope and costs of clinical development, manufacturing and potential commercialization of imetelstat, including the number of indications being pursued, subject to clearances and approvals by the United States Food and Drug Administration, or FDA, and other regulatory authorities;

- the scope, progress, duration, results and costs of current and future clinical trials, including the planned Phase 3 portion of IMerge, as well as non-clinical studies and assessments, of imetelstat;
- the costs, timing and outcomes of regulatory reviews or other regulatory actions related to imetelstat, including obtaining regulatory clearances and approvals in the United States and in other countries;
- the costs of preparing, filing and prosecuting patent applications and maintaining, enforcing and defending intellectual property-related claims;
- the costs of manufacturing imetelstat, including our ability to meaningfully reduce those manufacturing costs;
- the costs of multiple third-party vendors and service providers, including our CRO, to pursue the development, manufacturing and commercialization of imetelstat;
- our ability to establish, enforce and maintain collaborative or other strategic arrangements for research, development, clinical testing and manufacturing of imetelstat and potential future commercialization and marketing;
- our ability to successfully market and sell imetelstat, if imetelstat receives future regulatory approval or clearance, in the United States and other countries;
- our need to hire additional qualified employees and consultants to support the development and potential commercialization of imetelstat;
- the costs and timing of building a U.S. sales force to market and sell imetelstat, should it receive regulatory clearance;
- the sales price for imetelstat;
- the availability of coverage and adequate third-party reimbursement for imetelstat;
- the extent and scope of our general and administrative expenses, including expenses associated with potential future litigation; and
- the costs of maintaining and operating facilities in California and New Jersey, including higher expenses for travel, telecommunications and administrative oversight.

As a result of the termination of the Collaboration Agreement effective September 28, 2018, we are responsible for funding all clinical development, manufacturing, intellectual property maintenance and potential commercial activities for imetelstat. In order to further advance the imetelstat program, including completion of the planned Phase 3 portion of IMerge and potential clinical trials in other indications, we will need to raise substantial additional capital or establish additional collaborative arrangements with third-party collaborative partners, which may not be possible. In addition, as a result of the termination of the Collaboration Agreement, we will not receive any further milestone payments or royalties from Janssen for the development or sale of imetelstat, including any clinical development milestones. If we are unable to raise additional capital or establish alternative collaborative arrangements with third-party collaborative partners for imetelstat, the development of imetelstat may be further delayed, altered or abandoned, which might cause us to cease operations. Additional financing through public or private equity financings, including pursuant to our 2018 Sales Agreement with B. Riley FBR, capital lease transactions or other financing sources may not be available on acceptable terms, or at all. We may raise equity capital at a stock price or on other terms that could result in substantial dilution of ownership for our stockholders. The receptivity of the public and private equity markets to proposed financings is substantially affected by the general economic, market and political climate and by other factors which are unpredictable and over which we have no control. In this regard, volatility and instability in the global financial markets and political climate could adversely affect our ability to raise additional funds through financings and the terms upon which we may raise those funds.

In addition, we may seek additional capital due to market conditions or strategic considerations even if we believe we have sufficient funds for our current or future operating plans. To the extent that we raise additional capital through the sale of equity or convertible debt securities, the ownership interests of our stockholders may be diluted, and the terms may include liquidation or other preferences that materially and adversely affect the rights of our stockholders. Debt financing, if available, may involve agreements that include covenants limiting or restricting our ability to take specific actions, such as incurring additional debt, making capital expenditures or declaring dividends. If we raise additional funds through alliance, collaboration or licensing arrangements with third parties, we may have to relinquish valuable rights to imetelstat or our technologies or grant licenses on terms that are not favorable to us.

We cannot assure you that our existing capital resources, future interest income, and potential future sales of our common stock, including under our 2018 Sales Agreement with B. Riley FBR, will be sufficient to fund our operating plans. We will need additional funds to meet operational needs and capital requirements to advance the imetelstat program in clinical development and potential

commercialization, and our need for additional funds may arise sooner than planned. If adequate funds are not available on a timely basis, if at all, we may be unable to pursue further development or potential commercialization of imetelstat, which could adversely affect our business and we might cease operations.

Cash Flows from Operating Activities. Net cash used in operations for the three months ended March 31, 2019 and 2018 was $12.7 million and $7.4 million, respectively. The increase in net cash used in operations for the three months ended March 31, 2019 compared to the same period in 2018 primarily reflects the net result of higher payments for research and development expenses in connection with the transition of the imetelstat program from Janssen to us and increases in development headcount.

Cash Flows from Investing Activities. Net cash provided by investing activities for the three months ended March 31, 2019 was $9.0 million. Net cash used in investing activities for the three months ended March 31, 2018 was $2.6 million. The increase in net cash provided by investing activities in 2019 compared to 2018 primarily reflects a higher rate of maturities than purchases of marketable securities in 2019.

Cash Flows from Financing Activities. Net cash provided by financing activities for the three months ended March 31, 2019 and 2018 was none and $1.6 million, respectively. In the first quarter of 2018, we sold common stock under the 2015 Sales Agreement with MLV. No similar sales were conducted in the first quarter of 2019.

Contractual Obligations

During the three months ended March 31, 2019, there have been no material changes to the contractual obligations previously disclosed in our Annual Report on Form 10-K for the year ended December 31, 2018.

Off-Balance Sheet Arrangements

We have not engaged in any off-balance sheet arrangements, including the use of structured finance, special purpose entities or variable interest entities.

ITEM 3. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

During the three months ended March 31, 2019, there were no material changes to our market risk disclosures as set forth in Part II, Item 7A, "Quantitative and Qualitative Disclosures About Market Risk" in our Annual Report on Form 10-K for the year ended December 31, 2018.

ITEM 4. CONTROLS AND PROCEDURES

Evaluation of Disclosure Controls and Procedures

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

Changes in Internal Control Over Financial Reporting

There were no changes in our internal control over financial reporting during the quarter to which this report relates that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

Limitations on Effectiveness of Controls and Procedures

In designing and evaluating disclosure controls and procedures, our management recognizes that any system of controls, however well designed and operated, can provide only reasonable assurance, and not absolute assurance, that the desired control objectives of the system are met. In addition, the design of any control system is based in part upon certain assumptions about the likelihood of future events. Because of these and other inherent limitations of control systems, there can be no assurance that any design will succeed in achieving its stated goals in all future circumstances. Accordingly, our disclosure controls and procedures are designed to provide reasonable, not absolute, assurance that the objectives of our disclosure control system are met and, as set forth above, our Chief Executive Officer and our Chief Financial Officer have concluded, based on their evaluation as of the end of the

period covered by this quarterly report, that our disclosure controls and procedures were effective to provide reasonable assurance that the objectives of our disclosure control system were met.

PART II. OTHER INFORMATION

ITEM 1. LEGAL PROCEEDINGS

TBD.

ITEM 1A. RISK FACTORS

Our business is subject to various risks and uncertainties that may have a material adverse effect on our business, financial condition or results of operations. You should carefully consider the risks and uncertainties described below, together with all of the other information included in this Quarterly Report on Form 10-Q and in our Annual Report on Form 10-K for the year ended December 31, 2018, or the Form 10-K. Our business faces significant risks and uncertainties, and those described below may not be the only risks and uncertainties we face. Additional risks and uncertainties not presently known to us or that we currently believe are immaterial may also significantly impair our business, financial condition or results of operations. If any of these risks or uncertainties occur, our business, financial condition or results of operations could suffer, the market price of our common stock could decline and you could lose all or part of your investment in our common stock. We have marked with an asterisk (*) those risks described below that reflect substantive changes from, or additions to, the risks described under Part I, Item 1A, "Risk Factors" included in the Form 10-K.

RISKS RELATED TO THE DEVELOPMENT OF IMETELSTAT

Our future success depends solely on imetelstat, our only product candidate, and we cannot be certain that we will be able to continue to develop imetelstat or advance imetelstat to subsequent clinical trials, or that we will be able to receive regulatory approval for imetelstat on a timely basis, or at all.

Imetelstat is our sole product candidate, upon whose success we are wholly dependent. We do not have any other products or product candidates. Our ability to develop imetelstat to and through regulatory approval and commercial launch is subject to significant risks and uncertainties, including, among other things, our ability to:

- cause the IND for imetelstat to be maintained without such IND being placed on full or partial clinical hold by the United States Food and Drug Administration, or FDA;
- generate additional safety and efficacy data from existing and potential future clinical trials of imetelstat, providing a positive benefit-risk profile that supports the continued and future development of imetelstat in hematologic myeloid malignancies;
- ascertain that the use of imetelstat does not result in significant systemic or organ toxicities, including hepatotoxicity, or other safety issues resulting in an unacceptable benefit-risk profile;
- develop clinical plans for, and successfully enroll and complete, potential future clinical trials of imetelstat in hematologic myeloid malignancies, including the planned Phase 3 portion of IMerge;
- collaborate successfully with clinical trial sites, academic institutions, clinical research organizations, or CROs, contractors, physician investigators and other third parties;
- obtain required regulatory clearances and approvals for imetelstat; for example, it is uncertain:
  - whether the FDA and regulatory authorities in other countries will require us to obtain and submit additional non-clinical, manufacturing, or clinical data to proceed with any potential future clinical trials,
  - how the FDA and other regulatory authorities will interpret safety and efficacy data from any clinical trial, including from IMbark or IMerge,
  - what scope and type of clinical development and other data will be required before the FDA and other regulatory authorities might grant us marketing approval, if any, and
  - what the length of time and cost for us will be to complete any such requirements;

- enter into and maintain arrangements with third parties to provide services needed to further research and develop imetelstat, including maintaining the agreement with our CRO, or to manufacture imetelstat, in each case at commercially reasonable costs;
- enter into and maintain arrangements with third parties, or establish internal capabilities, to provide sales, marketing and distribution functions in compliance with applicable laws;
- obtain appropriate coverage and reimbursement levels for the cost of imetelstat from governmental authorities, private health insurers and other third-party payors;
- maintain and enforce adequate intellectual property protection for imetelstat;
- maintain adequate financial resources and personnel to advance imetelstat to and through potential future clinical trials, regulatory approval and commercial launch; and
- obtain funding necessary to fund our operations and to advance the development of imetelstat on commercially reasonable terms, including completion of the planned Phase 3 portion of IMerge and potential clinical development of other indications.

If we are not able to successfully achieve the above-stated goals and overcome other challenges that we may encounter in the research, development, manufacturing and potential commercialization of imetelstat, we may be forced to abandon our development of imetelstat, which would severely harm our business and prospects, and might cause us to cease operations.

Commencement of potential future clinical trials of imetelstat, including the planned Phase 3 portion of IMerge, and completion of the extension phase of IMbark and the Phase 2 portion of IMerge, could be interrupted, further delayed or abandoned for a variety of reasons.

Currently, there are two active clinical trials of imetelstat, the extension phase of IMbark and the Phase 2 portion of IMerge. Completion of these clinical trials, and the commencement of any potential future clinical trials of imetelstat, including the planned Phase 3 portion of IMerge, could be interrupted, delayed or abandoned for a variety of reasons, including as a result of failures or delays in:

- the comprehensive transition of the imetelstat program from Janssen to us, as discussed in more detail under the heading, "Risks Related to Transition of the Imetelstat Program from Janssen to Geron";
- demonstrating sufficient safety and efficacy of imetelstat in IMerge and any potential future clinical trials, without safety issues, side effects or dose-limiting toxicities, including any additional or more severe safety issues in addition to those that have been observed to date in previous or ongoing clinical trials related to imetelstat, whether or not in the same indications or therapeutic areas;
- obtaining or maintaining regulatory clearances in the United States or other countries to conduct clinical trials, such as obtaining or maintaining regulatory clearances to commence, conduct or modify current or potential future clinical trials of imetelstat, in a timely manner, or at all, which could, for example, cause the anticipated commencement of the planned Phase 3 portion of IMerge to be delayed beyond mid-year 2019 or prevent us from commencing or completing the planned Phase 3 portion of IMerge;
- maintaining the IND for imetelstat without such IND being placed on full or partial clinical hold, suspended or subject to other requirements by the FDA or other regulatory authorities;
- properly (i) completing the extension phase of IMbark, including collecting data about serious adverse events and overall survival from the extension phase of IMbark; (ii) completing the Phase 2 portion of IMerge, including assessing the durability of RBC-TI responses; and (iii) designing, commencing, enrolling, conducting and completing the planned Phase 3 portion of IMerge, and promptly or adequately reporting data from such trials;
- determining, after consultations with experts in MF and discussions with regulatory authorities, whether the results from the IMbark primary analysis provide a feasible registration path, if any, for imetelstat in Intermediate-2 or High risk MF patients who have relapsed after or are refractory to prior treatment with a JAK inhibitor;
- obtaining or accessing necessary clinical data in accordance with appropriate clinical or quality practices to ensure complete data sets;
- responding to safety findings by the data review committees of current clinical trials, including the extension phase of IMbark and the Phase 2 portion of IMerge, and safety or futility findings by the data review committees of potential future clinical trials of imetelstat, such as the planned Phase 3 portion of IMerge, based on emerging data occurring during such

clinical trials, such as significant systemic or organ toxicities, including severe cytopenias, hepatotoxicity, fatal bleeding with or without any associated thrombocytopenia, patient injury or death, or other safety issues, resulting in an unacceptable benefit-risk profile;

- obtaining funding on commercially reasonable terms necessary to advance the development of imetelstat;
- manufacturing sufficient quantities of imetelstat, or other clinical trial materials, in a manner that meets the quality standards of the FDA and other regulatory authorities, and responding to any disruptions to drug supply, clinical trial materials or quality issues that may arise;
- ensuring the ability to manufacture imetelstat at acceptable costs for potential Phase 3 clinical trials and commercialization;
- obtaining sufficient quantities of any study-related treatments, materials (including comparator products, placebo or combination therapies) or ancillary supplies;
- obtaining acceptance by regulatory authorities of manufacturing changes, as well as successfully implementing any such manufacturing changes;
- complying with current and future regulatory requirements, policies or guidelines, including domestic and international laws and regulations pertaining to fraud and abuse, transparency, and the privacy and security of health information;
- reaching agreement on acceptable terms and on a timely basis, if at all, with collaborators and vendors located in the United States or foreign jurisdictions, including our CRO, laboratory service providers and clinical trial sites, on all aspects of clinical development;
- obtaining timely review and clearances by regulatory authorities of future protocol amendments which may be sought for the planned Phase 3 portion of IMerge and potential future clinical trials of imetelstat, including responding to questions or comments from these authorities in a timely and adequate manner, which could, for example, cause the anticipated commencement of the planned Phase 3 portion of IMerge to be delayed beyond mid-year 2019 or prevent us from commencing or completing the planned Phase 3 portion of IMerge; and
- obtaining institutional review board or ethics committee approval of clinical trial protocols or protocol amendments, including any future refinements to the trial design we may seek for the planned Phase 3 portion of IMerge, which could, for example, cause the anticipated commencement of the planned Phase 3 portion of IMerge to be delayed beyond mid-year 2019 or prevent us from commencing or completing the planned Phase 3 portion of IMerge.

Failures or delays with respect to any of these events could adversely affect our ability to continue or successfully complete the extension phase of IMbark or the Phase 2 portion of IMerge or to commence potential future clinical trials of imetelstat, including the planned Phase 3 portion of IMerge, which could increase development costs, or interrupt, further delay or halt our development or potential commercialization of imetelstat, any of which could severely and adversely affect our financial results, business and business prospects, and the future of imetelstat, and might cause us to cease operations.

Imetelstat may cause, or have attributed to it, undesirable or unintended side effects or other adverse events that further delay or prevent the commencement and/or completion of clinical trials for imetelstat, further delay or prevent its regulatory approval, or limit its commercial potential.

Imetelstat may cause, or have attributed to it, undesirable or unintended side effects or other adverse events affecting its safety or efficacy that could interrupt, further delay or halt current or potential future clinical trials of imetelstat. For example, adverse events and dose-limiting toxicities observed in previous clinical trials of imetelstat include:

- hematologic toxicities, such as profound and/or prolonged thrombocytopenia or neutropenia, including one case of febrile neutropenia after prolonged myelosuppression with intracranial hemorrhage resulting in patient death, which the investigator assessed as possibly related to imetelstat;
- bleeding events, with or without thrombocytopenia;
- liver function test, or LFT, abnormalities, the clinical significance and long-term consequences of which are currently undetermined;
- gastrointestinal events;
- infections;
- muscular and joint pain;

- fatigue; and
- infusion reactions.

Such adverse events and other safety issues, including deaths, were also observed in IMbark and the Phase 2 portion of IMerge. If patients in any potential future clinical trials of imetelstat, including the planned Phase 3 portion of IMerge, experience similar or more severe adverse events, or new or unusual adverse events, or if the FDA or other regulatory authorities determine that efficacy and safety data in current or potential future clinical trials of imetelstat do not support an adequate benefit-risk profile to justify continued treatment of patients, then the FDA or other regulatory authorities may again place the IND for imetelstat on clinical hold, as occurred in March 2014.

Further, clinical trials by their nature examine the effect of a potential therapy in a sample of the potential future patient population. As such, clinical trials conducted with imetelstat, to date and in the future, may not uncover all possible adverse events that patients treated with imetelstat may experience. Because remaining patients in the treatment phase continue to receive imetelstat, in the extension phase of IMbark and in the Phase 2 portion of IMerge, additional or more severe toxicities or safety issues, including additional serious adverse events and dose-limiting toxicities, may be observed as patient treatment continues and more data become available. In addition, since additional data are being generated from the extension phase of IMbark and Part 1 of IMerge, the benefit-risk profile of imetelstat will continue to be assessed, including the risk of hepatotoxicity, severe cytopenias, fatal bleeding with or without any associated thrombocytopenia, patient injury or death, and any other severe adverse effects that may be associated with life-threatening clinical outcomes. If such toxicities or other safety issues in any clinical trial of imetelstat are determined by us, the FDA or any other regulatory authority to result in an unacceptable benefit-risk profile, then:

- additional information supporting the benefit-risk profile of imetelstat may be requested by the FDA or other regulatory authorities and if any such information supplied by Janssen, or by us, following the transition of the imetelstat program to us, is not deemed acceptable, current clinical trials of imetelstat could be suspended, terminated, or placed on clinical hold by the FDA or other regulatory authorities;
- the ability to retain enrolled patients in current clinical trials may be negatively affected, resulting in incomplete data sets and the inability to adequately assess the benefit-risk profile of imetelstat in a specific patient population; or
- additional, unexpected clinical trials or non-clinical studies may be required to be conducted.

The occurrence of any of these events could interrupt, further delay, or halt, any development and potential commercialization of imetelstat by us, which would have a severe adverse effect on our results of operations, financial condition, business prospects and the future of imetelstat, any of which might cause us to cease operations.

Results obtained in prior non-clinical studies and clinical trials do not predict success in later clinical trials. Likewise, preliminary data from clinical trials should be considered carefully and with caution since final data may be materially different from preliminary data, particularly as more patient data become available.*

Success in non-clinical testing and early clinical trials does not ensure that later clinical trials will be successful. We cannot be certain that any of the prior, current or potential future clinical trials of imetelstat will generate sufficient, consistent or adequate efficacy and safety data demonstrating a positive benefit-risk profile, which would be necessary to obtain regulatory approval to market imetelstat in any indication. Product candidates in later stages of clinical trials may fail to show the desired benefit-risk profile despite having progressed through non-clinical studies and initial clinical trials. Other companies in the biopharmaceutical industry have frequently suffered significant setbacks in later clinical trials, even after achieving promising results in earlier non-clinical studies or clinical trials.

Safety and efficacy data from previous or current imetelstat clinical trials in hematologic myeloid malignancies should not be relied upon as predictive or indicative of future clinical trial results. For example, complete and partial remissions observed in the pilot study of imetelstat conducted at Mayo Clinic, or the Pilot Study, suggested potential disease-modifying activity of imetelstat in the MF patient population enrolled in the Pilot Study. However, similar activity was not observed in the MF patients enrolled in IMbark, as shown by the one partial remission observed in the IMbark primary analysis. We believe that differences in the IMbark study design when compared to the Pilot Study design, such as more restrictive patient enrollment criteria requiring either documented objective lack of response to a JAK inhibitor or evidence of progressive disease while on treatment with a JAK inhibitor, may have contributed to the data observed in IMbark differing significantly from data reported from the Pilot Study, but we cannot assure you that any future clinical trials of imetelstat in MF will yield results comparable to IMbark or the Pilot Study. In addition, the potential improvement in survival observed in the 9.4 mg/kg dosing arm in IMbark will need to be further assessed in a Phase 3 clinical trial comparing imetelstat to a control therapy, and similar results, including potential improvement in survival, if any, with respect to any patient population or patient population subgroup, may not be observed.

Similarly, in the Phase 2 portion of IMerge, the initial data review for the expansion cohort that was conducted by Janssen in the second quarter of 2018, which Janssen called a "data snapshot," exhibited 8-week RBC-TI rate of 28%, while the 13-patient initial cohort exhibited 8-week RBC-TI rate of 54% resulting in an overall 8-week RBC-TI rate of 37% for the combined cohorts. We believe the observed difference in 8-week RBC-TI rate between the 13-patient initial cohort and the 25-patient expansion cohort may be attributable to factors such as the maturity of the data at the time of the data snapshot since the median follow-up time of the expansion cohort at the time of the data snapshot was less than half the length of time the 13-patient initial cohort had been followed when their data were first reported, or the higher overall baseline transfusion burden of the expansion cohort, but we cannot assure you that the 8-week RBC-TI rate reported for the combined cohorts in the Phase 2 portion of IMerge will improve with longer follow-up, or at all, or that the 8-week RBC-TI rate of patients to be enrolled in the planned Phase 3 portion of IMerge, if any, will be comparable to what has been reported in the 13-patient initial cohort, the 25-patient expansion cohort, or the combined cohorts. In this regard, because patients remaining in the treatment phase in the Phase 2 portion of IMerge continue to receive imetelstat, data continue to be generated from the trial and more mature data that may be reported from the Phase 2 portion of IMerge in the future may materially differ from data previously reported and continue to evolve until all patients have ceased treatment. Thus, the reported data should be considered carefully and with caution.

Additional or updated safety and efficacy data from current or potential future imetelstat clinical trials may result in a benefit-risk profile that does not justify continued development of imetelstat in a particular patient population, or at all. For example, because patients remaining in the treatment phase continue to receive imetelstat, in the extension phase of IMbark and the Phase 2 portion of IMerge, efficacy and safety data continue to be generated. Such additional data could result in a lower benefit-risk profile than initially expected, which could hinder the commencement, completion and potential success of the planned Phase 3 portion of IMerge, or could cause us to abandon further development of imetelstat entirely. Data from the planned Phase 3 portion of IMerge could materially differ from the overall conclusions reported for the Phase 2 portion of IMerge. In general, Phase 3 clinical trials with larger numbers of patients or longer durations of therapy may fail to replicate efficacy results observed in earlier clinical trials, or may reveal safety concerns that were not identified in smaller or shorter trials, any of which could adversely affect future development prospects of imetelstat.

From time-to-time, safety and efficacy data from previous and current imetelstat clinical trials have been reported or announced by us, clinical investigators or Janssen. For example, preliminary data from the Phase 2 portion of IMerge was presented at the ASH annual meetings in December 2017 and December 2018, and at the EHA annual congress in June 2018. We expect similar reports or announcements of safety and efficacy data from us or clinical investigators as data matures in current imetelstat clinical trials and from potential future clinical trials. Preliminary or interim results may not be reproduced in any potential future clinical trials of imetelstat, and thus should be considered carefully and with caution, and not relied upon as indicative of future clinical results. Material adverse differences in final data, compared to preliminary or interim data, could severely and adversely affect our financial results, business and business prospects, and the future of imetelstat, and might cause us to cease operations.

The research and development of imetelstat is subject to numerous risks and uncertainties.

The science and technology of telomere biology, telomerase and our proprietary oligonucleotide chemistry are relatively new. There is no precedent for the successful commercialization of a therapeutic product candidate based on these technologies. Significant research and development activities will be necessary to further develop imetelstat, which is our sole product candidate, which may take years to accomplish, if at all.

Because of the significant scientific, regulatory and commercial challenges that must be overcome to successfully research, develop and commercialize imetelstat, the development of imetelstat in hematologic myeloid malignancies, including MF and MDS, or any other indications, may be further delayed or abandoned, even after significant resources have been expended on it. Examples of such situations include:

- the discontinuation of our Phase 2 clinical trial of imetelstat in metastatic breast cancer in September 2012;
- the discontinuation of our development of imetelstat in solid tumors with short telomeres in April 2013;
- Janssen's decisions in the third quarter of 2016 to close the 4.7 mg/kg dosing arm in IMbark to new patient enrollment and to suspend enrollment in the 9.4 mg/kg dosing arm in IMbark because an insufficient number of patients in the 9.4 mg/kg dosing arm met the protocol defined interim efficacy criteria at 12 weeks;
- Janssen's decision in the third quarter of 2017 to expand the Phase 2 portion of IMerge to enroll additional lower risk MDS patients in a target patient population; and
- Janssen's decision in September 2018 to terminate the Collaboration Agreement.

Further delay, suspension or abandonment of the development of imetelstat in hematologic myeloid malignancies, including further delays resulting from the termination of the Collaboration Agreement, transition of the imetelstat program from Janssen to us, and our ability to successfully plan for, commence and conduct future clinical trials of imetelstat, including the planned Phase 3 portion of IMerge, could have a material adverse effect on the future of imetelstat and our business prospects, and we might cease operations.

If we encounter difficulties enrolling or retaining patients in current or potential future clinical trials of imetelstat, including in the planned Phase 3 portion of IMerge, clinical development and commercialization activities could be further delayed or otherwise adversely affected, which would cause our business and business prospects to be severely harmed, and we might cease operations.

The timely completion of a clinical trial in accordance with its protocol depends, among other things, on the ability to enroll a sufficient number of patients who remain in the trial until its conclusion. For example, if we experience difficulties in retaining patients in the extension phase of IMbark, our ability to continue to assess overall survival, or OS, would be adversely affected. If we experience difficulties in retaining patients in the Phase 2 portion of IMerge, our ability to continue to assess the durability of RBC-TI responses would be adversely affected. In addition, we may encounter challenges in enrolling and retaining patients in potential future clinical trials of imetelstat, including the planned Phase 3 portion of IMerge, for a variety of reasons. The enrollment and retention of patients depends on many factors, including:

- the patient eligibility criteria specified in the protocol;
- the size of the patient population required for analysis of the trial's primary endpoint;
- the proximity of patients to trial sites;
- the design of the trial;
- our ability to recruit and retain clinical trial investigators with the appropriate competencies and experience, during and after the transition of the imetelstat program from Janssen to us;
- clinicians' and patients' perceptions of the potential advantages of imetelstat, both in relation to other available therapies, including any new drugs that may be approved for the indications being investigated, and as a result of data reported from previous or current clinical trials of imetelstat, and their willingness to participate in clinical trials of imetelstat during and after the transition of the imetelstat program from Janssen to us;
- the ability to obtain and maintain patient consents; and
- the risk that patients enrolled in any imetelstat clinical trial will drop out of the trial before completion due to lack of efficacy, adverse side effects, investigator decision, slow progress to later stage clinical trials, perceptions based on the transition of the imetelstat program from Janssen to us, or personal issues.

In addition, potential future clinical trials of imetelstat, including the planned Phase 3 portion of IMerge, will compete, with other clinical trials for product candidates that are in the same therapeutic areas with imetelstat and such trials may also be conducted at the same clinical sites, and this competition will reduce the number and type of patients available to enroll or remain in the imetelstat clinical trials. Moreover, because imetelstat represents a departure from more commonly used methods for cancer treatment, potential patients and their doctors may be inclined to use conventional therapies, rather than enroll patients into imetelstat clinical trials, or may decide not to enroll, or may not recommend enrollment, in future clinical trials of imetelstat, based on efficacy and safety results reported to date and that may be reported in the future.

Delays in patient enrollment or the inability to retain or treat patients could result in increased costs, lead to incomplete data sets, or adversely affect the timing or outcome of current or potential future clinical trials of imetelstat, including the planned Phase 3 portion of IMerge, which could prevent completion of these trials and adversely affect the clinical development and potential commercialization of imetelstat. Such occurrences would severely and adversely affect our financial results, business and business prospects, and the future of imetelstat, and might cause us to cease operations.

We do not have experience as a company in conducting large-scale, late-stage clinical trials, such as the planned Phase 3 portion of IMerge or potential future similar trials, or in those functional areas that would be required for the successful commercialization of our sole product candidate, imetelstat.

We have no experience in conducting large-scale, late-stage clinical trials, such as the planned Phase 3 portion of IMerge, nor do we have experience with activities that would be required for the commercialization of imetelstat, should we receive future regulatory approval to do so. We cannot be certain that we will be able to design, commence, enroll, conduct or complete the planned

Phase 3 portion of IMerge, or any other future large-scale, late-stage clinical trial of imetelstat, in a timely fashion, or at all. Large-scale, late-stage clinical trials require additional financial resources and certain internal development experience that we are seeking to develop, but do not currently possess, as well as increased reliance on third-party clinical investigators, CROs, service providers, vendors, suppliers and consultants. Relying on these third parties and establishing effective and collaborative relationships with them to conduct large-scale, late-stage clinical trials may cause further delays that are outside of our control. Any such further delays could have a material adverse effect on our business.

We also do not have commercialization capabilities. Developing an internal sales, marketing and distribution capability would be an expensive and time-consuming process, and will require additional management expertise. We may not be able to negotiate and enter into third-party marketing and distribution agreements on terms that are economically attractive, or at all. Even if we do enter into such agreements, third party marketers and distributors may not successfully market or distribute our sole product candidate, imetelstat.

Our inability to successfully conduct large-scale, late-stage clinical trials, such as the planned Phase 3 portion of IMerge or future similar trials, or to successfully establish commercialization capabilities for imetelstat if we receive future regulatory approval to do so, would severely and adversely affect our financial results, business and business prospects, and the future of imetelstat, and might cause us to cease operations.

We will rely on third parties to conduct our current and potential future clinical trials of imetelstat. If these third parties do not successfully carry out their contractual duties or meet expected deadlines, we may be unable to continue the development of, obtain regulatory approval for, or commercialize imetelstat.*

We do not have the ability to independently conduct clinical trials. Therefore, we will rely on medical institutions, clinical investigators, contract laboratories and other third parties, such as CROs, service providers, vendors, suppliers and consultants, to conduct clinical trials of imetelstat. The third parties with whom we contract for execution of our clinical trials will play a critical role in the conduct of these trials and the subsequent collection and analysis of data. However, these third parties are not our employees, and except for contractual duties and obligations, we have limited ability to control their performance, or the amount or timing of resources that they devote to imetelstat. For example, the CRO we have retained to support our clinical development activities will be critical to our development of imetelstat, including the planned Phase 3 portion of IMerge, and any failure by our CRO to perform its contractual obligations, or disputes with our CRO about the quality of its performance or other matters, could cause the anticipated commencement of the planned Phase 3 portion of IMerge to be delayed beyond mid-year 2019 or prevent us from commencing or completing the planned Phase 3 portion of IMerge, or could otherwise further delay or halt our imetelstat development activities. These third parties may also have relationships with other commercial entities, some of which may compete with us. Under certain circumstances, these third parties may terminate their agreements with us without cause and upon immediate written notice.

Although we will rely on third parties to conduct any imetelstat clinical trials, including the planned Phase 3 portion of IMerge, we remain responsible for ensuring that each clinical trial is conducted in accordance with its investigational plan and protocol. Moreover, the FDA and foreign regulatory authorities require us to comply with regulations and standards, including regulations commonly referred to as good clinical practices, or GCPs, for conducting, monitoring, recording and reporting the results of clinical trials to ensure that the data and results are scientifically credible and accurate, and that patients are adequately informed of the potential risks of participating in clinical trials. Our ability to comply with these regulations and standards is contingent upon activities conducted by third parties, and if they fail to perform in accordance with contractual obligations and legal requirements, our development of imetelstat may be interrupted, further delayed or halted, which would have a severe adverse effect on our results of operations, financial condition, business prospects and the future of imetelstat, any of which might cause us to cease operations.

In addition, the execution of clinical trials and the subsequent compilation and analysis of the data produced, requires coordination among various parties. In order for these functions to be carried out effectively and efficiently, it is imperative that these parties communicate and coordinate with one another. If the quality or accuracy of the clinical data obtained, compiled or analyzed by third parties is compromised due to their failure to adhere to our clinical trial protocols or GCPs, or for any other reason, we may need to enter into new arrangements with alternative third parties, which could be difficult, costly or impossible. If third parties conducting our clinical trials do not perform their contractual duties or obligations, experience work stoppages, do not meet expected deadlines, terminate their agreements with us or need to be replaced, our clinical trials may be extended, delayed or terminated, or may be unsuccessful or need to be repeated, which could have a material adverse effect on our business and might cause us to cease operations.

RISKS RELATED TO TRANSITION OF THE IMETELSTAT PROGRAM FROM JANSSEN TO GERON

Encountering delays or difficulties in transitioning the imetelstat program from Janssen to us would prevent us from timely developing imetelstat, or preclude us from developing imetelstat at all, which could severely and adversely affect our financial results, business and business prospects, and might cause us to cease operations.*

Under the terms of the Collaboration Agreement, Janssen is required to provide operational support for the imetelstat program during transition of the program to us. The transition process is expected to occur through September 2019, to enable the orderly transfer of all ongoing clinical, regulatory, medical affairs and non-clinical activities to us, including transfer of the sponsorship of ongoing imetelstat clinical trials from Janssen to us. In addition, although we expect Janssen to supply imetelstat to us until the end of September 2020, they may be unable to do so on a timely basis, or at all. Any such supply will be charged to us at Janssen's cost plus a premium.

Our future clinical development plans for imetelstat substantially depend on the timely and comprehensive transition of the imetelstat program from Janssen to us. Delays in completing the transition activities, failure to obtain the necessary regulatory approvals for the transition in all jurisdictions, failure by us or our contractors to successfully assume all clinical trial responsibilities, or unwillingness by Janssen to fully perform all of the transition activities will further delay or preclude the clinical development of imetelstat, increase our operating costs and thereby negatively impact our financial results, as well as harm imetelstat's future prospects, any of which could severely and adversely affect our business and business prospects, and might cause us to cease operations.

During the transition period, we remain dependent on Janssen for several key operational development areas. Poor or incomplete performance by Janssen in these areas could severely and adversely affect imetelstat's future value and our business and business prospects, and might cause us to cease operations.*

During the transition period, we will remain dependent on Janssen to perform certain activities related to imetelstat, which subjects us to a number of risks, including:

- Janssen may not perform as expected or required by the Collaboration Agreement, and we are not able to control the amount or timing of the resources that Janssen may devote to the transition;
- there may be disputes between us and Janssen that result in the delay of the transition, or the achievement of development, regulatory and commercial objectives, or affect our license to the proprietary rights arising under the Collaboration Agreement, which may result in costly litigation or arbitration that diverts our management's attention and resources;
- the manner and timing in which Janssen effects the transition could adversely impact the development of imetelstat;
- Janssen may not adequately support the timely and orderly transition of clinical trial sites to us;
- failure by Janssen to comply with applicable regulatory guidelines could result in our inability to assume sponsorship responsibility for the IND for imetelstat or to plan for and commence future clinical trials of imetelstat, including the planned Phase 3 portion of IMerge, or could result in administrative or judicially imposed sanctions on us, including warning letters, civil and criminal penalties, injunctions, product seizures or detention, product recalls, total or partial suspension of manufacturing activities, and the potential refusal to approve any new drug applications;
- our ability to transfer and subsequently maintain the IND for imetelstat and to submit required regulatory reports within required timelines may be compromised if Janssen is not fully cooperative in transferring all data and information from the imetelstat program, including IMbark and IMerge, to us;
- business combinations or significant changes in Janssen's business strategy or failure to apply financial and other resources to the transition may also adversely affect Janssen's ability to perform its obligations related to transition of the imetelstat program to us; and
- Janssen may not properly maintain or defend intellectual property rights arising from the Collaboration Agreement, may use our proprietary information in such a way as to cause disputes that could jeopardize or invalidate our proprietary information or expose us to potential litigation, or may disclose our proprietary information in a manner that could put our intellectual property rights at risk.

The occurrence of any of these events could severely and adversely affect imetelstat's future value and our business and business prospects, and might cause us to cease operations.

RISKS RELATED TO REGULATORY APPROVAL AND COMMERCIALIZATION OF IMETELSTAT

Maintaining regulatory clearances and approvals to continue the clinical development of imetelstat, and obtaining future regulatory clearances to potentially market imetelstat, in the United States and other countries, is a costly and lengthy process, and we cannot predict when or if regulatory authorities will permit additional imetelstat development or when or if regulatory authorities will approve imetelstat for commercial sale.

Federal, state and local governments in the United States and governments in other countries have significant regulations in place that govern drug research and development and may prevent us from successfully conducting development efforts or potentially commercializing imetelstat. Delays in obtaining regulatory clearances and approvals or limitations in the scope of such clearances or approvals could:

- impede or halt our clinical development activities and plans;
- significantly harm the commercial potential of imetelstat;
- impose additional development costs;
- diminish any competitive advantages that may have been available to us; or
- further delay or preclude any revenue we may receive from the future commercialization of imetelstat, if any.

Before we can seek to obtain regulatory approval for the commercial sale of imetelstat, multiple clinical trials, including larger-scale Phase 3 clinical trials, will need to be conducted to demonstrate if imetelstat is safe and effective for use in a diverse population. Significant additional research, non-clinical testing and clinical testing is required before we can file any application with the FDA or other regulatory authorities for regulatory approval of imetelstat. As such, we do not expect imetelstat to be commercially available for many years, if at all. Our clinical development program for imetelstat may not lead to regulatory approval from the FDA and similar foreign regulatory authorities if we fail to demonstrate that imetelstat is safe and effective. If imetelstat cannot be developed in potential future clinical trials, including in Phase 3 clinical trials, our business and business prospects would be severely and adversely affected, and we might cease operations. Even if we do successfully complete one or more future clinical trials of imetelstat in hematologic myeloid malignancies, including the planned Phase 3 portion of IMerge, those results are not necessarily predictive of results of future pivotal trials that may be needed before we may submit an NDA to the FDA for the initial or other future indications. We may therefore fail to further develop or commercialize imetelstat.

If our interpretation of safety and efficacy data obtained from non-clinical studies and clinical trials varies from interpretations by the FDA or regulatory authorities in other countries, this would likely further delay, limit or prevent further development and approval of imetelstat. For example, the FDA and regulatory authorities in other countries may require more or different data than what has been generated from our non-clinical studies and previous or ongoing clinical trials, even though protocols for these trials may have been reviewed by FDA and any resulting feedback incorporated. In addition, delays or rejections of regulatory approvals, or limitations in marketing authorizations, may be encountered as a result of changes in the regulatory environment or regulatory policy during the period of product development and/or the period of review of any application for regulatory approval for imetelstat.

The benefit-risk profile of imetelstat will also affect the assessment by the FDA and regulatory authorities in other countries of the drug's cost-effectiveness and/or marketability, which assessment could prevent or limit its approval for marketing and successful commercial use. If regulatory submissions requesting approval to market imetelstat are submitted, the FDA and regulatory authorities in other countries may conclude that the overall benefit-risk profile of imetelstat treatment does not merit approval of imetelstat for marketing or further development for any indication. Any of these events could cause us to halt future development and commercialization of imetelstat, if any, which would severely harm our business and business prospects, and might cause us to cease operations.

Imetelstat must receive all relevant regulatory approvals before it may be marketed in the United States or other countries. Obtaining regulatory approval is a lengthy, expensive and uncertain process. For example, in June 2016, the electorate in the United Kingdom voted in favor of exiting the European Union, and in March 2017, the Government of the United Kingdom initiated the formal procedure of withdrawal from the European Union. Although the impact of the withdrawal of the United Kingdom from the European Union will not be known for some time, this could lead to a period of considerable uncertainty in relation to the regulatory process in Europe, which could result in a delay in the review of regulatory submissions made in Europe by biotechnology and pharmaceutical companies, including potentially by us in the future, and could also lead to less efficient, more expensive, and potentially lengthier regulatory review processes for companies like us, who may seek to obtain regulatory approval for drug products in the European Union or the United Kingdom. Such changes could adversely affect and/or delay our ability to obtain approval of, and market and sell, imetelstat in the United States. In addition, because imetelstat involves the application of new technologies and a new

therapeutic approach, it may be subject to substantial additional review by various government regulatory authorities, and, as a result, the process of obtaining regulatory approvals for imetelstat may proceed more slowly than for product candidates based upon more conventional technologies, and any approval that may be received could limit the use of imetelstat. We do not expect imetelstat to be approved for commercial sale for many years, if at all.

Even if the necessary time and resources are committed by us, the required regulatory clearances and approvals may not be obtained for imetelstat. Further, if regulatory clearances and approvals are obtained to commence commercial sales of imetelstat, they may impose significant limitations on the indicated uses or other aspects of the product label for which imetelstat can be marketed. An approval might also be contingent on the performance of costly additional post-marketing clinical trials. Any failure to advance imetelstat to subsequent clinical trials, failure to obtain regulatory approval of imetelstat, or limitations on any regulatory approval that we might receive, could reduce the potential commercial use of imetelstat, and potential market demand for imetelstat and therefore result in decreased revenue for us from any commercialization of imetelstat, any of which would severely and adversely affect our financial results, business and business prospects, and the future of imetelstat, and might cause us to cease operations.

Although orphan drug designation has been granted to imetelstat for the treatment of MF and MDS, these designations may not be maintained, which would eliminate the benefits associated with orphan drug designation, including the potential for market exclusivity, which would likely result in decreased sales revenue from commercialization of imetelstat, if any, and would likely harm our business and business prospects.

The FDA granted orphan drug designation to imetelstat in June 2015 for the treatment of MF and for the treatment of MDS in December 2015, and the European Medicines Agency, or EMA, granted it in December 2015 for the treatment of MF. The designation of imetelstat as an orphan drug does not guarantee that any regulatory authority will accelerate regulatory review of, or ultimately approve, imetelstat, nor does it limit the ability of any regulatory authority to grant orphan drug designation to product candidates of other companies that treat the same indications as imetelstat prior to imetelstat receiving any exclusive marketing approval.

We may lose orphan drug exclusivity if the FDA or EMA determines that the request for orphan drug designation was materially defective or if we cannot ensure sufficient quantities of imetelstat to meet the needs of patients with MF or MDS.

Even if we maintain orphan drug exclusivity for imetelstat, the exclusivity may not effectively protect imetelstat from competition because different drugs with different active moieties can be approved for the same condition. Even after an orphan drug product is approved, the FDA or EMA can subsequently approve a different drug with the same active moiety for the same condition, if the FDA or EMA concludes that the later drug is safer, more effective, or makes a major contribution to patient care. The occurrence of any of these events could result in decreased sales of imetelstat, should it ever receive marketing approval, and may harm our business and business prospects. In addition, orphan drug designation will neither shorten the development time nor regulatory review time for imetelstat, and does not give imetelstat any advantage in the regulatory review or approval process.

A Fast Track designation by the FDA, such as the Fast Track designation received for imetelstat, does not guarantee approval and may not lead to a faster development, regulatory review or approval process.

In October 2017, the FDA granted fast track designation for the imetelstat clinical development program for the treatment of adult patients with transfusion-dependent anemia due to Low or Intermediate-1 risk MDS who are non-del(5q) and who are refractory or resistant to treatment with an erythropoiesis stimulating agent. Fast track designation provides opportunities for frequent interactions with FDA review staff, as well as eligibility for priority review, if relevant criteria are met, and rolling review. Fast track designation is intended to facilitate and expedite development and review of a New Drug Application to address unmet medical needs in the treatment of serious or life-threatening conditions. However, fast track designation does not accelerate conduct of clinical trials or mean that the regulatory requirements are less stringent, nor does it ensure that imetelstat will receive marketing approval or that approval will be granted within any particular timeframe. In addition, the FDA may withdraw fast track designation if it believes that the designation is no longer supported by data emerging from the imetelstat clinical development program.

Failure to achieve continued compliance with government regulations could delay or halt potential commercialization of imetelstat.

Approved products and their manufacturers are subject to continual review, and discovery of previously unknown problems with a product or its manufacturer may result in restrictions on the product or manufacturer, including import restrictions, seizure and withdrawal of the product from the market. If approved for commercial sale, future sales of imetelstat will be subject to government regulation related to numerous matters, including the processes of:

- manufacturing;
- advertising and promoting;
- selling and marketing;
- labeling; and
- distribution.

If, and to the extent that, we are unable to comply with these regulations, our ability to earn potential revenue from the commercialization of imetelstat, if any, would be materially and adversely impacted.

Failure to comply with regulatory requirements can result in severe civil and criminal penalties, including but not limited to:

- recall or seizure of products;
- injunctions against the import, manufacture, distribution, sales and/or marketing of products; and
- criminal prosecution.

The imposition of any of these penalties or other commercial limitations would severely and adversely affect our financial results, business and business prospects, and the future of imetelstat, and might cause us to cease operations.

RISKS RELATED TO MANUFACTURING IMETELSTAT

Failure by Janssen to manufacture or provide adequate clinical quantities of imetelstat on a timely basis, or at all, for the period required by the Collaboration Agreement, or our failure to establish a manufacturing supply chain to appropriately and adequately supply imetelstat for future clinical and commercial uses, would result in a further delay in or cessation of clinical trials and a further delay in or our inability to obtain regulatory approvals of imetelstat, and our business and business prospects could be severely harmed, and we could cease operations.

Pursuant to the Collaboration Agreement, Janssen is required to supply imetelstat to us until September 28, 2020 while we are planning to re-establish our own manufacturing supply chain. Consequently, we will remain dependent on Janssen to appropriately supply imetelstat and other clinical trial materials until such date or when we re-establish our own manufacturing supply chain. Thereafter, we will be responsible for the manufacture and supply of imetelstat for future clinical and commercial uses. The process of manufacturing imetelstat is complex and subject to several risks, including:

- the ability to scale-up and attain sufficient production yields with appropriate quality control and quality assurance;
- reliance on third-party manufacturers and suppliers;
- supply chain issues, including the timely availability and shelf life requirements of raw materials and other supplies;
- shortage of qualified personnel; and
- compliance with regulatory requirements, which are less well-defined for oligonucleotide products than for small molecule drugs and vary in each country where imetelstat might be sold or used.

As a result of these and other risks, Janssen may not perform as agreed or may default in its obligations to supply clinical quantities of imetelstat for the period of time required by the Collaboration Agreement, or may fail to deliver the required quantities of imetelstat on a timely basis, or at required or applicable quality standards, which would result in a further delay or cessation of current and potential future clinical trials and otherwise significantly further delay our ability to develop imetelstat, which would severely and adversely affect our business and business prospects, and might cause us to cease operations. In addition, our inability to establish a manufacturing supply chain capable of providing imetelstat for clinical trials and potential future commercial uses, following the termination of Janssen's obligation to supply us with imetelstat, would further delay or result in a cessation of potential future clinical

trials and would further delay or preclude any applications for regulatory approval and therefore further delay or preclude our ability to earn revenue from the commercialization, if any, of imetelstat, which would severely and adversely affect our financial results, business and business prospects, and might cause us to cease operations.

If third parties that manufacture imetelstat fail to perform as needed, then the clinical and commercial supply of imetelstat will be limited, and we may be unable to conduct future clinical trials of imetelstat, including the planned Phase 3 portion of IMerge, or to commercialize imetelstat in the future.

Following the termination of Janssen's obligation to supply us with imetelstat, we expect to rely solely upon third-party contractors to perform certain process development or other technical and scientific work with respect to imetelstat, as well as to supply starting materials and manufacture drug substance and drug product. We currently have no arrangements with third parties for the manufacture of imetelstat, and the establishment of such arrangements could further delay, perhaps substantially, or preclude our ability to pursue imetelstat development on our own, increase our costs and otherwise negatively affect our financial results, business and business prospects. We may not be able to obtain third-party manufacturers for imetelstat on acceptable terms, or at all. We expect to rely on third-party contractors to produce and deliver sufficient quantities of imetelstat and other materials to support clinical trials on a timely basis and to comply with applicable regulatory requirements. We will not have direct control over these third-party personnel or operations. Reliance on these third-party manufacturers is subject to numerous risks, including:

- being unable to identify suitable third-party manufacturers, because the number of potential manufacturers is limited;
- regulatory authorities may require significant activities to validate and qualify any replacement manufacturer, which could involve new testing and compliance inspections;
- being unable to contract with third-party manufacturers on acceptable terms, or at all;
- the inability of third-party manufacturers to timely formulate and manufacture imetelstat or to produce imetelstat in the quantities or of the quality required to meet clinical and commercial needs;
- decisions by third-party manufacturers to exit the contract manufacturing business during the time required to supply clinical trials or to successfully produce, store and distribute products;
- compliance by third-party manufacturers with current Good Manufacturing Practice, or cGMP, standards mandated by the FDA and state agencies and other government regulations corresponding to foreign regulatory authorities;
- breach or termination of manufacturing contracts;
- inadequate storage at contracted facilities resulting in theft or spoilage;
- capacity limitation and scheduling imetelstat manufacturing activities as a priority in contracted facilities; and
- natural disasters that affect contracted facilities.

Each of these risks could lead to delays or shortages in drug supply, or the inability to manufacture drug supply necessary for non-clinical and clinical activities, and commercialization. For example, manufacturing delays could adversely impact the completion of current clinical trials, such as the extension phase of IMbark and the Phase 2 portion of IMerge, or the commencement of potential future clinical trials, including the planned Phase 3 portion of IMerge, which could severely and adversely affect our financial results, business and business prospects, and the future of imetelstat, and might cause us to cease operations.

In addition, third-party contractors and/or any other contractors may need to make substantial investments to enable sufficient capacity increases and cost reductions, and to implement those regulatory and compliance standards necessary for successful Phase 3 clinical trials and commercial production of imetelstat. These third-party contractors may not be willing or able to achieve such capacity increases, cost reductions, or regulatory and compliance standards, and even if they do, such achievements may not be at commercially reasonable costs. Changing manufacturers may be prolonged and difficult due to inherent technical complexities and because the number of potential manufacturers is limited. It may be difficult or impossible for us to find a replacement manufacturer on acceptable terms, or at all.

It may not be possible to manufacture imetelstat at costs or scales necessary to conduct clinical trials or potential future commercialization activities.

Oligonucleotides are relatively large molecules produced using complex chemistry, and the cost of manufacturing an oligonucleotide like imetelstat is greater than the cost of making typical small molecule drugs. Therefore, imetelstat for clinical use is more expensive to manufacture than most other treatments currently available today or that may be available in the future. Similarly,

the cost of manufacturing imetelstat for commercial use will need to be significantly lower than current costs in order for imetelstat to become a commercially successful product. We may not be able to achieve sufficient scale increases or cost reductions necessary for successful commercial production of imetelstat. Failure to achieve necessary cost reductions could result in decreased sales, if any, for us, which would materially and adversely affect our financial results, business and business prospects, and the future of imetelstat, and might cause us to cease operations.

RISKS RELATED TO MANAGING OUR GROWTH AND OTHER BUSINESS OPERATIONS

We may be unable to successfully retain or recruit key personnel to support the development and potential future commercialization of imetelstat or to otherwise successfully manage our growth.

Our ability to successfully develop imetelstat in the future and to potentially commercialize imetelstat depends to a significant extent on the skills, experience and efforts of our executive officers and key members of our staff. In addition, we will need to hire a number of senior personnel to re-staff our internal drug development group, as well as to contract with subject matter experts in clinical science, biostatistics, clinical operations, pharmacovigilance, quality systems, manufacturing and regulatory affairs, to enable us to further develop and potentially commercialize imetelstat.

We face intense competition for qualified individuals from numerous pharmaceutical, biopharmaceutical and biotechnology companies, as well as academic and other research institutions, and competition in our geographic region is particularly intense. Termination of the Collaboration Agreement by Janssen, as well as the previous restructurings we implemented, and the uncertainties regarding our future business viability could have an adverse impact on our ability to retain and recruit qualified personnel or we may incur unanticipated inefficiencies caused by our reduced personnel resources. We may also face higher than expected personnel costs in order to attract new management or development personnel, or to maintain our current executive officers and staff. If we are unable to successfully retain, motivate and incentivize our existing personnel, or to attract, assimilate and retain other highly qualified management and senior development personnel in the future on acceptable terms, our ability to further develop imetelstat will be impaired, and our business and the price of our common stock would be adversely impacted.

As our operations potentially expand, we expect that we will need to manage new and additional relationships with various service providers, vendors, suppliers and other third parties, as well as additional office locations, for example, our planned office in northern New Jersey. Such potential growth and expansion will require members of our management to assume significant added responsibilities. Our performance in managing any such future growth, if ineffective, could negatively impact our business prospects. We may not successfully manage our anticipated imetelstat development efforts and potential future imetelstat clinical trials, including the planned Phase 3 portion of IMerge, effectively. If we fail to achieve key development goals, our abilities to grow as a company, and to further develop and commercialize imetelstat, could be prevented or hindered, and our business and business prospects would be severely harmed, which might cause us to cease operations.

We expect imetelstat to remain our sole product candidate for the foreseeable future. If we are unable to successfully develop or commercialize imetelstat, our business and business prospects would be severely harmed, which might cause us to cease operations.

We plan to focus our efforts on the further development of imetelstat in hematologic myeloid malignancies. Accordingly, we do not currently have any plans to engage in any efforts to discover new product candidates or to seek to acquire and/or in-license other oncology products, product candidates, programs or companies in order to diversify our business. Since we do not currently have a discovery function or capabilities, and do not plan to establish such capabilities or to seek to diversify our product candidate portfolio through acquisition and/or in-licensing activity, we will be wholly reliant upon the development of imetelstat, our sole product candidate, for the foreseeable future. If we are unable to successfully develop and commercialize imetelstat, our business and business prospects would be severely harmed, which might cause us to cease operations.

If we are unable to establish potential future collaborative arrangements for imetelstat, we may have to delay, alter or abandon our imetelstat development and commercialization plans.

We intend to develop imetelstat broadly for hematologic malignancies, and to potentially commercialize, market and sell imetelstat by ourselves in the United States. We plan to seek another collaborative partner or partners, at an appropriate time, to assist us in the potential development and commercialization of imetelstat outside the United States, and to provide funding for such activities. We face significant competition in seeking appropriate collaborative partners, and these potential collaborative arrangements are complex and time consuming to negotiate, document and implement. We may not be able to negotiate collaborative arrangements on acceptable terms, or at all. In this regard, collaborative arrangements with third parties may require us to relinquish material rights, including revenue from potential commercialization, on terms that are less attractive than under the Collaboration

Agreement we had with Janssen, or to assume material ongoing development obligations that we would have to fund or otherwise support.

In any event, we are unable to predict when, if ever, we will enter into any collaborative arrangements because of the numerous risks and uncertainties associated with establishing collaborative arrangements. Moreover, as a result of the termination of the Collaboration Agreement and the significant uncertainty regarding the future imetelstat development program, potential collaborative partners may be less willing to enter into new collaborative arrangements with us, or may only be willing to do so on terms that are not favorable to us. As a result, we may not be successful in finding a new collaborative partner or partners on favorable terms, if at all. If we are unable to negotiate collaborative arrangements, we may have to:

- curtail the development of imetelstat,
- further delay, alter or abandon the imetelstat development program,
- further delay or abandon its potential commercialization,
- reduce the scope of potential future sales or marketing activities, or
- increase our expenditures and undertake development or commercialization activities at our own expense, which will require substantial additional capital than our current resources.

In order to advance the imetelstat program, including completing the planned Phase 3 portion of IMerge and potential clinical trials in other indications, as well as potential commercialization activities in the United States, we will need to raise substantial additional capital. In addition, if we elect to increase our expenditures to fund imetelstat development or commercialization activities outside the United States on our own, we will be required to substantially increase our personnel resources and we will need to obtain substantial further capital, which may not be available to us on acceptable terms, or at all. If we do not have sufficient funds, we will not be able to advance the imetelstat program, including completing the planned Phase 3 portion of IMerge or clinical trials in other indications, or to bring imetelstat to market and generate product revenues. Establishing the infrastructure necessary to further develop, commercialize, market and sell imetelstat worldwide will require substantial resources and may divert the attention of our management and key personnel and negatively impact our imetelstat development or commercialization efforts in the United States.

We currently have no products approved for commercial sale and we have not yet demonstrated an ability to obtain marketing approvals for any product candidates, which makes it difficult to assess our future viability.

We have never derived any revenue from the sales of any products. Our operations to date have been limited to organizing and staffing our company, acquiring, developing and securing our technology, undertaking non-clinical studies and early stage clinical trials of imetelstat and past product candidates that we have subsequently discontinued, and engaging in research and development under collaboration agreements. We have not yet demonstrated an ability to obtain regulatory approvals, formulate and manufacture commercial-scale products, or conduct sales and marketing activities necessary for successful product commercialization. Consequently, for these and other reasons discussed elsewhere in these risk factors, it is difficult to predict our future success and the viability of our business and the imetelstat program.

We may not be able to obtain or maintain sufficient insurance on commercially reasonable terms or with adequate coverage against potential liabilities in order to protect ourselves against product liability claims or claims related to clinical trial conduct.

Our business exposes us to potential product liability and other risks that are inherent in the testing, manufacturing and marketing of human therapeutic and diagnostic products. We may become subject to product liability claims or claims related to clinical trial conduct if the use of imetelstat is alleged to have injured patients, including any injuries alleged to arise from any hepatotoxicity or hemorrhagic event associated with the use of imetelstat. We currently have limited clinical trial liability insurance, and we may not be able to maintain this type of insurance for any clinical trials, including the planned Phase 3 portion of IMerge, or this type of insurance may become too expensive for us to afford because of the highly risky and uncertain nature of clinical trials generally and the high cost of insurance for our business activities. In addition, business liability and product liability insurance are becoming increasingly expensive, particularly for biotechnology and pharmaceutical companies, and the pool of insurers offering insurance coverage to biotechnology and pharmaceutical companies generally is becoming smaller, making it more difficult to obtain insurance for our business activities at a reasonable price, or at all. Being unable to obtain or maintain product liability, clinical trial liability, or other insurance for our business activities in the future on acceptable terms or with adequate coverage against potential liabilities could have a material adverse effect on our business.

We have been, and may in the future be, involved in securities-related legal actions that are expensive and time consuming. Any securities-related legal actions, if resolved adversely, could harm our business, financial condition, or results of operations.

Securities-related class action lawsuits and/or derivative lawsuits have often been brought against companies, including biotechnology and biopharmaceutical companies, that experience volatility in the market price of their securities. This risk is especially relevant for us because we often experience significant stock price volatility in connection with our product development activities.

We and certain of our officers were named as defendants in two purported class action securities lawsuits filed in the United States District Court for the Northern District of California, or the California District Court, as well as a third securities lawsuit, not styled as a class action, which was transferred to the California District Court. These three cases, or the Class Action Lawsuits, were consolidated for all purposes and settled in July 2017. In connection with the settlement, in April 2017, we paid $250,000 and our insurance providers paid $6.0 million to a settlement escrow account to be paid to members of the settlement class, less payment of attorneys' fees and costs to plaintiff's counsel.

The termination of the Collaboration Agreement could also result in litigation arising out of any claims that our stockholders suffered financial losses. The market price of our common stock declined significantly after the announcement on September 27, 2018 of the termination of the Collaboration Agreement, and certain stockholders experienced significant financial losses. Therefore, it is possible that lawsuits will be filed naming us and/or our officers and directors as defendants with respect to the termination of the Collaboration Agreement by Janssen or other matters related to the Collaboration Agreement, future clinical trials of imetelstat, if any, including the planned Phase 3 portion of IMerge, or other business activities. Monitoring, initiating and defending against legal actions is time-consuming for our management, is likely to be expensive and may detract from our ability to fully focus our internal resources on our business activities. We could be forced to expend significant resources in the settlement or defense of any potential future lawsuits, and we may not prevail in such lawsuits. Additionally, we may not be successful in having any such lawsuit dismissed or settled within the limits of our insurance coverage.

We have not established any reserve for any potential liability relating to any lawsuits. It is possible that we could, in the future, incur judgments or enter into settlements of claims for monetary damages. A decision adverse to our interests in any such lawsuit, or in similar or related litigation, could result in the payment of substantial damages, or possibly fines, and could have a material adverse effect on our business, our stock price, cash flow, results of operations and financial condition.

We may be subject to third-party litigation, and such litigation would be costly to defend or pursue and uncertain in its outcome.

Our business may bring us into conflict with our licensees, licensors, or others with whom we have contractual or other business relationships, or with our competitors or others whose interests differ from ours. We may experience employment-related disputes as we seek to expand our personnel resources. If we are unable to resolve those conflicts on terms that are satisfactory to all parties, we may become involved in litigation brought by or against us.

We may face litigation with Janssen arising from or related to the Collaboration Agreement and Janssen's termination of it. Possible disagreements with Janssen could include disagreements regarding the transition of the imetelstat program from Janssen back to us, or the ownership or use of proprietary rights arising from the work performed by Janssen under the Collaboration Agreement. We may become involved in performance or other disputes with the CRO we have retained to support our imetelstat clinical development activities, or with other third parties such as service providers, vendors, suppliers or consultants, which could result in a further delay or cessation of current and potential future clinical trials and otherwise significantly further delay our ability to develop imetelstat.

Lawsuits are subject to inherent uncertainties, and defense and disposition costs depend upon many unknown factors. Despite the availability of insurance, we may incur substantial legal fees and costs in connection with litigation. Lawsuits could result in judgments against us that require us to pay damages, enjoin us from certain activities, or otherwise negatively affect our legal or contractual rights, which could have a significant adverse effect on our business. In addition, the inherent uncertainty of such litigation could lead to increased volatility in our stock price and a decrease in the value of our stockholders' investment in our common stock.

RISKS RELATED TO PROTECTING OUR INTELLECTUAL PROPERTY

Our success and the success of our planned future development of imetelstat will depend on our ability to protect our technologies and imetelstat through patents and other intellectual property rights.

Protection of our proprietary technology is critically important to our business. Our success will depend in part on our ability to obtain, maintain, enforce and extend our patents and maintain trade secrets, both in the United States and in other countries. Our patents may be challenged, invalidated or circumvented, and our patent rights may not provide proprietary protection or competitive advantages to us. In the event that we are unsuccessful in obtaining, maintaining, and enforcing our patents and other intellectual property rights or having our licensors maintain the intellectual property rights we have licensed, the value of our technologies and imetelstat will be adversely affected, and we may not be able to further develop or potentially commercialize imetelstat. Loss or impairment of our intellectual property related to imetelstat might further delay or halt ongoing or potential future clinical trials of imetelstat and any applications for regulatory approval, and therefore further delay or preclude any future development or commercialization of imetelstat by us. Further, if imetelstat is approved for commercial sale, such events could impair our ability to sell imetelstat and therefore result in decreased sales for us. Occurrence of any of these events would materially and adversely affect our financial results, business and business prospects, and the future of imetelstat, and might cause us to cease operations.

Changes in U.S. or foreign patent law or interpretations of such patent laws could diminish the value of our patents in general, thereby impairing our ability to protect our technologies and imetelstat.

The patent positions of pharmaceutical and biopharmaceutical companies, including ours, are highly uncertain and involve complex legal and technical questions. In particular, legal principles for biotechnology and pharmaceutical patents in the United States and in other countries are evolving, and the extent to which we will be able to obtain patent coverage to protect our technologies and imetelstat, or enforce or defend issued patents, is uncertain.

Since the publication of discoveries in scientific or patent literature tends to lag behind actual discoveries by at least several months and sometimes several years, the persons or entities that we name as inventors in our patents and patent applications may not have been the first to invent the inventions disclosed in the patent applications or patents, or the first to file patent applications for these inventions. As a result, we may not be able to obtain patents for discoveries that we otherwise would consider patentable and that we consider to be extremely significant to the future success of imetelstat. Thus, our ability to protect our patentable intellectual property depends, in part, on our ability to be the first to file patent applications with respect to our inventions or inventions that were developed by Janssen under the Collaboration Agreement and to which we have an exclusive license for the future development, commercialization and manufacture of imetelstat. Delay in the filing of a patent application for any purpose, including further development or refinement of an invention, may result in the risk of loss of patent rights.

A number of significant changes to U.S. patent law occurred when the Leahy-Smith America Invents Act, or the AIA, was signed into law on September 16, 2011. These include provisions that affect the way patent applications are examined and may affect patent litigation. Many of the substantive changes to patent law associated with the AIA, and in particular, the first to file provisions, became effective on March 16, 2013. For example, the AIA limits where a patentee may file a patent infringement suit. The AIA 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.

U.S. court rulings have narrowed the scope of patent protection available in certain circumstances and weakened the rights of patent owners in certain situations. For example, on June 13, 2013, the U.S. Supreme Court, or the Court, issued a decision in *Association for Molecular Pathology v. Myriad Genetics, Inc.* holding that claims to isolated genomic DNA were not patentable subject matter, but claims to complementary DNA, or cDNA, molecules were patentable subject matter. On March 20, 2012, in *Mayo Collaborative Services, DBA Mayo Medical Laboratories, et al. v. Prometheus Laboratories, Inc.*, the Court held that several claims drawn to measuring drug metabolite levels from patient samples and correlating them to drug doses were not patentable subject matter. In addition, court rulings in cases such as *BRCA1- & BRCA2-Based Hereditary Cancer Test Patent Litig*. and *Promega Corp. v. Life Technologies Corp.* have also narrowed the scope of patent protection available in certain circumstances. In addition to increasing uncertainty with regard to our ability to obtain patents in the future, this combination of events may have created uncertainty with respect to the value of certain patents we have previously obtained or in-licensed.

In addition, in June 2016, the electorate of the United Kingdom voted to exit the European Union, and in March 2017 the Government of the United Kingdom initiated the formal procedure of withdrawal from the European Union. While the exit of the United Kingdom from the European Union is planned, the exact timing of the withdrawal and the resulting effect of withdrawal will not be known for some time, which could lead to a period of considerable uncertainty relating to our ability to obtain and maintain Supplementary Protection Certificates of imetelstat based on our United Kingdom patents and our ability to establish and maintain European trademarks in the United Kingdom.

In 2012, the European Union Patent Package, or EU Patent Package, regulations were passed with the goal of providing for a single pan-European Unity Patent, or UP, and a new European Unified Patent Court, or UPC, for litigation of European patents. Once established, the UPC would have jurisdiction over traditional European patents and new UPs in the United Kingdom and all Contracting Member States of the European Union. However, political activity in the United Kingdom and a legal challenge in Germany has delayed ratification of the EU Patent Package in these countries. There have been many delays in the implementation of the EU Patent Package, and further delays may occur. When the EU Patent Package is ratified and in effect, all European patents, including those issued prior to ratification, would by default automatically fall under the jurisdiction of the UPC and allow for the possibility of obtaining pan-European injunctions. Under the EU Patent Package as currently proposed, once the UPC is established, patent holders are permitted to "opt out" of the UPC on a patent-by-patent basis, although the time permitted for this opt-out is not yet known. Owners of traditional European Patent applications who receive notice of grant after the EU Patent Package is ratified could validate the patent nationally, and file an opt-out demand. The EU Patent Package may increase the uncertainties and costs surrounding the enforcement or defense of our issued European patents. The full impact on future European patent filing strategy and the enforcement or defense of our issued European patents in member states and/or the UPC is not known.

Depending on decisions by the U.S. federal courts, the U.S. Patent and Trademark Office, or the Patent Office, and similar authorities in foreign jurisdictions, the interpretation of laws and regulations governing patents could change in unpredictable ways that would weaken our ability to obtain new patents or to enforce our existing patents. Occurrence of these events and/or significant impairment of our imetelstat patent rights would severely and adversely affect our financial results, business and business prospects, and the future of imetelstat, which might cause us to cease operations.

Challenges to our owned or licensed patent rights would result in costly and time-consuming legal proceedings that could prevent or limit development of imetelstat.

Our patents or those patent rights we have licensed, including patent rights that we may seek with respect to inventions made by Janssen under the Collaboration Agreement, may be challenged through administrative or judicial proceedings, which could result in the loss of important patent rights. For example, where more than one party seeks U.S. patent protection for the same technology, the Patent Office may declare an interference proceeding in order to ascertain the party to which the patent should be issued. Patent interferences are typically complex, highly contested legal proceedings, subject to appeal. They are usually expensive and prolonged, and can cause significant delay in the issuance of patents. Our pending patent applications or our issued patents, or those we have licensed and may license from others, including Janssen, may be drawn into interference proceedings or be challenged through post-grant review procedures or litigation, any of which could delay or prevent the issuance of patents, or result in the loss of issued patent rights.

Under the AIA, interference proceedings between patent applications filed on or after March 16, 2013 have been replaced with other types of proceedings, including derivation proceedings. The AIA also includes post-grant review procedures subjecting U.S. patents to post-grant review procedures similar to European oppositions, such as *inter partes* review, or IPR, covered business method post-grant reviews and other post-grant reviews. This applies to all of our U.S. patents and those we have licensed and may license from others, including Janssen, even those issued before March 16, 2013. Because of a lower evidentiary standard necessary to invalidate a patent claim in Patent Office proceedings compared to the evidentiary standard in U.S. federal court, a third party could potentially provide evidence in a Patent Office proceeding sufficient for the Patent Office 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 could attempt to use the Patent Office procedures to invalidate patent claims that would not have been invalidated if first challenged by the third party as a defendant in a district court action. U.S. patents owned or licensed by us may therefore be subject to post-grant review procedures, as well as other forms of review and re-examination. In addition, the IPR process under the AIA permits any person, whether they are accused of infringing the patent at issue or not, to challenge the validity of certain patents. As a result, entities associated with hedge funds have challenged valuable pharmaceutical patents through the IPR process. Significant impairment of our imetelstat patent rights would severely and adversely affect our financial results, business and business prospects, and the future of imetelstat, which might cause us to cease operations.

Certain jurisdictions, such as Europe, New Zealand and Australia, permit oppositions to be filed against granted patents or patents proposed to be granted. Because we may in the future seek to commercialize imetelstat internationally, securing both proprietary protection and freedom to operate outside of the United States is important to our business. Opposition proceedings require significant time and costs, and if we are unsuccessful or are unable to commit these types of resources to protect our imetelstat patent rights, we could lose our patent rights and we could be prevented or limited in the development and commercialization of imetelstat.

As more groups become engaged in scientific research and product development in the areas of telomerase biology and hematologic malignancies, the risk of our patents, or patents that we have in-licensed, being challenged through patent interferences, derivation proceedings, IPRs, post-grant proceedings, oppositions, re-examinations, litigation or other means will likely increase. For

example, litigation may arise as a result of our decision to enforce our patent rights against third parties. Challenges to our patents through these procedures would be extremely expensive and time-consuming, even if the outcome was favorable to us. An adverse outcome in a patent dispute could severely harm our ability to further develop or commercialize imetelstat, or could otherwise have a material adverse effect on our business, and might cause us to cease operations, by:

- causing us to lose patent rights in the relevant jurisdiction(s);
- subjecting us to litigation, or otherwise preventing us from commercializing imetelstat in the relevant jurisdiction(s);
- requiring us to obtain licenses to the disputed patents;
- forcing us to cease using the disputed technology; or
- requiring us to develop or obtain alternative technologies.

We may be subject to infringement claims that are costly to defend, and such claims may limit our ability to use disputed technologies and prevent us from pursuing research, development, manufacturing or commercialization of imetelstat.

The commercial success of imetelstat will depend upon our ability to research, develop, manufacture, market and sell imetelstat without infringing or otherwise violating the intellectual property and other proprietary rights of third parties. There is considerable intellectual property litigation in the biotechnology and pharmaceutical industries, and many pharmaceutical companies, including potential competitors, have substantial patent portfolios. In the event our technologies infringe the rights of others or require the use of discoveries and technologies controlled by third parties, we may be prevented from pursuing research, development, manufacturing or commercialization of imetelstat, or may be required to obtain licenses to those patents or other proprietary rights or develop or obtain alternative technologies. For example, we are aware that certain third parties have or may be prosecuting patents and patent estates that may relate to imetelstat, and while we believe these patents will expire before imetelstat is able to be commercialized and/or that these patents are invalid and/or would not be infringed by the manufacture, use or sale of imetelstat, it is possible that the owner(s) of these patents will assert claims against us in the future. If that were to occur, we would need to obtain unblocking licenses from such third parties, develop alternative non-infringing technologies, which we may not be able to do at an acceptable cost or on acceptable terms, or at all, or cease the development of imetelstat. In addition, while Janssen has terminated the Collaboration Agreement, we are still subject to indemnification obligations to Janssen under the Collaboration Agreement, including with respect to claims of third party patent infringement.

Since we cannot be aware of all intellectual property rights potentially relating to imetelstat and its uses, we do not know with certainty that imetelstat, or the intended commercialization thereof, does not and will not infringe or otherwise violate any third party's intellectual property. Any infringement claims against us would likely be expensive to resolve, and the cost of any unblocking license that we could be required to obtain is unpredictable and could be significant. If we are unable to resolve an infringement claim successfully, we could be subject to an injunction that would prevent us from potentially commercializing imetelstat and could also require us to pay substantial damages. In addition to infringement claims, in the future we may also be subject to other claims relating to intellectual property, such as claims that we have misappropriated the trade secrets of third parties. Provided that we are successful in continuing the development of imetelstat, we expect to see more efforts by others to obtain patents that are positioned to cover imetelstat. Our success therefore depends significantly on our ability to operate without infringing patents and the proprietary rights of others.

We may become aware of discoveries and technologies controlled by third parties that are advantageous or necessary to further develop or manufacture imetelstat. For example, as we transition the imetelstat program from Janssen to us, we may learn of changes to the imetelstat manufacturing process made by Janssen which would require us to obtain licenses to third party intellectual property rights. Under such circumstances, we may initiate negotiations for licenses to other technologies as the need or opportunity arises. We may not be able to obtain a license to a technology required to pursue the research, development, manufacture or commercialization of imetelstat on commercially favorable terms, or at all, or such licenses may be terminated on certain grounds, including as a result of our failure to comply with the obligations under such licenses. If we do not obtain a necessary license or if such a license is terminated, we may need to redesign such technologies or obtain rights to alternative technologies, which may not be possible, and even if possible, could cause further delays in the development efforts for imetelstat and could increase the development and/or production costs of imetelstat. In cases where we are unable to license necessary technologies, we could be subject to litigation and prevented from pursuing research, development, manufacturing or commercialization of imetelstat, which would materially and adversely impact our business. Failure by us to obtain rights to alternative technologies or a license to any technology that may be required to pursue research, development, manufacturing or commercialization of imetelstat would further delay potential future clinical trials of imetelstat and any applications for regulatory approval, impair our ability to sell imetelstat and therefore result in decreased sales of imetelstat for us. Occurrence of any of these events would materially and adversely affect our business, and might cause us to cease operations.

We may become involved in disputes with past or future collaborator(s), including Janssen, over intellectual property inventorship, ownership or use, and publications by us, or by investigators, scientific consultants, research collaborators or others could impair our ability to obtain patent protection or protect our proprietary information, which, in either case, could have a significant impact on our business.

Inventions discovered under research, material transfer or other collaborative agreements, including our Collaboration Agreement with Janssen which was terminated effective September 28, 2018, may become jointly owned by us and the other party to such agreements in some cases, and may be the exclusive property of either party in other cases. Under some circumstances, it may be difficult to determine who invents and owns a particular invention, or whether it is jointly owned, and disputes can arise regarding inventorship, ownership and use of those inventions. These disputes could be costly and time-consuming, and an unfavorable outcome could have a significant adverse effect on our business if we were not able to protect our license rights to these inventions. In addition, clinical trial investigators, scientific consultants and research collaborators generally have contractual rights to publish data and other proprietary information, subject to review by the trial sponsor. Publications by us, or by investigators, scientific consultants, previous employees, research collaborators or others, either with permission or in contravention of the terms of their agreements with us or with Janssen or otherwise, may impair our ability to obtain patent protection or protect proprietary information which would have a material adverse effect on our business, and might cause us to cease operations.

Much of the information and know-how that is critical to our business is not patentable, and we may not be able to prevent others from obtaining this information and establishing competitive enterprises.

We sometimes rely on trade secrets to protect our proprietary technology, especially in circumstances in which we believe patent protection is not appropriate or available. We attempt to protect our proprietary technology in part by confidentiality agreements with our employees, consultants, collaborators and contractors. We cannot provide assurance that these agreements will not be breached, that we would have adequate remedies for any breach, or that our trade secrets will not otherwise become known or be independently discovered by competitors, any of which would harm our business significantly.

In May 2016, the Defend Trade Secrets Act of 2016, or the DTSA, was enacted, providing a federal cause of action for misappropriation of trade secrets. Under the DTSA, an employer may not collect enhanced damages or attorney fees from an employee or contractor in a trade secret dispute brought under the DTSA, unless certain advanced provisions are observed. We cannot provide assurance that our existing agreements with employees and contractors contain notice provisions that would enable us to seek enhanced damages or attorneys' fees in the event of any dispute for misappropriation of trade secrets brought under the DTSA.

Significant disruptions of information technology systems, including cloud-based systems, or breaches of data security could adversely affect our business.

Our business is increasingly dependent on critical, complex and interdependent information technology systems, including cloud-based systems, to support business processes as well as internal and external communications. Our computer and information technology systems, and those of our collaborators, service providers and contractors, are potentially vulnerable to breakdown, malicious intrusion, malware, computer viruses, natural disasters, terrorism, war, and telecommunication and electrical failures that may result in damage to or the impairment of key business processes, or the loss or corruption of confidential information, including intellectual property, proprietary business information and personal information. Such disruptions and breaches of security could have a material adverse effect on our business, financial condition and results of operations. The costs to us to mitigate network security problems, bugs, viruses, worms, malicious software programs and security vulnerabilities could be significant, and while we have implemented security measures to protect our data security and information technology systems, our efforts to address these problems may not be successful, and these problems could result in unexpected interruptions, delays, cessation of service and other harm to our business and our competitive position. In addition, we will rely on our collaborators, service providers, including our CRO, and contractors to establish and maintain appropriate information technology systems and data security protections. However, except for contractual duties and obligations, we have limited ability to control their actions related to such matters. If such an event were to occur and cause interruptions in our operations, it could result in a material disruption of our imetelstat development program. For example, the loss of clinical study data from completed, ongoing or planned clinical trials could result in delays in potential regulatory approval efforts and significantly increase our costs to recover or reproduce the data.

In addition, our computer and information technology systems, as well as those of our collaborators, service providers and contractors, are potentially vulnerable to data security breaches, whether by employees, contractors, consultants, malware, phishing attacks, or other cyber-attacks, that may expose confidential information, intellectual property, proprietary business information or personal information to unauthorized persons. If a data security breach affects our systems or those of third parties upon which we rely, corrupts our data or results in the unauthorized disclosure or release of personally identifiable information by our collaborators, service providers, contractors or us, our reputation could be materially damaged, and we could be subject to significant fines, increased costs or loss of revenue. In addition, such a breach may require notification to governmental agencies, supervisory bodies,

credit reporting agencies, the media or individuals pursuant to various federal, state and foreign data protection, privacy and security laws, regulations and guidelines, if applicable. These may include state breach notification laws, and the EU General Data Protection Regulation (EU) 2016/679, or GDPR. Accordingly, a data security breach or privacy violation that leads to unauthorized access to, disclosure or modification of personal information (including protected health information), that prevents access to personal information or materially compromises the privacy, security, or confidentiality of the personal information, could result in fines, increased costs or loss of revenue as a result of:

- harm to our reputation;
- fines or penalties imposed on us by regulatory authorities;
- additional compliance obligations or enforcement measures under federal, state or foreign laws;
- remediation and corrective action we undertake as required by law or as otherwise necessary;
- litigation and potential civil or criminal liability; and
- requirements to verify the accuracy of affected data.

If we are unable to prevent such data security breaches or privacy violations or implement satisfactory remedial measures, our operations could be disrupted, and we may suffer loss of reputation, financial loss and other regulatory penalties because of lost or misappropriated information, including sensitive patient data. In addition, these breaches and other inappropriate access can be difficult to detect, and any delay in identifying them may lead to increased harm of the type described above. Moreover, the prevalent use of mobile devices that access confidential information increases the risk of data security breaches, which could lead to the loss of confidential information, trade secrets or other intellectual property. While we have implemented security measures to protect our computer and information technology systems, because the techniques used to obtain unauthorized access, disable or degrade service, or sabotage systems, change frequently, become more sophisticated, and often are not recognized until launched against a target, we or our collaborators, service providers or contractors may be unable to anticipate these techniques or to implement adequate preventative measures. In addition, failure to maintain effective internal accounting controls related to data security breaches and cybersecurity in general could impact our ability to produce timely and accurate financial statements and could subject us to regulatory scrutiny.

Changes in and failures to comply with U.S. and foreign privacy and data protection laws, regulations and standards may adversely affect our business, operations and financial performance.*

We are subject to or affected by numerous federal, state and foreign laws and regulations, as well as regulatory guidance, governing the collection, use, disclosure, retention, and security of personal data, such as information that we collect about patients and healthcare providers in connection with clinical trials in the United States and abroad. Although we became Privacy Shield certified by the U.S. Department of Commerce's International Trade Administration in April 2019, there is a risk that our Privacy Shield certification could be revoked or held by a court of competent jurisdiction to be an invalid basis for the transfer of personal data outside of the European Economic Area. The global data protection landscape is rapidly evolving, and implementation standards and enforcement practices are likely to remain uncertain for the foreseeable future. This evolution may create uncertainty in our business, affect our or our collaborators', service providers' and contractors' ability to operate in certain jurisdictions or to collect, store, transfer use and share personal information, necessitate the acceptance of more onerous obligations in our contracts, result in liability or impose additional costs on us. The cost of compliance with these laws, regulations and standards is high and is likely to increase in the future. Any failure or perceived failure by us or our collaborators, service providers and contractors to comply with federal, state or foreign laws or regulation, our internal policies and procedures or our contracts governing processing of personal information could result in negative publicity, diversion of management time and effort and proceedings against us by governmental entities or others. In many jurisdictions, enforcement actions and consequences for noncompliance are rising.

In the United States, California enacted the California Consumer Privacy Act (CCPA) on June 28, 2018, which takes effect on January 1, 2020. The CCPA gives California residents expanded rights to access and delete their personal information, opt out of certain personal information sharing, and receive detailed information about how their personal information is used. The CCPA provides for civil penalties for violations, as well as a private right of action for data breaches that is expected to increase data breach litigation. The CCPA may increase our compliance costs and potential liability. Some observers have noted that the CCPA could mark the beginning of a trend toward more stringent privacy legislation in the United States, which could increase our potential liability and adversely affect our business.

Our operations abroad may also be subject to increased scrutiny or attention from data protection authorities. Many countries in these regions have established or are in the process of establishing privacy and data security legal frameworks with which we, our collaborators, service providers, including our CRO, and contractors must comply. For example, the EU has adopted the GDPR, which went into effect in May 2018 and introduces strict requirements for processing the personal information of EU subjects, including

clinical trial data. The GDPR has and will continue to increase compliance burdens on us, including by mandating potentially burdensome documentation requirements and granting certain rights to individuals to control how we collect, use, disclose, retain and process information about them. The processing of sensitive personal data, such as physical health condition, may impose heightened compliance burdens under the GDPR and is a topic of active interest among foreign regulators. In addition, the GDPR provides for more robust regulatory enforcement and fines of up to €20 million or 4% of the annual global revenue of the noncompliant company, whichever is greater. As we expand into other foreign countries and jurisdictions, we may be subject to additional laws and regulations that may affect how we conduct business.

RISKS RELATED TO OUR FINANCIAL POSITION AND NEED FOR ADDITIONAL FINANCING

Our failure to obtain additional capital when needed could force us to further delay, reduce or eliminate development of imetelstat, including the planned Phase 3 portion of IMerge, or our potential future imetelstat commercialization efforts, which would severely and adversely affect our financial results, business and business prospects, and might cause us to cease operations.

Successful drug development and commercialization requires significant amounts of capital. We will require substantial additional capital in order to further advance the imetelstat program, including conducting the research and development and clinical and regulatory activities necessary to bring imetelstat to market, such as completion of the planned Phase 3 portion of IMerge and potential clinical trials in other indications, and to establish sales and marketing capabilities to commercialize imetelstat in the United States on our own, if regulatory approval is granted. Because the outcome of any clinical activities and/or regulatory approval process is highly uncertain, we cannot reasonably estimate whether any development activities we may undertake will succeed, and we may never recoup our investment in any imetelstat development, which would adversely affect our financial condition and our business and business prospects, and might cause us to cease operations. Our future capital requirements are difficult to forecast and will depend on many factors, including:

- the accuracy of the assumptions underlying our estimates for our capital needs;
- the progress, timing, magnitude, scope and costs of clinical development, manufacturing and potential commercialization of imetelstat, including the number of indications being pursued, subject to clearances and approvals by the FDA and other regulatory authorities;
- the scope, progress, duration, results and costs of current and future clinical trials, including the planned Phase 3 portion of IMerge, as well as non-clinical studies and assessments, of imetelstat;
- the costs, timing and outcomes of regulatory reviews or other regulatory actions related to imetelstat, including obtaining regulatory clearances and approvals in the United States and in other countries;
- the costs of preparing, filing and prosecuting patent applications and maintaining, enforcing and defending intellectual property-related claims;
- the costs of manufacturing imetelstat, including our ability to meaningfully reduce those manufacturing costs;
- the costs of multiple third-party vendors and service providers, including our CRO, to pursue the development, manufacturing and commercialization of imetelstat;
- our ability to establish, enforce and maintain collaborative or other strategic arrangements for research, development, clinical testing and manufacturing of imetelstat and potential future commercialization and marketing;
- our ability to successfully market and sell imetelstat, if imetelstat receives future regulatory approval or clearance, in the United States and other countries;
- our need to hire additional qualified employees and consultants to support the development and potential commercialization of imetelstat;
- the costs and timing of building a U.S. sales force to market and sell imetelstat, should it receive regulatory clearance;
- the sales price for imetelstat;
- the availability of coverage and adequate third-party reimbursement for imetelstat;
- the extent and scope of our general and administrative expenses, including expenses associated with potential future litigation; and
- the costs of maintaining and operating facilities in California and New Jersey, including higher expenses for travel, telecommunications and administrative oversight.

As a result of the termination of the Collaboration Agreement effective September 28, 2018, we are responsible for funding all clinical development, manufacturing, intellectual property maintenance and potential commercial activities for imetelstat. In order to further advance the imetelstat program, including completion of the planned Phase 3 portion of IMerge and potential clinical trials in other indications, we will need to raise substantial additional capital or establish additional collaborative arrangements with third-party collaborative partners, which may not be possible. In addition, as a result of the termination of the Collaboration Agreement, we will not receive any further milestone payments or royalties from Janssen for the development or sale of imetelstat, including any clinical development milestones. If we are unable to raise additional capital or establish alternative collaborative arrangements with third-party collaborative partners for imetelstat, the development of imetelstat may be further delayed, altered or abandoned, which might cause us to cease operations. Additional financing through public or private equity financings, including pursuant to our 2018 Sales Agreement with B. Riley FBR, capital lease transactions or other financing sources may not be available on acceptable terms, or at all. We may raise equity capital at a stock price or on other terms that could result in substantial dilution of ownership for our stockholders. The receptivity of the public and private equity markets to proposed financings is substantially affected by the general economic, market and political climate and by other factors which are unpredictable and over which we have no control. In this regard, volatility and instability in the global financial markets and political climate could adversely affect our ability to raise additional funds through financings and the terms upon which we may raise those funds.

In addition, we may seek additional capital due to market conditions or strategic considerations even if we believe we have sufficient funds for our current or future operating plans. To the extent that we raise additional capital through the sale of equity or convertible debt securities, the ownership interests of our stockholders may be diluted, and the terms may include liquidation or other preferences that materially and adversely affect the rights of our stockholders. Debt financing, if available, may involve agreements that include covenants limiting or restricting our ability to take specific actions, such as incurring additional debt, making capital expenditures or declaring dividends. If we raise additional funds through alliance, collaboration or licensing arrangements with third parties, we may have to relinquish valuable rights to imetelstat or our technologies or grant licenses on terms that are not favorable to us.

We cannot assure you that our existing capital resources, future interest income, and potential future sales of our common stock, including under our 2018 Sales Agreement with B. Riley FBR, will be sufficient to fund our operating plans. We will need additional funds to meet operational needs and capital requirements to advance the imetelstat program in clinical development and potential commercialization, and our need for additional funds may arise sooner than planned. If adequate funds are not available on a timely basis, if at all, we may be unable to pursue further development or potential commercialization of imetelstat, which could adversely affect our business and might cause us to cease operations.

We currently have no source of product revenue and may never become consistently profitable.

Although we were profitable in 2015 due to the recognition of revenue in connection with the upfront payment from Janssen under the Collaboration Agreement, we have otherwise never been profitable and have incurred operating losses every year since our operations began in 1990. We will not receive any future milestone-based or royalty payments from Janssen relating to imetelstat, nor will Janssen share the cost of ongoing or future clinical trials of imetelstat or the costs for patents that were licensed to them under the terminated Collaboration Agreement, after September 28, 2018. We expect to incur significant additional operating losses and, as we undertake sole financial responsibility for imetelstat clinical development activities, our operating losses are likely to substantially increase. As of March 31, 2019, our accumulated deficit was approximately $1.0 billion. Losses have resulted principally from costs incurred in connection with our research and development activities and from general and administrative costs associated with our operations.

Substantially all of our revenues to date have been payments under collaborative agreements and milestones, royalties and other revenues from our licensing arrangements. With the termination of the Collaboration Agreement effective September 28, 2018, we have no ongoing collaborative agreements related to imetelstat. Any revenues generated from our remaining licensing agreements related to our telomerase technology are expected to be minimal, and will be insufficient to sustain our operations. Our telomerase-related licensing revenues declined significantly in 2018 due to the expiration of the patents underlying such technology, and are expected to be eliminated later in 2019. We have no current plans to enter into any new corporate collaboration, partnership or license agreements that result in revenues, and our remaining telomerase-related license agreements may be terminated by the other parties to such licenses, or expire with the underlying patents.

We also expect to experience increased negative cash flow for the foreseeable future as we fund our operations and assume full payment responsibility for imetelstat clinical development activities. This will result in decreases in our working capital, total assets and stockholders' equity. Further, we may be unable to replenish our working capital by future financings. We will need to generate significant revenues to achieve consistent future profitability. We may never achieve consistent future profitability. Even if we do become profitable in the future, we may not be able to sustain or increase profitability on a quarterly or annual basis. Our failure to

achieve consistent future profitability could negatively impact the market price of our common stock and our ability to sustain operations.

The comprehensive U.S. tax reform bill passed in 2017 could adversely affect our business and financial condition.

On December 22, 2017, President Trump signed into law legislation, known as the Tax Cuts and Jobs Act of 2017, that significantly revised the Internal Revenue Code of 1986, as amended, or the Code. The legislation, among other things, contained significant changes to corporate taxation, including reduction of the corporate tax rate from a top marginal rate of 35% to a flat rate of 21%; reduction in the percentage of allowable expenses eligible for orphan drug credit purposes; limitation of the deduction for net operating losses to 80% of current year taxable income and elimination of net operating loss carrybacks; immediate deductions for certain new investments instead of deductions for depreciation expense over time; and modifying or repealing many business deductions and credits. Notwithstanding the reduction in the corporate income tax rate, the overall long-term impact of the federal tax law changes are uncertain and our business and financial condition could be adversely affected. In addition, it is uncertain if and to what extent various states will conform to the federal tax law changes. The impact of this tax reform on holders of our common stock is also uncertain and could be adverse. We urge our stockholders to consult with their legal and tax advisors with respect to this legislation and the potential tax consequences of investing in or holding our common stock.

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

Our net operating loss carryforwards could expire unused and be unavailable to offset future income tax liabilities. Under the 2017 federal income tax law changes, federal net operating losses incurred in 2018 and in future years may be carried forward indefinitely, but the deductibility of such federal net operating losses is limited. It is uncertain if and to what extent various states will conform to the federal tax law changes. In addition, under Section 382 of the Code, and corresponding provisions of state law, if a corporation undergoes an "ownership change," generally defined as a greater than 50% change (by value) in its equity ownership over a three-year period, the corporation's ability to use its pre-change net operating loss carryforwards and other pre-change tax attributes (such as research tax credits) to offset its post-change taxable income or taxes may be limited. Changes in our stock ownership, some of which are outside of our control, may have resulted or could in the future result in an ownership change. If a limitation were to apply, utilization of a portion of our domestic net operating loss and tax credit carryforwards could be limited in future periods. In addition, a portion of the carryforwards may expire before being available to reduce future income tax liabilities which could adversely impact our financial position.

RISKS RELATED TO OUR COMMON STOCK AND FINANCIAL REPORTING

Historically, our stock price has been extremely volatile.

Historically, our stock price has been extremely volatile. Between April 1, 2009 and March 31, 2019, our stock has traded as high as $9.17 per share and as low as $0.90 per share. Between April 1, 2016 and March 31, 2019, the price has ranged between a high of $6.99 per share and a low of $0.95 per share. The significant market price fluctuations of our common stock have been due to and may in the future be influenced by a variety of factors, including:

- termination of the Collaboration Agreement by Janssen in September 2018;
- announcements regarding the research and development of imetelstat, or results of, further delays in, discontinuation of, or further modifications or refinements to any clinical trials of imetelstat for any reason, including as a result of the failure to successfully transition the imetelstat program to us by Janssen, or our inability, for any reason, to successfully continue the development of imetelstat after any such transfer;
- preliminary, interim or final clinical trial data reported with respect to current or potential future clinical trials of imetelstat, and investor perceptions thereof;
- not receiving timely regulatory clearances or approvals in any jurisdiction, whether within or outside of the United States, including, if we do not obtain regulatory clearance to commence, conduct or continue clinical trials of imetelstat in MF, MDS or any additional hematologic myeloid malignancies in a timely manner or at all, or to amend any clinical trial protocol with respect to the anticipated conduct of the planned Phase 3 portion of IMerge or any potential future clinical trials of imetelstat;
- announcements regarding the safety of imetelstat and partial or full clinical holds placed on the imetelstat IND by the FDA or other regulatory authorities, or other regulatory developments related to imetelstat;
- the experimental nature of imetelstat;

- the terms and timing of any future collaborative arrangements for the development and potential commercialization of imetelstat that we may establish;
- the demand in the market for our common stock;
- announcements of technological innovations, new commercial products, or clinical progress or lack thereof by us, potential future collaborative partners or our competitors;
- fluctuations in our operating results;
- increased or continuing operating losses as a result of our sole responsibility for the development and potential future commercialization of imetelstat or otherwise;
- general domestic and international market conditions or market conditions relating to the biopharmaceutical and pharmaceutical industries;
- announcements concerning imetelstat proprietary rights;
- comments by securities analysts or other third parties, including blogs, articles and other media;
- large stockholders exiting their position in our common stock or an increase in the short interest in our common stock;
- announcements of or developments concerning potential future litigation, including any securities class action litigation initiated as a result of the termination of the Collaboration Agreement;
- the issuance of common stock to partners, vendors or investors to raise additional capital; and
- the occurrence of any other risks and uncertainties discussed under the heading "Risk Factors."

Stock prices and trading volumes for many biopharmaceutical companies fluctuate widely for a number of reasons, including factors which may be unrelated to their businesses or results of operations, such as media coverage, statements made on message boards and social media forums, legislative and regulatory measures and the activities of various interest groups or organizations. In addition to the risk factors described in this section, overall market volatility, as well as general domestic or international economic, market and political conditions, could materially and adversely affect the market price of our common stock and the return on your investment.

In addition, as further discussed in the Risk Factor above titled *"We have been, and may in the future be, involved in securities-related legal actions that are expensive and time consuming. Any securities-related legal actions, if resolved adversely, could harm our business, financial condition, or results of operations",* class action litigation has often been instituted against companies, including us, whose securities have experienced periods of volatility in market price. Any such litigation brought against us in the future could result in substantial costs, which would hurt our financial condition and results of operations and divert management's attention and resources, which could result in further delays of potential future clinical trials or commercialization efforts.

We may fail to continue to meet the listing standards of Nasdaq, and as a result our common stock may be delisted, which could have a material adverse effect on the liquidity of our common stock.

Our common stock is currently traded on the Nasdaq Global Select Market. The Nasdaq Stock Market LLC has requirements that a company must meet in order to remain listed on Nasdaq. In particular, Nasdaq rules require us to maintain a minimum closing bid price of $1.00 per share of our common stock. On December 21, 2018, the closing price of our common stock was $0.98 per share, and while the closing price of our common stock rose to $1.02 per share on December 26, 2018, and has subsequently remained at or above the minimum closing bid price of $1.00 per share from December 26, 2018 through the date of filing of this Quarterly Report on Form 10-Q, it may in the future fall below the closing minimum bid price of $1.00 per share. If the closing bid price of our common stock were to fall below $1.00 per share for 30 consecutive trading days, or we do not meet other listing requirements, we would fail to be in compliance with Nasdaq's listing standards. There can be no assurance that we will continue to meet the minimum bid price requirement, or any other requirement in the future. If we fail to meet the minimum bid price requirement, The Nasdaq Stock Market LLC may initiate the delisting process with a notification letter. If we were to receive such a notification, we would be afforded a grace period of 180 calendar days to regain compliance with the minimum bid price requirement. In order to regain compliance, shares of our common stock would need to maintain a minimum closing bid price of at least $1.00 per share for a minimum of 10 consecutive trading days. In addition, we may be unable to meet other applicable Nasdaq listing requirements, including maintaining minimum levels of stockholders' equity or market values of our common stock, in which case our common stock could be delisted. If our common stock were to be delisted, the liquidity of our common stock would be adversely affected, and the market price of our common stock could decrease.

The sale of a substantial number of shares may adversely affect the market price of our common stock.

As of March 31, 2019, we had 300,000,000 shares of common stock authorized for issuance and 186,406,047 shares of common stock outstanding. In addition, we had reserved 45,604,287 shares of our common stock for future issuance pursuant to our option and equity incentive plans and outstanding warrants as of March 31, 2019. In addition, under the universal shelf registration statement filed by us in May 2018 and declared effective by the SEC in July 2018, we may sell any combination of common stock, preferred stock, debt securities and warrants in one or more offerings, up to a cumulative value of $250 million.

Future sales of our common stock or the perception that such sales could occur, or the issuance of common stock to fund our operations and imetelstat development, including pursuant to our 2018 Sales Agreement with B. Riley FBR, could cause immediate dilution and adversely affect the market price of our common stock. The sale or issuance of our securities, as well as the existence of outstanding options and shares of common stock reserved for issuance under our option and equity incentive plans and outstanding warrants, also may adversely affect the terms upon which we are able to obtain additional capital through the sale of equity securities, which could negatively affect the market price of our common stock and the return on your investment.

Our undesignated preferred stock may inhibit potential acquisition bids; this may adversely affect the market price of our common stock and the voting rights of holders of our common stock.

Our certificate of incorporation provides our board of directors with the authority to issue up to 3,000,000 shares of undesignated preferred stock and to determine or alter the rights, preferences, privileges and restrictions granted to or imported upon these shares without further vote or action by our stockholders. The issuance of shares of preferred stock may delay or prevent a change in control transaction without further action by our stockholders. As a result, the market price of our common stock may be adversely affected.

In addition, if in the future, we issue preferred stock that has preference over our common stock with respect to the payment of dividends or upon our liquidation, dissolution or winding up, or if we issue preferred stock with voting rights that dilute the voting power of our common stock, the rights of holders of our common stock or the market price of our common stock could be adversely affected.

Provisions in our charter, bylaws and Delaware law may inhibit potential acquisition bids for us, which may prevent holders of our common stock from benefiting from what they believe may be the positive aspects of acquisitions and takeovers.

Provisions of our charter documents and bylaws may make it substantially more difficult for a third party to acquire control of us and may prevent changes in our management, including provisions that:

- prevent stockholders from taking actions by written consent;
- divide the board of directors into separate classes with terms of office that are structured to prevent all of the directors from being elected in any one year; and
- set forth procedures for nominating directors and submitting proposals for consideration at stockholders' meetings.

Provisions of Delaware law may also inhibit potential acquisition bids for us or prevent us from engaging in business combinations. In addition, we have individual severance agreements with our executive officers and a company-wide severance plan, either of which could require a potential acquirer to pay a higher price. Either collectively or individually, these provisions may prevent holders of our common stock from benefiting from what they may believe are the positive aspects of acquisitions and takeovers, including the potential realization of a higher rate of return on their investment from these types of transactions.

We do not intend to pay cash dividends on our common stock in the foreseeable future.

We do not anticipate paying cash dividends on our common stock in the foreseeable future. Any payment of cash dividends will depend upon our financial condition, results of operations, capital requirements and other factors and will be at the discretion of our board of directors.

Failure to achieve and maintain effective internal controls in accordance with Section 404 of the Sarbanes-Oxley Act of 2002 could have a material adverse effect on our business and stock price.

Section 404 of the Sarbanes-Oxley Act of 2002, or Section 404, requires that we establish and maintain an adequate internal control structure and procedures for financial reporting. Our annual reports on Form 10-K must contain an annual assessment by management of the effectiveness of our internal control over financial reporting and must include disclosure of any material

weaknesses in internal control over financial reporting that we have identified. In addition, our independent registered public accounting firm must provide an opinion annually on the effectiveness of our internal control over financial reporting.

The requirements of Section 404 are ongoing and also apply to future years. We expect that our internal control over financial reporting will continue to evolve as our business develops. Although we are committed to continue to improve our internal control processes and we will continue to diligently and vigorously review our internal control over financial reporting in order to ensure compliance with Section 404 requirements, any control system, regardless of how well designed, operated and evaluated, can provide only reasonable, not absolute, assurance that its objectives will be met. Therefore, we cannot be certain that material weaknesses or significant deficiencies will not exist or otherwise be discovered in the future. If material weaknesses or other significant deficiencies occur, such weaknesses or deficiencies could result in misstatements of our results of operations, restatements of our financial statements, a decline in our stock price, or other material adverse effects on our business, reputation, results of operations, financial condition or liquidity.

RISKS RELATED TO COMPETITIVE FACTORS

Competitors may develop products, product candidates or technologies that are superior to or more cost-effective than ours, which may significantly impact the development and commercial viability of imetelstat, which would severely and adversely affect our financial results, business and business prospects, and the future of imetelstat, and might cause us to cease operations.

The pharmaceutical and biotechnology industries are intensely competitive. Other pharmaceutical and biotechnology companies and research organizations currently engage in or have in the past engaged in efforts related to the biological mechanisms related to imetelstat, the study of telomeres, telomerase, or our proprietary oligonucleotide chemistry, and the research and development of therapies for the treatment of hematologic myeloid malignancies. In addition, other products and therapies that could directly compete with imetelstat currently exist or are being developed by pharmaceutical and biopharmaceutical companies and by academic institutions, government agencies and other public and private research organizations.

If approved for commercial sale for the treatment of lower risk MDS, imetelstat would compete against a number of treatment options, including erythropoiesis stimulating agents and other hematopoietic growth factors; immunomodulators, such as lenalidomide by Celgene Corporation, or Celgene; hypomethylating agents, such as azacitidine by Celgene and decitabine by Janssen; in addition to investigational treatments that may be further along in development than imetelstat, such as oral versions of azacitidine; histone deacetylase inhibitors; TGF-beta superfamily inhibitors, such as luspatercept by Acceleron Pharma, Inc., or Acceleron, in collaboration with Celgene; PI3 Kinase inhibitors; proteasome inhibitors; aminopeptidase inhibitors, such as tosedostat by CTI Biopharma Corporation, or CTI Biopharma; TLR2-specific antibodies; TPO agonists, such as romiplostim by Amgen Inc.; anti-CD33 antibodies; anti-CD38 antibodies, such as daratumumab by Genmab A/S in collaboration with Janssen; anti-CD123 antibodies, such as talacotuzumab by Janssen; antagonists of Toll-like receptor signaling; retinoic acid receptor alpha agonists, such as SY-1425 by Syros Pharmaceuticals; hypoxia-inducible factor prolyl hydroxylase inhibitors, such as roxadustat by FibroGen, Inc.; Fas ligand inhibitors; immune checkpoint regulators; and JAK-STAT pathway inhibitors.

If approved for commercial sale for the treatment of MF, imetelstat would compete against Incyte Corporation's ruxolitinib, or Jakafi®, which is orally administered. In clinical trials, Jakafi® reduced spleen size, abdominal discomfort, early satiety, bone pain, night sweats and itching in MF patients. Recently, there have also been reports of overall survival benefit as well as improvement in bone marrow fibrosis from Jakafi® treatment. Other treatment modalities for MF include hydroxyurea for the management of splenomegaly, leukocytosis, thrombocytosis and constitutional symptoms; splenectomy and splenic irradiation for the management of splenomegaly and co-existing cytopenias, or low blood cell counts; chemotherapy and pegylated interferon. Drugs for the treatment of MF-associated anemia include erythropoiesis stimulating agents, androgens, danazol, corticosteroids, thalidomide and lenalidomide. There are other investigational treatments for MF further along in development than imetelstat, such as pacritinib by CTI Biopharma, momelotinib by Sierra Oncology, and fedratinib by Celgene, which have reported results from Phase 3 clinical trials. Other investigational treatments for MF include inhibitors of the JAK-STAT pathway, such as NS-018 by NS Pharma, Inc.; histone deacetylase inhibitors; interleukin-3 receptor targeted agents; inhibitors of heat shock protein 90; hypomethylating agents; PI3 Kinase and mTOR inhibitors; anti-fibrosis antibodies, such as PRM-151 from Promedior, Inc.; hedgehog and SMO inhibitors; PIM kinase inhibitors; IAP inhibitors; anti-LOX2 inhibitors; recombinant pentraxin 2 protein; KIP-1 activators; TGF-beta superfamily inhibitors, such as sotatercept and luspatercept by Acceleron, in collaboration with Celgene; FLT inhibitors; BET inhibitors, such as CPI-0610 by Constellation Pharmaceuticals, Inc.; SMAC mimetics, such as LCL161 by Novartis Pharmaceuticals Corporation and other tyrosine kinase inhibitors.

Smaller companies may also prove to be significant competitors, particularly through collaborative arrangements with large and established companies. We anticipate increased competition in the future as new companies explore treatments for hematologic myeloid malignancies, which may significantly impact the commercial viability of imetelstat. Academic institutions, government

agencies and other public and private research organizations may also conduct research, seek patent protection and establish collaborative arrangements for research, clinical development and marketing of products similar to imetelstat. These companies and institutions compete with us in recruiting and retaining qualified development and management personnel as well as in acquiring technologies complementary to the imetelstat program.

In addition to the above factors, imetelstat will face competition based on:

- product efficacy and safety;
- convenience of product administration;
- cost of manufacturing;
- the timing and scope of regulatory consents;
- status of coverage and level of reimbursement;
- price; and
- patent position, including potentially dominant patent positions of others.

As a result of the foregoing, competitors may develop more commercially desirable or affordable products than imetelstat, or achieve earlier patent protection or product commercialization than we may be able to achieve with imetelstat. Competitors have developed, or are in the process of developing, technologies that are, or in the future may be, competitive to imetelstat. Some of these products may have an entirely different approach or means of accomplishing therapeutic effects similar or superior to those that may be demonstrated by imetelstat. Competitors may develop products that are safer, more effective, or less costly than imetelstat, or more convenient to administer to patients and, therefore, present a serious competitive threat to imetelstat. In addition, competitors may price their products below what we may determine to be an acceptable price for imetelstat, may receive better third-party payor coverage and/or reimbursement, or may be more cost-effective than imetelstat. Such competitive products or activities by competitors may render imetelstat obsolete, which may cause us to cease any further development or future commercialization of imetelstat, which would severely and adversely affect our financial results, business and business prospects, and the future of imetelstat, and might cause us to cease operations.

To be commercially successful, imetelstat must be accepted by the health care community, which can be very slow to adopt or unreceptive to new technologies and products.

If approved for marketing, imetelstat may not achieve market acceptance since hospitals, physicians, patients or the medical community in general may decide not to accept and utilize imetelstat. If approved for commercial sale, imetelstat will compete with a number of conventional and widely accepted drugs and therapies manufactured and marketed by major pharmaceutical companies. The degree of market acceptance of imetelstat will depend on a number of factors, including:

- the clinical indications for which imetelstat is approved;
- the country and/or regions within which imetelstat is approved;
- the establishment and demonstration to the medical community of the clinical efficacy and safety of imetelstat;
- the ability to demonstrate that imetelstat is superior to alternatives on the market at the time;
- the ability to establish in the medical community the potential advantages of imetelstat over alternative treatment methods, including with respect to efficacy, safety, cost or route of administration;
- the label and promotional claims allowed by the FDA or other regulatory authorities for imetelstat, if any;
- the timing of market introduction of imetelstat as well as competitive products;
- the effectiveness of sales, marketing and distribution support for imetelstat;
- the pricing of imetelstat;
- the availability of coverage and adequate reimbursement by government and third-party payors; and
- the willingness of patients to pay out-of-pocket in the absence of coverage by third-party payors, including governmental authorities.

The established use of conventional products competitive with imetelstat may limit or preclude the potential for imetelstat to receive market acceptance upon any commercialization. We may be unable to demonstrate any pharmacoeconomic advantage for imetelstat compared to established or standard-of-care therapies, or newly developed therapies, for hematologic myeloid malignancies. Third-party payors may decide that any potential improvement that imetelstat may provide to clinical outcomes in hematologic myeloid malignancies is not adequate to justify the costs of treatment with imetelstat. If the health care community does not accept imetelstat for any of the foregoing reasons, or for any other reason, our ability to further develop or potentially commercialize imetelstat may be negatively impacted or precluded altogether, which would seriously and adversely affect our business and business prospects, and might cause us to cease operations.

If acceptable prices or adequate reimbursement for imetelstat is not obtained, the use of imetelstat could be severely limited.

The ability to successfully commercialize imetelstat, if approved, will depend significantly on obtaining acceptable prices and the availability of coverage and adequate reimbursement to the patient from third-party payors. Government payors, such as the Medicare and Medicaid programs, and other third-party payors, such as private health insurers and health maintenance organizations, determine which medications they will cover and the reimbursement levels. Assuming we obtain coverage for imetelstat by a third-party payor, the resulting reimbursement payment rates may not be adequate or may require co-payments that patients find unacceptably high. If imetelstat is approved for commercial sale, patients are unlikely to use it unless coverage is provided, and reimbursement is adequate to cover all or a significant portion of its cost. Therefore, coverage and adequate reimbursement will be critical to new product acceptance.

Government authorities and other third-party payors are developing increasingly sophisticated methods of controlling healthcare costs, such as by limiting coverage and the amount of reimbursement for particular medications. Increasingly, third-party payors are requiring that drug companies provide them with predetermined discounts from list prices as a condition of coverage, are using restrictive formularies and preferred drug lists to leverage greater discounts in competitive classes, and are challenging the prices charged for medical products. Further, no uniform policy requirement for coverage and reimbursement for drug products exists among third-party payors in the United States. Therefore, coverage and reimbursement for drug products can differ significantly from payor to payor. As a result, the coverage determination process is often a time-consuming and costly process that will require us to provide scientific and clinical support for the use of imetelstat to each payor separately, with no assurance that coverage and adequate reimbursement will be applied consistently or obtained in the first instance.

We cannot be sure that coverage and reimbursement will be available for imetelstat, if approved for commercial sale, and, if reimbursement is available, what the level of reimbursement will be. There may also be significant delays in obtaining coverage and reimbursement for newly approved drugs, and coverage may be more limited than the purposes for which the drug is approved by the FDA or comparable foreign regulatory authorities. Coverage and reimbursement may impact the demand for, or the price of, any product candidate for which marketing approval is obtained. If coverage and reimbursement are not available or reimbursement is available only to limited levels, we may not successfully commercialize imetelstat, even if marketing approval is obtained, which would negatively impact our business and business prospects.

The adoption of health policy changes and health care reform in the United States may adversely affect our business and financial results.

In March 2010, the Patient Protection and Affordable Care Act, as amended by the Health Care and Education Reconciliation Act, collectively known as the Affordable Care Act, or ACA, became law and substantially changed the way healthcare is funded by both governmental and private insurers, and significantly impacted the pharmaceutical industry. The ACA contains a number of provisions that may have a significant impact on our business.

While the Supreme Court upheld the constitutionality of most elements of the ACA in June 2012 and upheld the ACA against challenges to nationwide tax subsidies in July 2015, other judicial and Congressional challenges against the ACA have been brought, and are likely to be brought in the future. Since January 2017, President Trump has signed two executive orders and other directives designed to delay, circumvent, or loosen certain requirements mandated by the ACA. Concurrently, Congress has considered legislation that would repeal or repeal and replace all or part of the ACA. While Congress has not passed comprehensive repeal legislation, two bills affecting the implementation of certain taxes under the ACA have been signed into law. The Tax Cuts and Jobs Act of 2017, or Tax Act, includes a provision which repealed, effective January 1, 2019, the tax-based shared responsibility payment imposed by the ACA on certain individuals who fail to maintain qualifying health coverage for all or part of a year that is commonly referred to as the "individual mandate". On January 22, 2018, President Trump signed a continuing resolution on appropriations for fiscal year 2018 that delayed the implementation of certain ACA-mandated fees. The Bipartisan Budget Act of 2018, among other things, amended the ACA, effective January 1, 2019, to close the coverage gap in most Medicare Part D drug plans, commonly referred to as the "donut hole". In July 2018, CMS published a final rule permitting further collections and payments to and from

certain ACA qualified health plans and health insurance issuers under the ACA risk adjustment program in response to the outcome of federal district court litigation regarding the method CMS uses to determine this risk adjustment. On December 14, 2018, a Texas U.S. District Court Judge ruled that the ACA is unconstitutional in its entirety because the "individual mandate" was repealed by Congress as part of the Tax Act. While the Texas U.S. District Court Judge, as well as the Trump administration and CMS, have stated that the ruling will have no immediate effect pending appeal of the decision, it is unclear how this decision, subsequent appeals, and other efforts to repeal and replace the ACA will impact the ACA and our business.

In addition, other legislative changes have been proposed and adopted since the ACA was enacted. For example, in August 2011, the Budget Control Act of 2011 was enacted, which, among other things, created the Joint Select Committee on Deficit Reduction to recommend to Congress proposals in spending reductions. The Joint Select Committee on Deficit Reduction did not achieve a targeted deficit reduction of at least $1.2 trillion for fiscal years 2012 through 2021, triggering the legislation's automatic reduction to several government programs. This includes aggregate reductions to Medicare payments to providers of up to 2% per fiscal year, which went into effect beginning on April 1, 2013 and, due to subsequent legislative amendments to the statute, including the Bipartisan Budget Act of 2018, will stay in effect through 2027 unless additional Congressional action is taken. Further, the American Taxpayer Relief Act of 2012, signed into law in January 2013, among other things, also reduced Medicare payments to certain providers, including hospitals, imaging centers and cancer treatment centers, and increased the statute of limitations period for the government to recover overpayments to providers from three to five years.

In the future, we anticipate additional proposals relating to the reform of the U.S. healthcare system, some of which could further limit the prices, or the amounts of reimbursement available for imetelstat. There has been increasing legislative and enforcement interest in the United States with respect to specialty drug pricing practices in light of the rising cost of prescription drugs and biologics. Specifically, there have been several recent U.S. Congressional inquiries and federal and state legislative activity designed to, among other things, bring more transparency to drug pricing, review the relationship between pricing and manufacturer patient programs, reduce the price of drugs under Medicare, and reform government program reimbursement methodologies for drugs, some of which are included in the Trump administration's budget proposal for fiscal year 2019. Additionally, the Trump administration released a "Blueprint" that contains additional proposals to increase manufacturer competition, increase the negotiating power of certain federal healthcare programs, incentivize manufacturers to lower the list price of their products and reduce the out of pocket costs of drug products paid by consumers. On January 31, 2019, the U.S. Department of Health and Human Services, Office of Inspector General, proposed modifications to federal Anti-Kickback Statute safe harbors which, among other things, will affect rebates paid by manufacturers to Medicare Part D plans, the purpose of which is to further reduce the cost of drug products to consumers. While a number of these and other proposed measures may require authorization through additional legislation to become effective, Congress and the Trump Administration have each indicated that they will continue to seek new legislative and/or administrative measures to control drug costs. If future legislation were to impose direct governmental price controls and access restrictions, it could have a significant adverse impact on our business and financial results. Managed care organizations, as well as Medicaid and other government agencies, continue to seek price discounts. At the state level, legislatures have increasingly passed legislation and implemented regulations designed to control pharmaceutical and biologic product pricing, including price or patient reimbursement constraints, discounts, restrictions on certain product access and marketing cost disclosure and transparency measures, and, in some cases, to encourage importation from other countries and bulk purchasing. Due to the volatility in the current economic and market dynamics, we are unable to predict the impact of any unforeseen or unknown legislative, regulatory, payor or policy actions, which may include cost containment and healthcare reform measures. Such policy actions could have a material adverse impact on future worldwide sales of imetelstat, if approved.

Cost control initiatives also could decrease the price that we may receive for imetelstat in the future. If imetelstat is not considered cost-effective or adequate third-party reimbursement for the users of imetelstat cannot be obtained, then we may be unable to maintain price levels sufficient to realize an appropriate return on our investment in imetelstat. Any of these events would severely and adversely affect our financial results, business and business prospects, and might cause us to cease operations.

If we fail to comply with federal, state and foreign healthcare laws, including fraud and abuse, transparency, and health information privacy and security laws, we could face substantial penalties and our business, results of operations, financial condition and prospects could be adversely affected.

Our business operations and current and future arrangements with investigators, healthcare professionals, consultants, third-party payors and customers, may expose us to broadly applicable fraud and abuse and other healthcare laws and regulations. These laws may constrain the business or financial arrangements and relationships through which we conduct our operations, including how we research, market, sell and distribute any product of ours for which marketing approval is obtained. Such laws include:

- the federal Anti-Kickback Statute, which prohibits, among other things, persons and entities, including prescription drug manufacturers (or a party acting on its behalf), from knowingly and willfully, directly or indirectly, soliciting, offering, receiving or providing remuneration, directly or indirectly, in cash or in kind, to induce or reward, or in return for, either the

referral of an individual for, or the purchase, order, lease or recommendation of, any good, facility, item or service for which payment may be made under a federal healthcare program such as Medicare and Medicaid. The term "remuneration" has been broadly interpreted to include anything of value. Several courts have interpreted the statute's intent requirement to mean that if any one purpose of an arrangement involving remuneration is to induce referrals of federal healthcare covered business, the federal Anti-Kickback Statute has been violated. The ACA, among other things, amended the intent requirement of the federal Anti-Kickback Statute such that a person or entity no longer needs to have actual knowledge of the statute or specific intent to violate, in order to commit a violation;

- the federal civil and criminal false claims and civil monetary penalties laws, including the federal civil False Claims Act and its qui tam or whistleblower provisions which permit a private individual to bring an action on behalf of the government to enforce the civil False Claims Act, prohibit, among other things, knowingly presenting, or causing to be presented, to the federal government, claims for payment that are false or fraudulent or making a false statement to avoid, decrease or conceal an obligation to pay money to the federal government. Entities can be held liable under these laws if they are deemed to "cause" the submission of false or fraudulent claims by, for example, providing inaccurate billing or coding information to customers, promoting a product off-label, or for providing medically unnecessary services or items. In addition, a claim including items or services resulting from a violation of the federal Anti-Kickback Statute constitutes a false or fraudulent claim for purposes of the federal civil False Claims Act;
- the federal Health Insurance Portability and Accountability Act of 1996, or HIPAA, which imposes criminal and civil liability for, among other things, knowingly and willfully executing, or attempting to execute, a scheme to defraud any healthcare benefit program, including private third-party payors, knowingly and willfully embezzling or stealing from a healthcare benefit program, willfully obstructing a criminal investigation of a healthcare offense, and knowingly and willfully falsifying, concealing or covering up a material fact or making any materially false or fraudulent statements in connection with the delivery of or payment for healthcare benefits, items or services;
- HIPAA, as amended by the Health Information Technology for Economic and Clinical Health Act, or HITECH, and their implementing regulations, which imposes obligations, including mandatory contractual terms, with respect to safeguarding the privacy, security, transmission and breach reporting of individually identifiable health information, upon entities subject to the law, such as health plans, healthcare clearinghouses and certain healthcare providers, known as covered entities, and their respective business associates that perform services for them that involve individually identifiable health information. HITECH also created new tiers of civil monetary penalties, amended HIPAA to make civil and criminal penalties directly applicable to business associates, and gave state attorneys general new authority to file civil actions for damages or injunctions in U.S. federal courts to enforce the federal HIPAA laws and seek attorneys' fees and costs associated with pursuing federal civil actions;
- the federal Physician Payments Sunshine Act, which requires certain manufacturers of drugs, devices, biologics and medical supplies for which payment is available under Medicare, Medicaid or the Children's Health Insurance Program, with specific exceptions, to report annually to the Centers for Medicare & Medicaid Services, or CMS, information related to payments or other transfers of value made to physicians and teaching hospitals, and applicable manufacturers and applicable group purchasing organizations to report annually to CMS ownership and investment interests held by physicians and their immediate family members; and
- analogous state and foreign laws and regulations, such as state anti-kickback and false claims laws, which may apply to sales or marketing arrangements and claims involving healthcare items or services reimbursed by non-governmental third-party payors, including private insurers; state laws that require pharmaceutical companies to comply with the pharmaceutical industry's voluntary compliance guidelines and the relevant compliance guidance promulgated by the federal government; state laws that require drug manufacturers to report information related to payments and other transfers of value to physicians, other healthcare providers, and healthcare entities, or marketing expenditures; state laws that require the reporting of information related to drug pricing; state and local laws that require the registration of pharmaceutical sales representatives; and state and foreign laws governing the privacy and security of health information, including the GDPR, many of which differ from each other in significant ways and often are not preempted by HIPAA, thus complicating compliance efforts.

Efforts to ensure that our current and future business arrangements will comply with applicable healthcare, privacy and data security laws and regulations will involve substantial costs. For example, the GDPR, which became effective on May 25, 2018, imposes several requirements relating to the consent of the individuals to whom the personal data relates, the information provided to the individuals, the security and confidentiality of the personal data, data breach notification and the use of third-party processors in connection with the processing of personal data. The GDPR also imposes strict rules on the transfer of personal data out of the EU, provides an enforcement authority and authorizes the imposition of large penalties for noncompliance, including the potential for fines of up to €20 million or 4% of the annual global revenues of the noncompliant company, whichever is greater. The GDPR has increased our responsibility and potential liability in relation to personal data that we process or control compared to prior EU law,

including in clinical trials, and we may be required to put in place additional mechanisms to ensure compliance with the GDPR, which could divert management's attention and increase our cost of doing business. Likewise, we expect that there will continue to be new proposed laws, regulations and industry standards relating to privacy and data protection in the United States, the EU and other jurisdictions, such as the California Consumer Privacy Act of 2018, which has been characterized as the first "GDPR-like" privacy statute to be enacted in the United States because it mirrors a number of the key provisions in the GDPR, that will go into effect beginning January 1, 2020, and we cannot determine the impact such laws, regulations and standards will have on our business. In any event, it is possible that governmental authorities will conclude that our business practices do not comply with current or future statutes, regulations, agency guidance or case law involving applicable healthcare or privacy laws, including the GDPR, in light of the lack of applicable precedent and regulations.

Federal and state enforcement bodies have recently increased their scrutiny of interactions between healthcare companies and healthcare providers, which has led to a number of investigations, prosecutions, convictions and settlements in the healthcare industry. If our operations are found to be in violation of any of these or any other healthcare and privacy-related regulatory laws that may apply to us, we may be subject to significant penalties, including the imposition of significant civil, criminal and administrative penalties, damages, monetary fines, disgorgement, imprisonment, possible exclusion from participation in Medicare, Medicaid and other federal healthcare programs, reputational harm, diminished profits and future earnings, additional reporting requirements and oversight if we become subject to a corporate integrity agreement or similar agreement to resolve allegations of non-compliance with these laws, and curtailment of our operations, any of which could adversely affect our ability to operate our business and our results of operations. Defending against any such actions can be costly, time-consuming and may require significant financial and personnel resources. Therefore, even if we are successful in defending against any such actions that may be brought against us, our business may be impaired.

ITEM 2. UNREGISTERED SALES OF EQUITY SECURITIES AND USE OF PROCEEDS

None.

ITEM 3. DEFAULTS UPON SENIOR SECURITIES

None.

ITEM 4. MINE SAFETY DISCLOSURES

Not applicable.

ITEM 5. OTHER INFORMATION

In April 2019, we entered into a lease agreement for approximately 9,815 square feet of office space located at 3 Sylvan Way, Parsippany, New Jersey. The initial term of the lease is 11 years with an option to extend for an additional five years and a one-time option to terminate the lease without cause as of the 103rd month anniversary of the commencement date of the lease. We have not yet occupied the space as it is being renovated for our use. The lease term commences upon the earlier of the date of completion of the construction work or the date upon which we occupy and use the space for its intended purpose, which is expected to occur by the end of September 2019. Upon the commencement of the lease, the aggregate minimum future lease payments for the initial lease term is approximately $3,700,000, net of a seven-month rent abatement period. Under the lease, we are also obligated to pay certain variable expenses separately from the base rent, including electricity and common area maintenance. The lease agreement is filed as Exhibit 10.18 to this Quarterly Report on Form 10-Q, and the above description of the lease agreement is qualified in its entirety by reference to such exhibit.

ITEM 6. EXHIBITS

Exhibit Number	Description	Incorporation by Reference			
		Exhibit Number	Filing	Filing Date	File No.
10.1	Form of Employee Stock Option Agreement under 2018 Equity Incentive Plan, as amended*	10.11	10-K	March 7, 2019	000-20859
10.2	Form of Non-Employee Director Stock Option Agreement under 2018 Equity Incentive Plan, as amended*	10.13	10-K	March 7, 2019	000-20859
10.3	Form of Performance-Vesting Stock Option Agreement under 2018 Equity Incentive Plan*	10.14	10-K	March 7, 2019	000-20859
10.4	Form of Performance-Vesting Stock Option Agreement under 2018 Equity Incentive Plan, as amended*	10.15	10-K	March 7, 2019	000-20859
10.5	2018 Inducement Award Plan, as amended*	10.17	10-K	March 7, 2019	000-20859
10.6	Form of Stock Option Agreement under 2018 Inducement Award Plan, as amended*	10.19	10-K	March 7, 2019	000-20859
10.7	Form of Performance-Vesting Stock Option Agreement under 2018 Inducement Award Plan*	10.20	10-K	March 7, 2019	000-20859
10.8	Non-Employee Director Compensation Policy, as amended January 30, 2019*	10.26	10-K	March 7, 2019	000-20859
10.9	Amended and Restated Severance Plan, effective as of January 30, 2019*	10.28	10-K	March 7, 2019	000-20859
10.10	Amended and Restated Employment agreement between the Registrant and John A. Scarlett, M.D., effective as of January 31, 2019*	10.29	10-K	March 7, 2019	000-20859
10.11	Amended and Restated Employment agreement between the Registrant and Stephen N. Rosenfield, effective as of January 31, 2019*	10.30	10-K	March 7, 2019	000-20859
10.12	Amended and Restated Employment agreement between the Registrant and Andrew J. Grethlein, effective as of January 31, 2019*	10.31	10-K	March 7, 2019	000-20859
10.13	Amended and Restated Employment agreement between the Registrant and Olivia K. Bloom, effective as of January 31, 2019*	10.32	10-K	March 7, 2019	000-20859
10.14	Amended and Restated Employment agreement between the Registrant and Melissa A. Kelly Behrs, effective as of January 31, 2019*	10.33	10-K	March 7, 2019	000-20859
10.15	Employment Agreement between the Registrant and Aleksandra K. Rizo, effective as of January 15, 2019*	10.34	10-K	March 7, 2019	000-20859
10.16#	Master Services Agreement by and between the Registrant and Parexel International (IRL) Limited, dated January 30, 2019	10.42	10-K	March 7, 2019	000-20859
10.17#	Work Order No. 1 under Master Services Agreement by and between the Registrant and Parexel International (IRL) Limited, dated January 30, 2019	10.43	10-K	March 7, 2019	000-20859
10.18	Office Lease Agreement by and between Registrant and 3 Sylvan Realty LLC, effective as April 30, 2019				
31.1	Certification of Chief Executive Officer pursuant to Form of Rule 13a-14(a), as Adopted Pursuant to Section 302(a) of the Sarbanes-Oxley Act of 2002, dated May 2, 2019				
31.2	Certification of Chief Financial Officer pursuant to Form of Rule 13a-14(a), as Adopted Pursuant to Section 302(a) of the Sarbanes-Oxley Act of 2002, dated May 2, 2019				
32.1	Certification of Chief Executive Officer pursuant to 18 U.S.C. Section 1350, as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, dated May 2, 2019 **				
32.2	Certification of Chief Financial Officer pursuant to 18 U.S.C. Section 1350, as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, dated May 2, 2019 **				

Exhibit Number	Description	Incorporation by Reference			
		Exhibit Number	Filing	Filing Date	File No.
101	The following materials from the Registrant's March 31, 2019 Quarterly Report on Form 10-Q for the quarter ended March 31, 2019 formatted in Extensible Business Reporting Language (XBRL) include: (i) Condensed Balance Sheets as of March 31, 2019 and December 31, 2018, (ii) Condensed Statements of Operations and Comprehensive Loss for the three months ended March 31, 2019 and 2018, (iii) Condensed Statements of Stockholders' Equity for the three months ended March 31, 2019 and 2018, (iv) Condensed Statements of Cash Flows for the three months ended March 31, 2019 and 2018 and (v) Notes to Condensed Financial Statements				

* Management contract or compensation plan or arrangement.

\# Confidential treatment has been requested for certain portions of this exhibit. Omitted information has been filed separately with the Securities and Exchange Commission.

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

SIGNATURE

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.

GERON CORPORATION

Date: May 2, 2019

By: /s/ OLIVIA K. BLOOM
OLIVIA K. BLOOM
Executive Vice President, Finance, Chief Financial Officer and Treasurer

EXHIBIT 10.18

SHORT FORM LEASE

Between

3 SYLVAN REALTY L.L.C.

as Landlord,

and

GERON CORPORATION

as Tenant

Building:

3 Sylvan Way
Parsippany, New Jersey

THIS LEASE is made on the 30th day of April, 2019 between **3 SYLVAN REALTY L.L.C.** , a New Jersey limited liability company, whose address is c/o Mack-Cali Realty Corporation, Harborside 3, 210 Hudson Street, Suite 400, Jersey City, New Jersey 07311 (who is referred to in this Lease as "**Landlord**") and **GERON CORPORATION**, a Delaware corporation, whose address is 149 Commonwealth Drive, Menlo Park, CA 94025 (who is referred to in this Lease as "**Tenant**"). This Lease consists of the following Basic Lease Provisions and Definitions and the attached General Conditions and Exhibits. The Basic Lease Provisions and Definitions are referred to in this Lease as the "**Basic Lease Provisions**."

BASIC LEASE PROVISIONS

1. **BASE PERIOD COSTS** means the following:

   a) Base Operating Costs: Operating Costs incurred during the Calendar Year.

   b) Base Real Estate Taxes: Real Estate Taxes incurred during the Calendar Year.

2. **BUILDING** means 3 Sylvan Way, Parsippany, New Jersey.

3. **CALENDAR YEAR** means the calendar year 2019.

4. **COMMENCEMENT DATE** means the earlier of (i) the date Landlord shall substantially complete the Work in accordance with Exhibit C attached hereto and made part hereof, or (ii) the date Tenant, or any party acting by or through Tenant, shall occupy the Premises for the purpose of conducting Tenant's business therein, subject to Article 20 of this Lease.

5. **DEMISED PREMISES OR PREMISES** mean and are agreed and deemed to be 9,815 gross rentable square feet on the second (2nd) floor as shown on Exhibit A to this Lease, which includes an allocable share of the Common Facilities.

6. **EXPIRATION DATE** means 11:59 p.m. on the last day of the month in which the day before the eleven (11) year anniversary of the Commencement Date occurs.

7. **FIXED BASIC RENT** means the following:

Months	Annual Rate	Monthly Installments	Annual Per Sq. Ft. Rent
1 – 12	$318,987.50	$26,582.29	$32.50
13 – 24	$325,367.25	$27,113.94	$33.15
25 – 36	$331,845.15	$27,653.76	$33.81
37 – 48	$338,519.35	$28,209.95	$34.49
49 – 60	$345,291.70	$28,774.31	$35.18
61 – 72	$352,162.20	$29,346.85	$35.88
73 – 84	$359,229.00	$29,935.75	$36.60
85 – 96	$366,393.95	$30,532.83	$37.33
97 – 108	$373,755.20	$31,146.27	$38.08
109 – 120	$381,214.60	$31,767.88	$38.84
121 - 132	$388,870.30	$32,405.86	$39.62

If the Commencement Date is other than the first day of a calendar month, then the Monthly Installment of Fixed Basic Rent payable by Tenant for such month shall be prorated at the same rental rate payable for the first (1st) Monthly Installment listed above, and "Month 1" of the rent grid set forth above shall be deemed to be the first full calendar month following immediately thereafter.

Notwithstanding the foregoing, provided that: (i) this Lease is in full force and effect, (ii) Tenant has complied with each of its obligations hereunder, and (iii) Tenant is otherwise at the time required to pay Landlord Fixed Basic Rent, then, Tenant shall have no obligation to pay the Monthly Installments of Fixed Basic Rent for the second (2nd), third (3rd), fourth (4th), fifth (5th), sixth (6th), seventh (7th) and eighth (8th) full calendar months of the Term.

8. **HVAC AFTER HOURS CHARGE** is $55.00 per hour per zone for heat and $75.00 per hour per zone for air conditioning, subject to Section 17 (b) of the Lease. The HVAC After Hours Charge is subject to increase from time to time to reflect the increase in the cost of providing such after hours HVAC service.

9. **NOTICE ADDRESSES** shall mean the following (all in accordance with Article 26):

   If to Tenant:

   Geron Corporation
   149 Commonwealth Drive
   Menlo Park, CA 94025
   Attention: Chief Financial Officer
   With a copy to: Attention: General Counsel

With a copy to:

Geron Corporation
149 Commonwealth Drive
Menlo Park, CA 94025
Attention: General Counsel

If to Landlord:

c/o Mack-Cali Realty Corporation
Harborside 3
210 Hudson Street, Suite 400
Jersey City, NJ 07311
Attention: Chief Executive Officer

With a copy to:

c/o Mack-Cali Realty Corporation
Harborside 3
210 Hudson Street, Suite 400
Jersey City, NJ 07311
Attention: General Counsel

10. **PARKING SPACES** means a total of thirty-two (32) unassigned parking spaces.

11. **SECURITY DEPOSIT** means ONE HUNDRED THIRTY-TWO THOUSAND NINE HUNDRED ELEVEN AND 45/100 DOLLARS ($132,911.45).

In lieu of the cash Security Deposit, Tenant may deliver to Landlord in the form of a letter of credit from a banking institution having a net worth of at least ONE BILLION U.S. DOLLARS and meeting the other criteria set forth in this paragraph that a letter of credit issuer must satisfy. The letter of credit shall be in form and content acceptable to Landlord (also at its sole discretion) (the form attached hereto as Exhibit I shall be deemed acceptable to Landlord) for the account of Landlord. Said letter of credit shall be for a term of not less than one (l) year and shall be automatically renewed by the bank (without notice from Landlord) (i.e. an "evergreen" letter of credit), until Landlord shall be required to return the security to Tenant pursuant to the terms of this Lease but in no event earlier than ninety (90) days after the Expiration Date, and any renewed letter of credit shall be delivered to Landlord no later than sixty (60) days prior to the expiration of the letter of credit then held by Landlord. If any portion of the security deposit shall be utilized by Landlord in the manner permitted by this Lease, Tenant shall, within five (5) days after request by Landlord, replenish the security account by depositing with Landlord, by letter of credit, an amount equal to that utilized by Landlord. Failure of Tenant to comply strictly with the provisions of this Article shall constitute a material breach of this Lease and Landlord shall be entitled to present the letter of credit then held by it for payment (without notice to Tenant). In the event of a bank failure or insolvency affecting the letter of credit, Tenant shall replace same within twenty (20) days after being requested to do so by Landlord. If Landlord reasonably believes that the letter of credit issuer is financially troubled or at risk of failure, Landlord, at Landlord's option, shall have the right to draw on the letter of credit or require Tenant to substitute letter of credit from a banking institution reasonably satisfactory to Landlord. The letter of credit shall be transferable in connection with a transfer of the Building and Tenant shall be solely responsible for any transfer fees imposed by the Bank.

Provided that (i) this Lease is in full force and effect, (ii) Tenant is not in and has not been in default hereunder beyond the expiration of any applicable notice and cure period, and (iii) Tenant's net worth (exclusive of goodwill and other intangible assets) is equal to or greater than ninety-five percent (95%) (in Landlord's sole and absolute judgment) of the net worth of Tenant on the date of this Lease, Tenant, upon request to Landlord which must be received in writing by Landlord together with complete, accurate and detailed financials of Tenant in form acceptable to Landlord, no sooner than sixty (60) days prior to the reduction date **TIME BEING OF THE ESSENCE**, may elect to cause Landlord to reduce the Security Deposit by FIFTY-THREE THOUSAND ONE HUNDRED SIXTY-FOUR AND 58/100 DOLLARS ($53,164.58) on or after the three (3) year and seven (7) month anniversary of the Commencement Date. If, following the date of any such reduction in the Security Deposit, Tenant is in default hereunder beyond the expiration of and applicable notice and cure period, Tenant shall immediately restore the Security Deposit in the amount originally required under this lease, (i.e. $132,911.45) so that the Security Deposit shall be equal to the Security Deposit at the Commencement Date of the Lease.

12. **TENANT'S BROKER** means Savills, Inc.

13. **TENANT'S PERCENTAGE** means and is agreed and deemed to be 6.67% (9,815/147,241).

DEFINITIONS

1. **ADDITIONAL RENT** means all money, other than the Fixed Basic Rent, payable by Tenant to Landlord under the Lease, including, but not limited to, the monies payable by Tenant to Landlord pursuant to Exhibits G and H of this Lease.

2. **BUILDING HOLIDAYS** means the holidays shown on Exhibit E and all days observed as holidays by the United States, State, or labor unions representing individuals servicing the Building in behalf of Landlord; if there be no such labor unions, such definition shall include holidays designated by Landlord for the benefit of such individuals.

3. **BUILDING HOURS** means Monday through Friday, 8:00 a.m. to 6:00 p.m., but excluding Building Holidays. Notwithstanding the foregoing, Tenant shall (i) have access to the Premises seven days per week, twenty-four hours per day (except to the extent such access is restricted as the result of an emergency), and (ii) receive forty (40) card keys for access to the Building. Any additional or replacement card keys shall be provided for a fee of $20.00 per card.

4. **COMMON FACILITIES** means and includes the lobby; elevator(s); fire stairs; public hallways; public lavatories; all other general Building components, facilities and fixtures that service or are available to more than one tenant; air conditioning mechanical rooms; fan rooms; janitors' closets; electrical and telephone closets serving more than one tenant; elevator shafts and machine rooms; flues; stacks; pipe shafts and vertical ducts with their enclosing walls; and structural components of the Building.

Whenever the word “includes” or “including” is used in this Lease, it means “includes but is not limited to” and “including but not limited to,” respectively.

5. **EXHIBITS** are the following:

Exhibit A	Location of Premises
Exhibit B	Rules and Regulations
Exhibit C	Workletter Agreement
Exhibit D	Cleaning Services
Exhibit E	Building Holidays
Exhibit F	Commencement Date Agreement
Exhibit G	Tax and Operating Cost Rider
Exhibit H	Electricity Rider
Exhibit I	Sample Letter of Credit Form

The Exhibits are attached at the back of this Lease and are a part of this Lease.

6. **LEGAL REQUIREMENTS** means all present and future laws and ordinances of federal, state, municipal and county governments, and rules, regulations, orders and directives of departments, subdivisions, bureaus, agencies or offices of such governments, or any other governmental, public or quasi-public authorities having jurisdiction over the Building, and the directions of any public officer pursuant to law.

7. **PRIME** means the so-called annual prime rate of interest established and quoted by The Wall Street Journal (or its successor), from time to time, but in no event greater than the highest lawful rate from time to time in effect.

8. **PERMITTED USE** means general office use consistent with a first-class office building and for no other purpose.

9. **REAL PROPERTY** means the Building, the land upon which the Building stands, together with adjoining parking areas, sidewalks, driveways, landscaping and land.

10. **STATE** means the State of New Jersey.

11. **TERM** means the period of time beginning on the Commencement Date and ending on the Expiration Date.

— End of Basic Lease Provisions and Definitions —

General Conditions

1. LEASE:

Landlord has leased the Premises to Tenant for the Term.

2. FIXED BASIC RENT:

Tenant will pay Landlord the Fixed Basic Rent. At Landlord's option, upon notice to Tenant, Tenant will pay the Fixed Basic Rent and Additional Rent by electronic transfer. The Fixed Basic Rent payable for the entire Term will be the aggregate of the Annual Rate set forth in the Basic Lease Provisions, less the Fixed Base Rent for the months set forth in Article 7 of the Basic Lease Provisions pursuant to the rent abatement provision included therein, and will be payable, in advance, on the first day of each calendar month during the Term at the Monthly Installments set forth in the Basic Lease Provisions, except that a proportionately lesser amount will be paid for the first month of the Term if the Term commences on a day other than the first day of the month. Tenant will pay the first (1st) full monthly installment of Fixed Basic Rent upon Tenant's execution and delivery of this Lease. Tenant will pay Fixed Basic Rent, and any Additional Rent, to Landlord at Landlord's address set forth in the first paragraph of this Lease, or at such other place as Landlord may designate in writing, without demand and without counterclaim, deduction or set off.

3. USE AND OCCUPANCY:

Tenant will use the Premises solely for the Permitted Use.

Neither Tenant, nor anyone acting by or through Tenant, will generate, handle, dispose, store or discharge any hazardous substances or wastes as defined by Legal Requirements in, on or around the Premises, the Building or the Real Property in violation of any Legal Requirements (such actions collectively referred to as "**Prohibited Actions**"). Tenant will defend, indemnify and hold Landlord harmless against any and all loss, cost, damage, liability or expense (including attorneys' fees and disbursements) which Landlord may sustain as a result of any Prohibited Actions (except to the extent resulting from Landlord's own gross negligence of willful misconduct).

Tenant shall not be responsible for the remediation of: (i) any pre-existing environmental conditions (e.g., environmental conditions existing prior to Landlord's delivery of the Premises to Tenant); or (ii) the presence of Contaminants (as hereinafter defined) in violation of Legal Requirements, except to the extent that Tenant or Tenant's Agents (as defined in Article 4 herein below) has caused such condition or violation, or exacerbated such condition or violation, in which event Tenant shall only be responsible to the extent such condition or violation has been caused by Tenant or Tenant's Agent or exacerbated by Tenant or Tenant's Agents. As used in this Article, the term "Contaminants" shall include, without limitation, any regulated substance, toxic substance, hazardous substance, hazardous waste, pollution, pollutant, contaminant, petroleum, asbestos or polychlorinated biphenyls, as defined or referred to in any applicable Legal Requirements. Landlord represents that, as of the date hereof, Landlord has no actual knowledge of the presence of Contaminants in the Building or the Premises at levels in violation of applicable Legal Requirements.

Landlord shall, at its sole cost and expense, be responsible for removing any violations currently affecting the Building and/or the Real Property, unless Tenant has caused same. Tenant, at its sole cost and expense, shall comply with the Americans With Disabilities Act of 1990, as amended, within the Premises necessitated by Tenant's particular manner of use of the Premises or Tenant's alterations, additions or improvements within the Premises, except for Landlord's Work (as defined in Exhibit C).

4. CARE AND REPAIR OF PREMISES:

Tenant will not commit any act that damages the Premises or Building and will take good care of the Premises, and will comply with all Legal Requirements affecting the Premises or the Tenant's use and/or occupancy of the Premises. Landlord will, at Tenant's expense, make all necessary repairs to the Premises. Landlord will make all necessary repairs to the Common Facilities. The cost of repairs to the Common Facilities will be included in Operating Costs, except where the repair has been made necessary by misuse or neglect by Tenant or Tenant's agents, employees, contractors, invitees, visitors or licensees (collectively, "**Tenant's Agents**"), in which event Landlord will nevertheless make the repair but Tenant will pay to Landlord, as Additional Rent, upon demand, the cost incurred by Landlord to complete such repairs. All improvements made by Tenant prior to or after the commencement of the Term which are attached to the Premises will, at Landlord's option, become the property of Landlord upon the expiration or sooner termination of this Lease. Not later than the last day of the Term, Tenant will, at Tenant's expense, remove from the Building all of Tenant's personal property and those improvements made by Tenant which Landlord has not elected by notice to Tenant to retain as Landlord's property, as well as all trade fixtures (other than built-in cabinet work), moveable partitions, telephone, computer, data and antenna wiring, cabling and related conduit and the like. Tenant will repair all injury done by or in connection with the installation or removal of said property, improvements, wiring and the like; cap or terminate all telephone, computer and data connections at service entry panels in accordance with Legal Requirements; and surrender the Premises in as good condition as they were at the beginning of the Term, except for reasonable wear and damage by casualty, insured damage, or other cause not due to the willful or negligent act or omission of Tenant and/or Tenant's Agents. All property of Tenant remaining on the Premises after the last day of the Term will be conclusively deemed abandoned and may be removed and discarded or stored at Tenant's risk by Landlord, and Tenant will pay Landlord for the cost of such removal, discarding and/or storage. Notwithstanding anything contained herein to the contrary, Tenant shall remove all installations that are "non-standard office improvements" that are so designated by Landlord on Tenant's plans when submitted for approval. For purposes hereof, "**non-standard office improvements**" shall mean raised flooring, interior staircases, vaults, elevators, modifications to the Building's utility and mechanical systems and unusual configuration for first class office space. Tenant shall repair any damage to the Premises resulting from such removal.

Tenant is responsible for all costs related to the repair and maintenance of any additional or supplemental HVAC systems, appliances and equipment serving exclusively the Premises or installed to meet Tenant's specific requirements. Tenant will purchase and maintain throughout the Term an annual full maintenance and service contract for this equipment and will forward a copy of each proposed contract to Landlord for its reasonable approval prior to signing it. Landlord does not recommend the installation or operation of a dishwasher within the Premises given their inherent risks; therefore, Tenant assumes full risk and responsibility for the installation and operation of a dishwasher in the Premises and agrees to indemnify, release and hold harmless, Landlord, its agents, employees, contractors, tenants, occupants and invitees from any and all claims, liabilities, injuries, losses, damages, or expenses of whatever nature or kind, that in any way arise from the dishwasher, including, but not limited to, any and all claims concerning leaks, mildew, mold or mold-like infestation within the Premises and/or Building. In furtherance of the foregoing, such indemnification shall include but not be limited to, any claims by Landlord with respect to damage to the Common Facilities of the Building, as well as claims by other tenants of the Building for damage to the premises occupied by such other tenants and the personal property located therein, resulting from the installation and operation of the dishwasher or resulting from any leak or other malfunctioning of the dishwasher resulting from the installation or operation of the dishwasher following the date of this Lease. In the event that, in the sole and exclusive opinion of Landlord or as may be required by legal requirements, remediation of any mildew, mold or mold-like infestation in the Premises and/or the Building is required, Landlord shall make all necessary repairs to the Premises and/or the Building, as the case may be, at Tenant's sole and exclusive cost and expense. Landlord assumes no responsibility whatsoever for Tenant's installation and use of a dishwasher and Tenant hereby agrees to assume all responsibility, costs and expenses in connection with Tenant's use of a dishwasher, including any and all maintenance, repairs or replacements to the dishwasher. Landlord shall provide cleaning services to the Premises as set forth in this Lease, however, Landlord shall not be responsible for running, emptying or cleaning the dishwasher.

5. ALTERATIONS, ADDITIONS OR IMPROVEMENTS:

Tenant will not, without first obtaining the written consent of Landlord, make any alterations, additions or improvements (collectively, "**alterations**") in, to or about the Premises. Unless the alterations affect the Common Facilities or Building Systems or would otherwise require a building permit, Landlord will not unreasonably withhold or delay its consent. Building Systems include the life safety, plumbing, electrical, heating, ventilation and air conditioning systems in the Building. Tenant may, upon prior notice to Landlord, perform (i) minor cosmetic improvements, such as painting and wallpapering, or (ii) alterations which do not .affect the Common Facilities or Building Systems or would otherwise require a building permit, and whose cost does not exceed $50,000 in the aggregate, without the prior consent of Landlord.

If Tenant shall request the consent or approval of Landlord to the making of any alterations or to any other thing, and Landlord shall seek and pay a separate fee for the opinion of Landlord's counsel, architect, engineer or other representative or agent as to the form or substance thereof, Tenant shall pay Landlord, as Additional Rent, within 30 days after demand, all reasonable costs and expenses of Landlord incurred in connection therewith, including, in case of any alterations, costs and expenses of Landlord in reviewing plans and specifications.

6. ASSIGNMENT AND SUBLEASE:

Tenant will not mortgage, pledge, assign or otherwise transfer this Lease or sublet all or any portion of the Premises in any manner except as specifically provided for in this Article 6:

a) If Tenant desires to assign this Lease or sublease all or part of the Premises, the terms and conditions of such assignment or sublease will be communicated by Tenant to Landlord in writing no less than thirty (30) days prior to the effective date of such sublease or assignment. Prior to such effective date, Landlord will have the option, upon notice to Tenant, to terminate the Lease, (i) in the case of subletting, solely as to that portion of the Premises to be sublet, or (ii) in the case of an assignment, as to all of the Premises, and in such event, Tenant will be fully released from its obligations with respect to the terminated space ("**Recapture Space**") accruing from and after the effective date. If Landlord terminates the Lease as to the Recapture Space, in no event will Landlord be liable for a brokerage commission in connection with the proposed assignment or sublet. If Landlord recaptures the Recapture Space, Tenant shall be solely responsible, at its cost and expense, for the reasonable cost of all alterations required to separate the Recapture Space from the balance of the Premises, including, but not limited to, construction of demising walls and separation of utilities. Notwithstanding the foregoing, Landlord shall have no right to exercise its rights herein above if (i) the space that Tenant proposes to sublet is less than fifty percent (50%) of the Premises, without regard to the term of such subletting, or (ii) the space that Tenant proposes to sublet is equal to or greater than fifty percent (50%) of the Premises and the term of such subletting (including renewal options, if any) is to expire at any time prior to the last twelve (12) months of the Term or the Renewal Term (as hereinafter defined), if applicable.

b) In the event that the Landlord elects not to terminate the Lease as to the Recapture Space, Tenant may assign this Lease or sublet the whole or any portion of the Premises, subject to Landlord's prior written consent, which consent will not be unreasonably withheld, conditioned or delayed, subject to the following terms and conditions and provided the proposed occupancy is in keeping with that of a first-class office building:

i) Tenant will provide to Landlord the name, address, nature of the business and evidence of the financial condition of the proposed assignee or sublessee;

ii) The assignee will assume, by written instrument, all of the obligations of the Tenant under this Lease, and a copy of such assumption agreement will be furnished to Landlord within ten (10) days of its execution. Any further assignment of this Lease or subletting of all or any part of the Premises will be permitted only in accordance with the terms hereof;

iii) Each sublease will provide that sublessee's rights will be no greater than those of Tenant, and that the sublease is subject and subordinate to this Lease and to the matters to which this Lease is or will be subordinate, and that in the event of default by Tenant under this Lease, Landlord may, at its option, have such

sublessee attorn to Landlord provided, however, in such case Landlord will not (i) be liable for any previous act or omission of Tenant under such sublease or, (ii) be subject to any offset not expressly provided for in this Lease or by any previous prepayment of more than one month's rent;

iv) The liability of Tenant and each assignee will be joint, several and primary for the observance of all the provisions, obligations and undertakings of this Lease, including the payment of Fixed Basic Rent and Additional Rent through the entire Term, as the same may be renewed, extended or otherwise modified;

v) Tenant will promptly pay to Landlord fifty percent (50%) of any consideration received for any assignment or all of the rent (fixed basic rent and additional rent) and any other consideration payable by the subtenant to Tenant under or in connection with a sublease, after deducting therefrom all usual and customary expenses incurred by Tenant in connection therewith (including, but not limited to, broker's fees, reasonable attorneys' fees and disbursements marketing expenses and any expenses in connection with rent abatements, work contributions or construction expenses) as and when received, in excess of the Fixed Basic Rent required to be paid by Tenant for the area sublet;

vi) The acceptance by Landlord of any rent from the assignee or from any subtenant or the failure of Landlord to insist upon strict performance of any of the terms, conditions and covenants of this Lease will release neither Tenant, nor any assignee assuming this Lease, from the Tenant's obligations set forth in this Lease;

vii) The proposed assignee or subtenant is not then an occupant of any part of the Building or any other building then owned by Landlord or its affiliates within the Business Park in which the Building is located, unless Landlord or its affiliates do not have comparable space available for leasing;

viii) The proposed assignee or subtenant is not an entity or a person or an affiliate of an entity with whom Landlord is or has been, within the preceding nine (9) month period, negotiating to lease space in the Building or any other building owned by Landlord or its affiliates within the Business Park in which the Building is located;

ix) There will not be more than two (2) subtenant in the Premises;

x) Tenant will not publicly advertise the subtenancy for less than Landlord's then current market rent for the Premises, provided, however, that nothing contained herein shall be deemed to prohibit Tenant from actual subletting for less than Landlord's then current market rent;

xi) Tenant will pay Landlord a TWO THOUSAND FIVE HUNDRED AND 00/100 DOLLAR ($2,500.00) administrative fee for each request for consent to any sublet or assignment simultaneously with Tenant's request for consent to a specific sublet or assignment; and

xii) The proposed assignee or subtenant will use the Premises for the Permitted Use only.

xiii) As used herein, the term "**Business Park**" shall mean 4, 6, 7, 8 & 9 Campus Drive, 1, 3, 5 & 7 Sylvan Way, 4 Gatehall Drive and 2 Hilton Court.

c) If Tenant is a corporation (other than a corporation whose stock is listed and traded on a nationally recognized stock exchange), the transfer (however accomplished, whether in a single transaction or in a series of related or unrelated transactions) of a majority of the issued and outstanding stock [or any other mechanism such as, by way of example, the issuance of additional stock, a stock voting agreement or change in class(es) of stock which results in a change of control of Tenant], and if Tenant is a partnership, joint venture or limited liability company (collectively "Entity"), the transfer (by one or more transfers) of an interest in the distributions of profits and losses of such Entity (or other mechanism, such as, by way of example, the creation of additional partnership or limited liability company interests) which results in a change of control of such Entity will be deemed an assignment of this Lease, subject to, and as provided by, the provisions of this Article.

Notwithstanding anything contained in this Lease to the contrary, Tenant may assign this Lease or sublet all or any portion of the Premises to (i) any corporation or other Entity directly or indirectly controlling or controlled by Tenant or under common control with Tenant, or (ii) any successor by merger, consolidation, corporate reorganization or acquisition of all or substantially all of the assets or stock of Tenant (any transaction referred to in clauses (i) or (ii) hereof will be a "**Permitted Transfer**") provided that the net worth of any transferee of a Permitted Transfer will not be less than the greater of (A) the net worth of Tenant immediately preceding the Permitted Transfer or (B) the net worth of Tenant as of the date of the execution and delivery of this Lease by both parties. Any other assignment or subleasing of Tenant's interest under this Lease will be subject to Landlord's approval, which approval will not be unreasonably withheld, conditioned or delayed.

d) Except as specifically set forth above, if any portion of the Premises or of Tenant's interest in this Lease is acquired by any other person or entity, whether by assignment, mortgage, sublease, transfer, operation of law or act of the Tenant, or if Tenant pledges its interest in this Lease or in any security deposit required hereunder, Tenant will be in default.

7. COMPLIANCE WITH RULES AND REGULATIONS:

Tenant will observe and comply with the rules and regulations set forth in Exhibit B and with such further reasonable rules and regulations as Landlord may prescribe from time to time.

8. DAMAGES TO BUILDING:

If the Building is damaged by fire or any other cause to such extent that the cost of restoration, as reasonably estimated by Landlord, will equal or exceed twenty-five (25%) percent of the replacement value of the Building (exclusive of foundations) just prior to the occurrence of the damage, then Landlord may, no later than the sixtieth (60th) day following the damage, give Tenant a notice electing to terminate this Lease, or if restoration of the damage to the Premises will require more than one hundred eighty (180) days to complete or if such damage is not fully repaired and reasonable access to the Premises restored within one hundred eighty (180) days from the date of damage, then, in any such event, then Tenant may, no later than the sixtieth (60th) day following the date of damage or following the end of said one hundred eighty (180) day period, give Landlord a notice of election to terminate this Lease. In either such event, this Lease will terminate on the thirtieth (30th) day after the giving of such notice, and Tenant will surrender possession of the Premises on or before such date. If this Lease is not terminated pursuant to this Article, Landlord will restore the Building and the Premises with reasonable promptness, subject to Force Majeure, as defined in Article 30 e) below, and subject to the availability and adequacy of the insurance proceeds. Landlord shall not be obligated to restore fixtures and improvements owned by Tenant. Notwithstanding anything to the contrary contained herein, if more than twenty-five percent (25%) of the Premises shall be rendered untenantable for the normal conduct of Tenant's business as a result of a fire or casualty during the last twelve (12) months of the Term, then the terms and conditions of this Article 8 shall continue to control and be binding upon Landlord and Tenant except that: (i) Tenant shall have the right to terminate this Lease by giving notice to Landlord in accordance with this Article 8 if Landlord's estimated time of restoration provides that the substantial completion of the repairs of the Premises which are Landlord's responsibility will take longer than one hundred twenty (120) days from the date of the casualty.

In any case in which use of the Premises is affected by any damage to the Building, there will be either an abatement or an equitable reduction in Fixed Basic Rent, depending on the period for which and the extent to which the Premises are not reasonably usable for general office use. The words "restoration" and "restore" as used in this Article will include repairs.

9. EMINENT DOMAIN:

If Tenant's use of the Premises is materially affected due to the taking by eminent domain of (a) the Premises or any part thereof; or (b) any other part of the Building; then, in either event, this Lease will terminate on the date when title vests pursuant to such taking. The Fixed Basic Rent, and any Additional Rent, will be apportioned as of such termination date and any Fixed Basic Rent or Additional Rent paid for any period beyond said date, will be repaid to Tenant. Tenant will not be entitled to any part of the award for such taking or any payment in lieu thereof, but Tenant may file a separate claim for any taking of fixtures and improvements owned by Tenant which have not become the Landlord's property, and for moving expenses, provided the same will, in no way, affect or diminish Landlord's award. In the event of a partial taking which does not effect a termination of this Lease but does deprive Tenant of the use of a portion of the Premises, there will be either an abatement or an equitable reduction in Fixed Basic Rent, depending on the period for which and the extent to which the Premises are not reasonably usable for general office use.

10. LANDLORD'S REMEDIES ON DEFAULT:

If Tenant defaults in the payment of Fixed Basic Rent or any Additional Rent or in the performance of any of the other covenants and conditions of this Lease or permits the Premises to become deserted, abandoned or vacated, Landlord may give Tenant notice of such default, and if Tenant does not cure any Fixed Basic Rent or Additional Rent default within five (5) days or other default within thirty (30) days after the giving of such notice (or if such other default is of such nature that it cannot be completely cured within such period, if Tenant does not commence such curing within such thirty (30) days and thereafter proceed with reasonable diligence and in good faith to cure such default), then Landlord may terminate this Lease or Tenant's right to possession upon not less than ten (10) days' notice to Tenant, and on the date specified in such notice Tenant's right to possession of the Premises will cease, but Tenant will remain liable as provided below in this Lease. If this Lease or Tenant's right to possession will have been so terminated by Landlord, Landlord may at any time thereafter recover possession of the Premises by any lawful means and remove Tenant or other occupants and their effects. Landlord may, at Tenant's expense, relet all or any part of the Premises and may make such alterations, decorations or other changes to the Premises as Landlord considers appropriate in connection with such reletting, without relieving Tenant of any liability under this Lease. Tenant shall pay to Landlord, on demand, such expenses as Landlord may incur, including, without limitation, court costs and reasonable attorney's fees and disbursements, in enforcing the performance of any obligation of Tenant under this Lease.

Tenant hereby waives all right of redemption to which Tenant or any person under Tenant might be entitled by any Legal Requirement. Tenant hereby further waives any and all rights to invoke N.J.S.A. 2A:18-60.

11. DEFICIENCY:

In any case where Tenant has defaulted and Landlord has recovered possession of the Premises or terminated this Lease or Tenant's right to possession, Tenant's obligation to pay Landlord all the Fixed Basic Rent and Additional Rent up to and including the Expiration Date will not be discharged or otherwise affected. Landlord will have all rights and remedies available to Landlord at law and in equity by reason of Tenant's default, and may periodically sue to collect the accrued obligations of the Tenant together with interest at Prime plus four percent per annum from the date owed to the date paid, but in no event greater than the maximum rate of interest permitted by law.

Alternatively, in any case where Landlord has recovered possession of the Premises by reason of Tenant's default, Landlord may at Landlord's option, and at any time thereafter, and without notice or other action by Landlord, and without prejudice to any other rights or remedies it might have hereunder or at law or equity, become entitled to recover from Tenant, as damages for such breach, in addition to such other sums herein agreed to be paid by Tenant, to the date of re-entry, expiration and/or dispossess, an amount equal to the difference between the Fixed Basic Rent and Additional Rent reserved in this Lease from the date of such default to the date of Expiration Date of the original Term and the then fair and reasonable rental value of the Premises for the same period. Said damages shall become

due and payable to Landlord immediately upon such breach of this Lease and without regard to whether this Lease be terminated or not, and if this Lease be terminated, without regard to the manner in which it is terminated. In the computation of such damages, the difference between an installment of Fixed Basic Rent and Additional Rent thereafter becoming due and the fair and reasonable rental value of the Premises for the period for which such installment was payable shall be discounted to the date of such default at the rate of not more than six percent (6%) per annum.

12. SUBORDINATION:

This Lease will, at the option of any holder of any underlying lease or holder of any first mortgage or first trust deed, be subject and subordinate to any such underlying lease and to any first mortgage or first trust deed which may now or hereafter affect the Real Property, and also to all renewals, modifications, consolidations and replacements of such underlying leases and first mortgage or first trust deed. Although no instrument or act on the part of Tenant will be necessary to effectuate such subordination, Tenant will, nevertheless, within ten (10) days after written request by Landlord, execute and deliver such further instruments confirming such subordination of this Lease as may be desired by the holders of such first mortgage or first trust deed or by any of the lessors under such underlying leases. If any underlying lease to which this Lease is subject terminates, Tenant will, on timely request, recognize and acknowledge the owner of the Real Property as Tenant's landlord under this Lease.

13. SECURITY DEPOSIT:

Tenant will deposit with Landlord on the signing of this Lease by Tenant, the Security Deposit for the performance of Tenant's obligations under this Lease, including the surrender of possession of the Premises to Landlord in the condition required under this Lease. If Landlord applies all or any part of the Security Deposit to cure any default of Tenant, Tenant will, on demand, deposit with Landlord the amount so applied so that Landlord will have the full Security Deposit on hand at all times during the Term. In the event of a bona fide sale of the Real Property, subject to this Lease, upon notice to Tenant, Landlord will transfer the Security Deposit to the purchaser, and upon purchaser's assumption of the Security Deposit upon notice to Tenant, Landlord will be considered released by Tenant from all liability for the return of the Security Deposit; and Tenant agrees to look solely to the new landlord for the return of the Security Deposit, and it is agreed that this will apply to every transfer or assignment made of the Security Deposit to a new landlord. Provided Tenant is not in default beyond the expiration of any applicable notice and cure period, the Security Deposit (less any portions of it previously used, applied or retained by Landlord), will be returned to Tenant after the expiration or sooner termination of this Lease and delivery of the entire Premises to Landlord in accordance with the provisions of this Lease. Tenant will not assign, pledge or otherwise encumber the Security Deposit, and Landlord will not be bound by any such assignment, pledge or encumbrance.

14. RIGHT TO CURE TENANT'S BREACH:

If Tenant breaches any covenant or condition of this Lease, Landlord may, on prior notice to Tenant (except that no notice need be given in case of emergency), cure such breach at the expense of Tenant, and the reasonable amount of all expenses, including attorney's fees, incurred by Landlord in so doing (whether paid by Landlord or not) will be deemed payable on demand as Additional Rent.

15. LIENS:

Tenant will use commercially reasonable efforts to prevent any lien or other encumbrance to be filed as a result of any act or omission (or alleged act or omission) of Tenant. Tenant will, within thirty (30) days after notice from Landlord, discharge or satisfy by bonding or otherwise any liens filed against Landlord or all or any portion of the Real Property as a result of any such act or omission, including any lien or encumbrance arising from contract or tort claims.

16. RIGHT TO INSPECT AND REPAIR:

Landlord or its designees may enter the Premises (but will not be obligated to do so) at any reasonable time on reasonable prior notice to Tenant (except that no notice need be given in case of emergency) for the purpose of: (i) inspection; (ii) performance of any work or the making of such repairs, replacements or additions in, to, on and about the Premises or the Building, as Landlord deems necessary or desirable; or (iii) showing the Premises to prospective purchasers, mortgagees and, during the last twelve (12) months of the Term (as same may be extended pursuant to Article 32 herein below), tenants. A representative of Tenant shall have the right to accompany any party accessing the Premises pursuant to this Article 16, provided, that the availability of said representative shall not be a condition to such access. Tenant will provide Landlord or its designees free and unfettered access to any mechanical or utility rooms, conduits, risers or the like located within the Premises. Landlord or any prospective tenant shall have the right to enter the space to perform inspections, surveys or measurements as may be necessary to prepare the Premises for occupancy by the succeeding tenant. Tenant will have no claims, including claims for interruption of Tenant's business, or cause of action against Landlord by reason of entry for such purposes in accordance with this provision.

17. SERVICES TO BE PROVIDED BY LANDLORD:

a) Landlord will furnish to the Premises (i) electricity for normal lighting and ordinary office machines, (ii) during Building Hours, HVAC required for the reasonable use and occupancy of the Premises, and (iii) janitorial service (as set forth in Exhibit D), all in a manner comparable to that of similar buildings in the area. In addition, Landlord shall provide Common Facilities lighting at the Real Property during Building Hours and for such additional hours as, in Landlord's judgment, is necessary or desirable to insure proper operation of the Real Property. Landlord shall maintain the Common Facilities in a manner consistent with applicable Legal Requirements.

b) Tenant will be entitled to make use of HVAC beyond the Building Hours, at Tenant's sole cost and expense, provided Tenant has notified Landlord by 3:00 p.m. on the day that Tenant will require said overtime use if said overtime use is required on any weekday, and by 3:00 p.m. on Friday for Saturday and/or Sunday overtime use.

Tenant will pay Landlord the HVAC After Hours Charge (as defined in the Basic Lease Provisions) for HVAC beyond the Building Hours.

18. TENANT'S ESTOPPEL:

Tenant will, from time to time, on not less than ten (10) business days prior written request by Landlord, execute, acknowledge and deliver to Landlord an estoppel certificate a) certifying the date of commencement of this Lease, (b) certifying that this Lease is unmodified and in full force and effect or, if modified, stating the nature of such modification and certifying that this Lease, as so modified, is in full force and effect, (c) stating the dates to which rent and any other amounts payable hereunder have been paid and the amount of any unforfeited security deposit then held by Landlord, (d) certifying that no defaults exist as of such date, or, if there are any defaults, stating the nature of such defaults, (e) acknowledging that there are not, to Tenant's knowledge, any uncured defaults on the part of Landlord, or, if there are uncured defaults on the part of the Landlord, stating the nature of such uncured defaults, (f) acknowledging that Tenant does not have any claim or right of offset against Landlord, and containing such information as Landlord or its mortgagee may reasonably request.

19. HOLDOVER TENANCY:

Tenant agrees that it must surrender possession of the Premises to Landlord on the Expiration Date or earlier termination of the Term. Tenant agrees to indemnify and hold Landlord harmless from and against all liabilities, obligations, damages, penalties, claims, costs, charges and expenses, including attorneys' fees, resulting from any delay by Tenant in so surrendering the Premises, including any claims made by any succeeding tenant based on such delay. Tenant agrees that if possession of the Premises is not surrendered to Landlord on the Expiration Date or earlier termination of the Term, then Tenant agrees to pay Landlord as liquidated damages for each month and for any portion of a month during which Tenant holds over in the Premises after the Expiration Date or earlier termination of the Term, a sum equal to 150% of the average Fixed Basic Rent and Additional Rent which was payable per month under this Lease during the last three months of the Term for the first month of Tenant holding over, and 200% for each month or partial month thereafter. Such liquidated damages shall not limit Tenant's indemnification obligation with respect to claims made by any succeeding tenant based on Tenant's failure or refusal to surrender the Premises to Landlord on the Expiration Date or sooner termination of the Term. Nothing contained herein shall be deemed to authorize Tenant to remain in occupancy of the Premises after the Expiration Date or sooner termination of the Term.

20. LANDLORD'S WORK; COMMENCEMENT:

a) Landlord agrees that, prior to the Commencement Date, Landlord will perform work in the Premises in accordance with Exhibit C of this Lease (the "**Work**").

b) A satisfactory inspection of the Work by the applicable governmental authority allowing the Premises to be legally occupied, which may be later evidenced by a (temporary or final) Certificate of Occupancy (although the date of issuance may be other than the Commencement Date), will constitute sufficient evidence to demonstrate that Landlord has performed the Work and the Term has commenced. For the purposes of this Lease, the terms "substantially complete", "substantial completion" or "substantially completed" shall mean the date the Landlord has completed the Work, as defined in Exhibit C, with the exception of minor or insubstantial details of construction, mechanical adjustments, finishing touches or decoration which do not materially interfere with Tenant's use or occupancy of the Premises and has delivered possession of the Premises to Tenant.

c) Notwithstanding anything contained in this Lease to the contrary, if Tenant (or anyone having rights under or through Tenant) shall occupy all or any part of the Premises prior to the date Landlord has completed the Work, other than in accordance with Paragraph 13 of Exhibit C, then the Commencement Date shall be deemed to occur on such date that Tenant (or anyone claiming under or through Tenant) shall occupy all or any part of the Premises.

d) Notwithstanding anything contained in this Lease to the contrary, if Landlord, for any reason whatsoever cannot deliver possession of the Premises to Tenant on the Commencement Date set forth in the Basic Lease Provisions, this Lease will not be void or voidable, nor will Landlord be liable to Tenant for any loss or damage resulting therefrom, but in that event, the Term will commence on the earlier of: (i) the date Landlord delivers possession of the Premises to Tenant or (ii) the date Landlord would have delivered possession of the Premises to Tenant but for any reason attributable to Tenant.

e) Upon request by Landlord, Tenant agrees to memorialize the Commencement Date and Expiration Date in writing and ratify and confirm said Commencement and Expiration Date by completing and signing a Commencement Date Agreement attached hereto as Exhibit F, in the form of an amendment to this Lease, no later than thirty (30) days following Landlord's request therefor.

21. OVERDUE RENT CHARGE/INTEREST:

a) Tenant will pay an "**Overdue Rent Charge**" of eight percent (8%) of any installment of Fixed Basic Rent or Additional Rent which Tenant fails to pay within five (5) days after the due date thereof, to cover the extra expense involved in handling non-payments and/or delinquent payments. The Overdue Rent Charge will constitute Additional Rent and an agreed upon amount of liquidated damages and not a penalty.

b) Any amount owed by Tenant to Landlord which is not paid when due will bear interest at the lesser of (i) the rate of two percent (2%) per month from the due date of such amount, or (ii) maximum legal interest rate permitted by law. The payment of interest on such amounts will not extend the due date of any amount owed.

22. INSURANCE:

a) Tenant's Insurance. On or before the Commencement Date or Tenant's prior entry into the Premises, Tenant will obtain and have in full force and effect, insurance coverage as follows:

(i) workers' compensation in an amount required by law; (ii) commercial general liability with a per occurrence limit of Three Million Dollars ($3,000,000) and a general aggregate of Five Million Dollars ($5,000,000) for bodily injury and property damage on an occurrence basis and containing an endorsement naming Landlord, Mack-Cali Realty, L.P., Mack-Cali Realty Corporation, their respective affiliates, subsidiaries, agents, designees and lender, if any, as additional insureds and no modification that would make Tenant's policy excess or contributing with Landlord's liability insurance; (iii) all risk property insurance for the full replacement value of all of Tenant's furniture, fixtures, equipment, alterations, improvements or additions that do not become Landlord's property upon installation; and (iv) any other form or forms of insurance or any increase in the limits of any of the coverages described above or other forms of insurance as Landlord or the mortgagees or ground lessors (if any) of Landlord may reasonably require from time to time if in the reasonable opinion of Landlord or said mortgagees or ground lessors said coverage and/or limits become inadequate or less than that commonly maintained by prudent tenants with similar uses in similar buildings in the area. All policies obtained by Tenant will be issued by carriers having ratings in Best's Insurance Guide ("**Best**") of A and VIII, or better (or equivalent rating by a comparable rating agency if Best no longer exists) and licensed in the State. The general liability policies must be endorsed to be primary and noncontributing with the policies of Landlord being excess, secondary and noncontributing and shall contain an endorsement stating no policy will be canceled without thirty (30) days' prior written notice by the insurance carrier to Landlord (the "Cancellation Endorsement"). If the forms of policies, endorsements, certificates, or evidence of insurance required by this Article are superseded or discontinued, Landlord may require other equivalent or better forms. Evidence of the insurance coverage required to be maintained by Tenant, represented by certificates of insurance issued by the insurance carrier, must be furnished to Landlord via electronic mail at inscert@mack-cali.com, Attn: Risk Management Department, prior to Tenant occupying the Premises and at least thirty (30) days prior to the expiration of current policies. Copies of all endorsements required by this Article must accompany the certificates delivered to Landlord. The certificates will state the amounts of all deductibles and self-insured retentions and the Cancellation Endorsement. If requested in writing by Landlord, Tenant will provide to Landlord a certified copy of any or all insurance policies or endorsements required by this Article.

b) Tenant will not do or allow anything to be done on the Premises which will increase the rate of fire insurance on the Building from that of a general office building. If any use of the Premises by Tenant results in an increase in the fire insurance rate(s) for the Building, Tenant will pay Landlord, as Additional Rent, any resulting increase in premiums. Tenant's insurance obligations set forth in Section 22 a) (i) and (ii) above shall continue in effect throughout the Term and after the Term as long as Tenant, or anyone claiming by, through or under Tenant, occupies all or any part of the Premises.

c) Waiver of Claims. Landlord and Tenant hereby waive all claims and release each other and each other's employees, agents, customers and invitees from any and all liability for any loss, damage or injury to property occurring in, on, about or to the Premises or the Building by reason of fire or other casualty, regardless of cause, including the negligence of Landlord or Tenant and their respective employees, agents, customers and invitees, and agree that the property insurance carried by either of them will contain a clause whereby the insurer waives its right of subrogation against the other party. Each party to this Lease will give to its insurance company notice of the provisions of this Section 22 c) and have such insurance policies properly endorsed, if necessary, to prevent the invalidation of such insurance by reason of the provisions of this Section c). Each party shall bear the risk of its own deductibles. Landlord and Tenant acknowledge that the insurance requirements of this Lease reflect their mutual recognition and agreement that each party will look to its own insurance and that each can best insure against loss to its property and business no matter what the cause. If Tenant fails to maintain insurance or self insures for loss including, without limitation, business interruption, Tenant shall be deemed to have released Landlord for all loss or damage which would have been covered if Tenant had so insured.

d) Building Insurance. Landlord will at all times during the Term carry a policy of insurance which insures the Building, including the Premises and the Work, if any, against loss or damage by fire or other casualty (namely, the perils against which insurance is afforded by a standard fire insurance policy); provided, however, that Landlord will not be responsible for, and will not be obligated to insure against, any loss of or damage to any personal property or trade fixtures of Tenant or any alterations which Tenant may make to the Premises or any loss suffered by Tenant due to business interruption. All insurance maintained by Landlord pursuant to this Article may be effected by blanket insurance policies.

23. INDEMNITY:

Tenant will defend, indemnify and hold Landlord, Mack-Cali Realty, L.P., Mack-Cali Realty Corporation and their respective affiliates, subsidiaries, designees and agents ("Landlord's Parties") harmless from and against any and all claims, actions or proceedings, costs, expenses and liabilities, including reasonable attorneys' fees and disbursements incurred in connection with each such claim, action or proceeding, whether in contract or tort, arising from Tenant's use and occupancy of the Premises, including Tenant's negligent acts or omissions at the Real Property except to the extent caused by the negligence or willful misconduct of Landlord's Parties. In case any action or proceeding be brought against Landlord's Parties by reason of any such claim, Tenant, upon notice from any of Landlord's Parties, will, at Tenant's expense, resist and defend such action or proceeding with counsel reasonably acceptable to Landlord's Parties, provided that Landlord's Parties shall permit Tenant to assume the sole control of the defense of such action or proceeding and shall cooperate fully with Tenant in such defense and all actions related thereto. Landlord's Parties will not compromise or settle any claim or suit in a manner that admits fault or negligence on the

part of Tenant, or that would otherwise adversely affect any rights of Tenant. Tenant have no liability with respect to claims settled or compromised without Tenant's prior knowledge and express written consent.

24. BROKER:

Tenant represents and warrants to the Landlord that no broker brought about this transaction, except Tenant's Broker and Tenant agrees to indemnify and hold Landlord harmless from any and all claims of any broker(s) (other than Tenant's Broker), claiming to have represented Tenant in this transaction, arising out of or in connection with the negotiations of or entering into of this Lease by Tenant and Landlord.

25. PERSONAL LIABILITY:

There will be no personal liability on the part of Landlord, its constituent members (including officers, directors, partners, members and trustees) and their respective successors and assigns or any mortgagee in possession, with respect to any of the terms, covenants and conditions of this Lease, and Tenant will look solely to the equity of Landlord in the Building for the satisfaction of each and every remedy of Tenant in the event of any breach by Landlord of any of the terms of this Lease to be performed by Landlord, such exculpation of liability to be absolute and without any exceptions whatsoever.

26. NOTICES:

Any notice by either party to the other shall be in writing and shall be deemed to have been duly given only if (i) delivered personally or (ii) sent by registered mail or certified mail return receipt requested in a postage paid envelope or (iii) sent by nationally recognized overnight delivery service at Landlord's or Tenant Notice Address as set forth in the Basic Lease Provisions ; or, to either at such other address as Tenant or Landlord, respectively, may designate in writing. Notice shall be deemed to have been duly given, if delivered personally, on delivery thereof, if mailed, upon the seventh (7th) day after the mailing thereof or if sent by overnight delivery service, the next business day.

27. AUTHORITY:

The signatories on behalf of Tenant represent and warrant that they are authorized to execute this Lease, and if Tenant is a corporation or other Entity, Tenant will, within fifteen (15) days of Landlord's request, provide Landlord with a resolution confirming the authorization. Tenant represents and warrants to Landlord (i) that neither Tenant nor any person or entity that directly owns a ten percent (10%) or greater equity interest in Tenant nor any of its officers, directors or managing members (collectively, "**Tenant and Others in Interest**") is a person or entity with whom U.S. persons or entities are restricted from doing business under regulations of the Office of Foreign Asset Control ("**OFAC**") of the Department of the Treasury (including those named on OFAC's Specially Designated and Blocked Persons List) or under any statute, executive order (including Executive Order 13224 signed on September 24, 2001 (the "**Executive Order**") and entitled "Blocking Property and Prohibiting Transactions with Persons Who Commit, Threaten to Commit, or Support Terrorism"), or other governmental action, (ii) that Tenant and Others in Interest's activities do not violate the International Money Laundering Abatement and Financial Anti-Terrorism Act of 2001 or the regulations or orders promulgated thereunder (as amended from time to time, the "**Money Laundering Act**"), and (iii) that throughout the Term Tenant will comply with the Executive Order and the Money Laundering Act.

28. PARKING SPACES

Tenant's occupancy of the Premises will include the use of the parking spaces set forth in the Basic Lease Provisions. Tenant will, upon request, promptly furnish to Landlord the license numbers of the cars operated by Tenant and its subtenants, invitees, concessionaires, licensees and their respective officers, agents and employees. If any vehicle of Tenant, or of any subtenant, invitee, licensee, concessionaire, or their respective officers, agents or employees, is parked in any part of the Real Property other than those portions of the parking area(s) designated for this purpose by Landlord, or if Tenant shall exceed the number of parking spaces allocated to Tenant in the Basic Lease Provisions, then, in addition to Landlord's rights and remedies provided in this Lease, Tenant will pay to Landlord $100.00 per day for each violation Tenant shall fail to immediately cure upon notice from Landlord (which notice may be in-person or telephonic).

29. RELOCATION:

Landlord, at its sole expense, at any time before or during the Term, may relocate Tenant from the Premises to space of reasonably comparable size, window lines, utility and improvements ("**Relocation Space**") within the Building or a comparable building in the business park of which the Building is a part upon ninety (90) days prior notice to Tenant. From and after the date of the relocation, the Fixed Basic Rent and Tenant's Percentage will be adjusted based upon the gross rentable area of the Relocation Space; but in no event will the Fixed Basic Rent or Tenant's Percentage increase as a result of such relocation. Landlord will pay Tenant the actual, reasonable out of pocket moving costs incurred by Tenant in connection with such relocation. Landlord will have no liability for any interference with Tenant's business resulting from such relocation. Landlord shall bear and pay for the cost and expense of any such relocation including, but not limited to, the moving of any furniture and equipment and the reprinting of existing stationery. In connection with any such relocation, the Landlord shall, at its own cost and expense, furnish and install in (or, if practicable, relocate to) the Relocation Space all walls, partitions, floors, floor coverings, ceilings, fixtures, wiring and plumbing, if any, together with Tenant's trade fixtures, equipment, furniture, furnishings and other personal property required for the Tenant's proper use and occupancy thereof, all of which items shall be comparable in quality to those situated in the Premises. The Landlord shall make reasonable efforts to minimize such interference and, if requested by Tenant, shall relocate Tenant during Saturdays, Sundays and/or Business Holidays

30. MISCELLANEOUS:

a) If any of the provisions of this Lease, or the application of such provisions, will be invalid or unenforceable, the remainder of this Lease will not be affected, and this Lease will be valid and enforceable to the fullest extent permitted by law.

b) Intentionally Omitted.

c) No representations or promises will be binding on the parties to this Lease except those representations and promises expressly contained in the Lease.

d) The article headings in this Lease are intended for convenience only and will not be taken into consideration in any construction or interpretation of this Lease or any of its provisions.

e) Force Majeure means and includes those situations beyond either party's reasonable control, including acts of God; strikes; inclement weather; or, where applicable, the passage of time while waiting for an adjustment of insurance proceeds. Any time limits required to be met by either party hereunder, whether specifically made subject to Force Majeure or not, except those related to the payment of Fixed Basic Rent or Additional Rent, will, unless specifically stated to the contrary elsewhere in this Lease, be automatically extended by the number of days by which any required performance is delayed due to Force Majeure.

f) Tenant consents to the receipt of electronic messages from Landlord or its affiliates.

g) No payment by Tenant or receipt by Landlord of a lesser amount than the Fixed Basic Rent and Additional Rent payable hereunder will be deemed to be other than a payment on account of the earliest stipulated Fixed Basic Rent and Additional Rent, nor will any endorsement or statement on any check or any letter accompanying any check or payment of Fixed Basic Rent or Additional Rent be deemed an accord and satisfaction, and Landlord may accept such check or payment without prejudice to Landlord's right to recover the balance of such Fixed Basic Rent and Additional Rent or to pursue any other remedy provided herein or by law. All obligations of Tenant under this Lease shall survive the expiration or earlier termination of this Lease.

h) No failure by either party to insist upon the strict performance of any covenant, agreement, term or condition of this Lease, or to exercise any right or remedy upon a breach of any such covenant, agreement, term or condition, and no acceptance by Landlord of full or partial rent during the continuance of any such breach by Tenant, will constitute a waiver of any such breach or of such covenant, agreement, term or condition. No consent or waiver, express or implied, by either party to or of any breach of any covenant, condition or duty of the other party will be construed as a consent or waiver to or of any other breach of the same or any other covenant, condition or duty, unless such consent or waiver is in writing and signed by the party granting such consent or waiver.

i) Landlord covenants that if, and so long as, Tenant pays Fixed Basic Rent and any Additional Rent as required under this Lease, and performs Tenant's other covenants under the Lease, Landlord will do nothing to affect Tenant's right to peaceably and quietly have, hold and enjoy the Premises for the Term, subject to the provisions of this Lease.

j) The provisions of this Lease will apply to, bind and inure to the benefit of Landlord and its respective heirs, successors, legal representatives and assigns. The term "Landlord" as used in this Lease means only the owner or a master lessee of the Building, so that in the event of any sale of the Building or of any master lease thereof, the Landlord named herein will be and hereby is entirely freed and relieved of all covenants and obligations of Landlord under this Lease accruing after such sale, and it will be deemed without further agreement that the purchaser or the new master lessee of the Building has assumed and agreed to carry out any and all covenants and obligations of Landlord accruing under this Lease after such sale.

k) Landlord reserves the right unilaterally to alter Tenant's ingress and egress to the Building or make any change in operating conditions to restrict pedestrian, vehicular or delivery ingress and egress to a particular location, or at any time close temporarily any Common Facilities to make repairs or changes therein or to effect construction, repairs or changes within the Building, or to discourage non-tenant parking, and may do such other acts in and to the Common Facilities as in Landlord's sole judgment may be desirable to improve their convenience. Landlord shall use commercially reasonable efforts to minimize interference with Tenant's use and enjoyment of the Premises while exercising is rights hereunder.

l) To the extent such waiver is permitted by law, the parties waive trial by jury in any action or proceeding brought in connection with this Lease or the Premises. This Lease will be governed by the laws of the State (without the application of any conflict of laws principles), and any action or proceeding in connection with this Lease shall be decided in the courts of the State.

m) Tenant agrees not to disclose the terms, covenants, conditions or other facts with respect to this Lease, including the Fixed Basic Rent and Additional Rent, to any person, corporation, partnership, association, newspaper, periodical or other entity, except to Tenant's accountants or attorneys (who shall also be required to keep the terms of this Lease confidential) or as required by law, including but not limited to filing requirements of the Securities and Exchange Commission or other statutes, laws or regulations with respect to securities. This non-disclosure and confidentiality agreement will be binding upon Tenant without limitation as to time, and a breach of this paragraph will constitute a material breach under this Lease. Furthermore, any inspection and/or audit Tenant is permitted to perform pursuant to this Lease shall be subject to Tenant and/or Tenant's Certified Public Accounting firm executing a confidentiality agreement reasonably acceptable to Landlord prior to the commencement of any such inspection and/or audit. In addition, Tenants employees, contractors, etc. shall keep any of the terms and conditions of this Lease and any future inspections and/or audits, including any billing statements and/or any backup supporting those statements, confidential.

n) Any State statutory provisions dealing with termination rights due to casualty, condemnation, delivery of possession or any other matter dealt with by this Lease are superseded by the terms of this Lease.

o) Whenever it is provided that Landlord will not unreasonably withhold, condition or delay consent or approval or will exercise its judgment reasonably (such consent or approval and such exercise of judgment being collectively referred to as "**consent**"), if Landlord delays, conditions or refuses such consent, Tenant waives any claim for money damages (including any claim for money damages by way of setoff, counterclaim or defense) based upon any claim or assertion that Landlord unreasonably withheld, conditioned or delayed consent. Tenant's sole remedy will be specific performance. Failure on the part of Tenant to seek relief within 30 days after the date upon which Landlord has withheld, conditioned or delayed its consent will be deemed a waiver of any right to dispute the reasonableness of such withholding, conditioning or delaying of consent.

p) Notwithstanding anything to the contrary contained in this Lease, in no event will Landlord or Tenant be liable to the other for the payment of consequential, punitive or speculative damages, except as provided in Article 19 hereof.

31. TERMINATION OPTION

Notwithstanding anything to the contrary contained herein, Lessee shall have a one-time option to surrender the Premises ("**Termination Option**") in accordance with the following terms and conditions:

a) If Tenant desires to exercise the Termination Option, Tenant shall give Landlord irrevocable written notice (" **Termination Notice**") of Tenant's exercise of this Termination Option, which Termination Notice must be received by Landlord no later than the date that is twelve (12) full months prior to the Termination Date. **TIME IS OF THE ESSENCE** with respect to Landlord's receipt of the Termination Notice and all other deadlines in this Article.

b) If Tenant gives the Termination Notice and complies with all the provisions in this Article, the Lease as it applies to the Premises only shall terminate at 11:59 p.m. on the last day of the month during which the day prior to the one hundred third (103rd) month anniversary of the Commencement Date occurs (the "**Termination Date**").

c) In consideration for Tenant's termination of this Lease, Tenant shall pay Landlord the then unamortized costs and expenses incurred by Landlord in connection with this Lease including but not limited to the cost of the Work, brokerage commissions and rent concessions as same shall be amortized (together an interest factor of 8% per annum) over the Term ("**Termination Fee**"). Such Termination Fee shall be paid simultaneously with the Termination Notice sent by Tenant to Landlord.

d) Tenant's obligations to pay Fixed Basic Rent, Additional Rent, and any other costs or charges under this Lease, and to perform all other Lease obligations for the period up to and including the Termination Date, shall survive the termination of this Lease.

e) Notwithstanding the foregoing, if at any time during the period on or after the date on which Tenant shall exercise its Termination Option, up to and including the Termination Date, Tenant shall be in default of this Lease beyond the expiration of any applicable notice and cure period, then Landlord may elect, but is not obligated, to: (i) cancel and declare null and void Tenant's exercise of the Termination Option and this Lease shall continue in full force and effect for the full Term hereof unaffected by Tenant's exercise of the Termination Option; and/or (ii) retain the Termination Fee as a credit against any and all damages and expenses related directly or indirectly to Tenant's default under the Lease and apply any remaining balance of the Termination Fee, if any, towards the next payments of Fixed Basic Rent or Additional Rent then coming due until the Termination Fee is fully expended. If Landlord does not cancel Tenant's exercise of the Termination Option after Tenant's default, Tenant shall cure any default within the period of time specified in this Lease and this obligation shall survive the Termination Date.

f) In the event Tenant exercises the Termination Option, Tenant covenants and agrees to surrender full and complete possession of the Premises to Landlord on or before the Termination Date vacant, broom-clean, in good order and condition, and, in accordance with the provisions of this Lease, and thereafter the Premises shall be free and clear of all leases, tenancies, and rights of occupancy of any entity claiming by or through Tenant.

g) If Tenant shall fail to deliver possession of the Premises on or before the Termination Date in accordance with the terms hereof, Tenant shall be deemed to be a holdover Tenant from and after the Termination Date, and in such event all covenants and terms of Article 19 shall apply and shall also be liable to Landlord for all costs and expenses incurred by Landlord in securing possession of the Premises. Landlord may accept any such sums from Tenant without prejudice to Landlord's right to evict Tenant from the Premises by any lawful means.

h) If Tenant properly and timely exercises the Termination Option and properly and timely satisfies all other monetary and non-monetary obligations under this Lease, the Lease as it applies to the Premises shall cease and expire on the Termination Date with the same force and effect as if said Termination Date were the date originally provided in this Lease as the Expiration Date of the Term hereof.

i) If this Lease has been assigned or all or a portion of the Premises has been sublet, other than in accordance with a Permitted Transfer, this Termination Option shall be deemed null and void and neither Tenant nor any assignee or subtenant shall have the right to exercise such option.

32. OPTION TO RENEW

a) If the term of this Lease shall then be in full force and effect and Tenant is not then in default hereunder beyond the expiration of any applicable notice and cure period, Tenant shall have the option to extend the term of this Lease for a period of five (5) years (the "**Renewal Term**") commencing on the day immediately following

the Expiration Date, provided however that Tenant shall give Landlord notice of Tenant's election to extend the term no earlier than fifteen (15) months prior to the Expiration Date nor later than twelve (12) months prior to the Expiration Date of the term, **TIME BEING OF THE ESSENCE** in connection with the exercise of Tenant's option pursuant to this Article.

b) Such extension of the term of this Lease shall be upon the same covenants and conditions, as herein set forth except for the Fixed Basic Rent (which shall be determined in the manner set forth below) and adjustment of the Calendar Year, and except that Tenant shall have no further right to extend the term of this Lease after the exercise of the single option described in paragraph (a) of this Section. If Tenant shall duly give notice of its election to extend the term of this Lease, the Renewal Term shall be added to and become a part of the Term of this Lease (but shall not be considered a part of the initial Term), and any reference in this Lease to the "Term of this Lease", the "Term hereof", or any similar expression shall be deemed to include such Renewal Term, and, in addition, the term "Expiration Date" shall thereafter mean the last day of such Renewal Term. Landlord shall have no obligation to perform any alteration or preparatory or other work in and to the Premises or provide a tenant improvement allowance and Tenant shall continue possession thereof in its "as is" condition.

c) If Tenant exercises its option for the Renewal Term, the Fixed Basic Rent during the Renewal Term shall be the fair market rent for the Premises, as hereinafter defined., taking into consideration any additional components, included but not limited to items such as rent abatement, tenant improvements, brokerage commissions, etc., and the fact that Tenant shall receive a new base year for the renewal term.).

d) Landlord and Tenant shall use commercially reasonable efforts, within thirty (30) days after Landlord receives Tenant's notice of its election to extend the Term of this Lease for the Renewal Term ("Negotiation Period"), to agree upon the Fixed Basic Rent to be paid by Tenant during the Renewal Term. If Landlord and Tenant shall agree upon the Fixed Basic Rent for the Renewal Term, the parties shall promptly execute an amendment to this Lease stating the Fixed Basic Rent for the Renewal Term.

e) If the parties are unable to agree on the Fixed Basic Rent for the Renewal Term during the Negotiation Period, then within fifteen (15) days after notice from the other party, given after expiration of the Negotiation Period, each party, at its cost and upon notice to the other party, shall appoint a person to act as an appraiser hereunder, to determine the fair market rent for the Premises for the Renewal Term. Each such person shall be a real estate broker or appraiser with at least ten years' active commercial real estate appraisal or brokerage experience (involving the leasing of office space as agent for both landlords and tenants) in Morris County, New Jersey. If a party does not appoint a person to act as an appraiser within said fifteen (15) day period, the person appointed by the other party shall be the sole appraiser and shall determine the aforesaid fair market rent. Each notice containing the name of a person to act as appraiser shall contain also the person's address. Before proceeding to establish the fair market rent, the appraisers shall subscribe and swear to an oath fairly and impartially to determine such rent.

If the two appraisers are appointed by the parties as stated in the immediately preceding paragraph, they shall meet promptly and attempt to determine the fair market rent. If they are unable to agree within forty-five (45) days after the appointment of the second appraiser, they shall attempt to select a third person meeting the qualifications stated in the immediately preceding paragraph within fifteen (15) days after the last day the two appraisers are given to determine the fair market rent. If they are unable to agree on the third person to act as appraiser within said fifteen (15) day period, the third person shall be appointed by the American Arbitration Association (the "Association"), upon the application of Landlord or Tenant to the office of the Association nearest the Building. The person appointed to act as appraiser by the Association shall be required to meet the qualifications stated in the immediately preceding paragraph. Each of the parties shall bear fifty percent (50%) of the cost of appointing the third person and of paying the third person's fees. The third person, however selected, shall be required to take an oath similar to that described above.

The three appraisers shall meet and determine the fair market rent. A decision in which two of the three appraisers concur shall be binding and conclusive upon the parties. In deciding the dispute, the appraisers shall act in accordance with the rules then in force of the Association, subject however, to such limitations as may be placed on them by the provisions of this Lease.

Notwithstanding the foregoing, in no event shall the Fixed Basic Rent during the Renewal Term be less than the Fixed Basic Rent during the last year of the Term of this Lease immediately preceding the Renewal Term.

f) After the fair market rent for the Renewal Term has been determined by the appraiser or appraisers and the appraiser or appraisers shall have notified the parties, at the request of either party, both parties shall execute and deliver to each other an amendment of this Lease stating the Fixed Basic Rent for the Renewal Term.

g) If the Fixed Basic Rent for the Renewal Term has not been agreed to or established prior to the commencement of the Renewal Term, then Tenant shall pay to Landlord an annual rent ("Temporary Rent") which Temporary Rent shall be equal to the Fixed Basic Rent payable by Tenant for the last year of the Term immediately preceding the Renewal Term. Thereafter, if the parties shall agree upon a Fixed Basic Rent, or the Fixed Basic Rent shall be established upon the determination of the fair market rent by the appraiser or appraisers, at a rate at variance with the Temporary Rent (i) if such Fixed Basic Rent is greater than the Temporary Rent, Tenant shall promptly pay to Landlord the difference between the Fixed Basic Rent determined by agreement or the appraisal process and the Temporary Rent, or (ii) if such Fixed Basic Rent is less than the Temporary Rent, Landlord shall credit to Tenant's subsequent monthly installments of Fixed Basic Rent the difference between the Temporary Rent and the Fixed Basic Rent determined by agreement or the appraisal process.

h) In describing the fair market rent during the Renewal Term, the appraiser or appraisers shall be required to take into account the rentals at which lease renewals are then being concluded (as of the last day of the Term) (for five (5) year leases without renewal options with the landlord and tenant each acting prudently, with

knowledge and for self-interest, and assuming that neither is under undue duress) for comparable space in the Building and in comparable office buildings in Morris County, New Jersey.

i) The option granted to Tenant under this Article 32 may be exercised only by Tenant, its permitted successors and assigns, and not by any subtenant or any successor to the interest of Tenant by reason of any action under the Bankruptcy Code, or by any public officer, custodian, receiver, United States Trustee, trustee or liquidator of Tenant or substantially all of Tenant's property. Tenant shall have no right to exercise this option subsequent to the date Landlord shall have the right to give the notice of termination referred to in Article 10 of the Lease unless Tenant cures the default within the applicable grace period. Notwithstanding the foregoing, Tenant shall have no right to extend the term if, at the time it gives notice of its election (i) Tenant shall not be in occupancy of substantially all of the Premises or (ii) the Premises (or any part thereof) shall be the subject of a sublease, other than in accordance with a Permitted Transfer, for the remainder of the Term. If Tenant shall have elected to extend the term, such election shall be (at Landlord's sole option) deemed withdrawn if, at any time after the giving of notice of such election and prior to the commencement of the Renewal Term, Tenant shall sublease (all or any portion of) the Premises or assign Tenant's interest in this Lease.

EACH PARTY AGREES that it will not raise or assert as a defense to any obligation under this Lease, or make any claim that this Lease is invalid or unenforceable, due to any failure of this document to comply with ministerial requirements, including requirements for corporate seals, attestations, witnesses, notarizations or other similar requirements, and each party hereby waives the right to assert any such defense or make any claim of invalidity or unenforceability due to any of the foregoing.

This Lease may be executed in multiple counterparts, each of which, when assembled to include an original signature for each party contemplated to sign this Lease, will constitute a complete and fully executed original. All such fully executed counterparts will collectively constitute a single Lease agreement. Tenant expressly agrees that if the signature of Landlord and/or Tenant on this Lease is not an original, but is a digital, mechanical or electronic reproduction (such as, but not limited to, a photocopy, fax, e-mail, PDF, Adobe image, JPEG, telegram, telex or telecopy), then such digital, mechanical or electronic reproduction shall be as enforceable, valid and binding as, and the legal equivalent to, an authentic and traditional ink-on-paper original wet signature penned manually by its signatory.

THE PARTIES to this Lease have executed and delivered this Lease as of the date set forth above.

LANDLORD:	TENANT:
3 SYLVAN REALTY L.L.C.	GERON CORPORATION
By: 3 Sylvan Holding L.L.C., sole member	
By: Mack-Cali Property Trust, sole member	
By: /s/ Nicholas Hilton	By: /s/ John A. Scarlett
Nicholas Hilton	Name: John A. Scarlett
Executive Vice President of Leasing	Title: Chairman, President and Chief Executive Officer

EXHIBIT A

LOCATION OF PREMISES

EXHIBIT B

RULES AND REGULATIONS

1. **OBSTRUCTION OF PASSAGEWAYS** : Tenant will not: (i) obstruct the sidewalks, entrance(s), passages, courts, elevators, vestibules, stairways, corridors and other public parts of the Building, or (ii) interfere with the ability of Landlord and other tenants to use and enjoy any of these areas, and (iii) use them for any purpose other than ingress and egress.

2. **WINDOWS**: Tenant will not cover or obstruct windows in the Premises, other than with blinds, curtains or similar items. No bottles, parcels or other articles will be placed on the windowsills, in the halls, or in any other part of the Building other than the Premises. No article will be thrown out of the doors or windows of the Premises.

3. **PROJECTIONS FROM BUILDING**: No awnings, air-conditioning units or other fixtures will be attached to the outside walls or the window sills of the Building or otherwise affixed so as to project from the Building, without the prior written consent of Landlord.

4. **SIGNS**: Tenant will not affix any sign or lettering to any part of the outside of the Premises, or any part of the inside of the Premises so as to be visible from the outside of the Premises, without the prior written consent of Landlord. However, Tenant will have the right to place its name on any door leading into the Premises, the size, color and style thereof to be subject to the Landlord's approval. Tenant's name will be placed on the Building directory. Tenant will not have the right to have additional names placed on the Building directory without Landlord's prior written consent.

5. **FLOOR COVERING**: Tenant will not lay linoleum or other similar floor covering so that the same will come in direct contact with the floor of the Premises. If linoleum or other similar floor covering is desired to be used, an interlining of builder's deadening felt will first be fixed to the floor by a paste or other material that may easily be removed with water. The use of cement or other similar adhesive material for this purpose is expressly prohibited.

6. **INTERFERENCE WITH OCCUPANTS OF BUILDING**: Tenant will not make, or permit to be made, any unseemly or disturbing noises or odors and will not interfere with other tenants or those having business with them. Tenant will keep all mechanical apparatus in the Premises free of vibration and noise which may be transmitted beyond the limits of the Premises.

7. **LOCK KEYS**: No additional locks or bolts of any kind will be placed on any of the doors or windows by Tenant. Tenant will, on the expiration or earlier termination of Tenant's tenancy, deliver to Landlord all keys to any space within the Building either furnished to or otherwise procured by Tenant, and in the event of the loss of any keys furnished, Tenant will pay to Landlord the cost thereof. Tenant, before closing and leaving the Premises, will ensure that all windows are closed and entrance doors locked. Nothing in this Paragraph 7 will be deemed to prohibit Tenant from installing a security system within the Premises, provided: (1) Tenant obtains Landlord's consent which will not be unreasonably withheld or delayed; (2) Tenant supplies Landlord with copies of the plans and specifications of the system; (3) such installation will not damage the Building or any Common Facilities; (4) all costs of installation and removal (if required by Landlord) will be borne solely by Tenant; and (5) Landlord is afforded the security code or other means of access to the Premises for purposes permitted under the Lease.

8. **CONTRACTORS**: Tenant will not enter into any contract of any kind with any supplier of towels, water, toilet articles, waxing, rug shampooing, venetian blind washing, furniture polishing, lamp servicing, cleaning of electrical fixtures, removal of waste paper, rubbish or garbage, or other like service, nor will Tenant install or cause to be installed any machine of any kind (other than customary office equipment) in the Premises, other portions of the Building or the Real Property without the prior written consent of the Landlord. Tenant will not employ any persons other than Landlord's janitors for the purpose of cleaning the Premises without the prior written consent of Landlord. Landlord will not be responsible to Tenant for any loss of property from the Premises, however occurring, or for any damage to the effects of Tenant by such janitors or any of its employees, or by any other person or any other cause.

9. **PROHIBITED ON PREMISES**: Tenant will not conduct, or permit any other person to conduct, any auction upon the Premises, nor will Tenant manufacture or store, or permit others to manufacture or store, goods, wares or merchandise upon the Premises, without the prior written approval of Landlord, except the storage in customary amounts of ordinary office supplies to be used by Tenant in the conduct of its business. Tenant will not permit the Premises to be used for gambling. Tenant will not permit any portion of the Premises to be occupied as an office for a public stenographer or typewriter, or for the manufacture or sale of intoxicating beverages, narcotics, tobacco in any form or as a barber or manicure shop or for any medical use, including medical testing on humans or animals. Canvassing, soliciting and peddling at the Real Property are prohibited, and Tenant will cooperate to prevent the same. No bicycles, vehicles or animals of any kind will be brought into or kept in or about the Building, except guide dogs.

10. **PLUMBING, ELECTRIC AND TELEPHONE WORK**: Plumbing facilities will not be used for any purpose other than those for which they were constructed; and no sweepings, rubbish, ashes, newspaper or other substances of any kind will be thrown into them. Waste and excessive or unusual amounts of electricity or water use is prohibited. When electric or communications wiring of any kind is introduced, it must be connected as directed by Landlord, and no stringing or cutting of wires will be allowed, except by prior written consent of Landlord, and will be done by contractors approved by Landlord.

11. **MOVEMENT OF FURNITURE, FREIGHT OR BULKY MATTER**: The carrying in or out of freight, furniture or bulky matter of any description must take place during such hours as Landlord may from time to time reasonably determine and only after advance notice to the manager of the Building. The persons employed by Tenant for such work must be reasonably acceptable to Landlord and provide liability insurance reasonably satisfactory to Landlord. Tenant may, subject to these provisions, move freight, furniture, bulky matter, and other material into or out of the Premises on Saturdays between the hours of 9:00 a.m. and 1:00 p.m., provided Tenant pays additional costs, if any, incurred by Landlord for elevator operators or security guards, and for any other expenses occasioned by such activity

of Tenant. If, at least three (3) days prior to such activity, Landlord requests that Tenant deposit with Landlord a sum which Landlord reasonably estimates to be the amount of such additional cost, the Tenant will deposit such sum with Landlord as security for such cost. There will not be used in the Building or Premises, either by Tenant or by others, any hand trucks except those equipped with rubber tires and side guards, and no hand trucks will be allowed in the elevators without the consent of the superintendent of the Building.

12. **SAFES AND OTHER HEAVY EQUIPMENT** : Landlord reserves the right to prescribe the weight and position of all safes and other heavy equipment so as to distribute their weight properly and to prevent any unsafe condition from arising. Tenant will not place a load upon any floor of the Premises exceeding the floor load per square foot area which it was designed to carry or which is allowed by law.

13. **ADVERTISING**: Landlord may prohibit any advertising by Tenant which in Landlord's reasonable opinion tends to impair the reputation of the Building or its desirability as a building for offices, and upon written notice from Landlord, Tenant will refrain from or discontinue such advertising.

14. **NON-OBSERVANCE OR VIOLATION OF RULES BY OTHER TENANTS** : Landlord will not be responsible to Tenant for non-observance or violation of any of these rules and regulations by any other tenant.

15. **AFTER HOURS USE**: Landlord reserves the right to exclude from the Building during Building Hours and at all hours on Saturdays, Sundays and Building Holidays, all persons who do not present a pass to the Building signed by the Tenant. Each Tenant will be responsible for all persons for whom such a pass is issued and will be liable to the Landlord for the acts of such persons.

16. **RESERVATION OF RIGHTS**: Landlord reserves to itself any and all rights not granted to Tenant hereunder, including the following:

    a) the exclusive right to the use of the name of the Building for all purposes, except that Tenant may use the name as its business address and for no other purposes;

    b) the right to change the name or address of the Building, without incurring any liability to Tenant for doing so;

    c) the right to install and maintain signs on the exterior of the Building;

    d) the exclusive right to use and/or allow others to use the roof of the Building;

    e) the right to limit the space on the directory of the Building to be allotted to Tenant; and

    f) the right to grant to anyone the right to conduct any particular business or undertaking in the Building.

17. **HEALTH AND SAFETY**: Tenant will be responsible for initiating, maintaining and supervising all health and safety precautions and/or programs required by Legal Requirements applicable to the Premises and/or Tenant's use and occupancy of the Premises.

-- END --

EXHIBIT C

WORKLETTER AGREEMENT

GERON CORPORATION ("**Tenant**") and we 3 SYLVAN REALTY L.L.C. (" **Landlord**") are executing a written lease ("**Lease**"), covering 9,815 gross rentable square feet on the second (2nd) floor, as more particularly described in the Lease ("**Premises**").

With respect to the construction work being conducted in or about the Premises, each party agrees to be bound by the approval and actions of their respective construction representatives. Unless changed by written notification, the parties designate the following individuals as their respective construction representatives:

FOR LANDLORD:	FOR TENANT:
Robert Wilber c/o Mack-Cali Realty Corporation 331 Newman Springs Road Red Bank, New Jersey 07701 (732) 433-3687 rwilber@mack-cali.com	_____ _____ _____

To induce Tenant to enter into the Lease (which is hereby incorporated by reference) and in consideration of the covenants contained in this Workletter Agreement (the "**Workletter**"), Landlord and Tenant agree as follows:

1. Landlord will have its architect prepare the following architectural and mechanical drawings and specifications based upon the sketch layout supplied to Landlord by Tenant marked PP1 & PP2 dated January 23, 2019.

   a. Architectural drawings and specifications for Tenant's partition layout, reflected ceiling, placement of electrical outlets and other installations for the work to be done by Landlord.

   b. Mechanical plans and specifications where necessary for installation of air conditioning systems, ductwork and heating.

   All such plans and specifications are expressly subject to Landlord's written approval, which approval will not be unreasonably withheld.

2. Landlord agrees to cause the partition plan, electrical plan and the reflected ceiling plan to be delivered to Tenant on or before the fifteenth (15th) day after Lease execution. Tenant agrees to approve the plans by initialing and returning them to Landlord within three (3) days of receipt of each plan. Landlord will file the plans with the appropriate governmental agencies. This Lease is expressly conditioned upon Landlord obtaining a building permit from the appropriate government official for the Work (as hereinafter defined).

3. Landlord agrees, at its expense and without charge to Tenant (unless otherwise provided), to do the work in the Premises as shown on the approved plans described above and described on the "Description of Materials" schedule attached to this Workletter, which will be referred to as the "**Work**" in the following provisions of this Workletter. " **Building Standard**" will mean the type and grade of material, equipment and/or device designated by Landlord as standard for the Building. All items are Building Standard unless otherwise noted.

4. Intentionally Omitted

5. All low partitioning, workstation modules, bank screen partitions and prefabricated partition systems will be furnished and installed by Tenant at its expense.

6. The installation or wiring of telephone and computer (data) outlets is not part of the Work. Tenant will bear the responsibility to provide its own telephone and data systems at Tenant's sole cost and expense.

7. Changes in the Work, if necessary or requested by the Tenant, will be accomplished after the execution of the Lease and this Workletter, and without invalidating any part of the Lease or Workletter, by written agreement between Landlord and Tenant (referred to as a " **Change Order**"). Each Change Order will be prepared by Landlord and signed by both Tenant and Landlord stating their agreement on all of the following:

   a. The scope of the change in the Work; and

   b. The cost of the change; and

   c. The manner in which the cost will be paid; and

   d. The estimated extent of any adjustment to the Commencement Date (if any) as a result of the change in the Work.

   Each and every Change Order will be signed by Landlord's and Tenant's respective construction representatives. In no event will any Change Order(s) be permitted without such authorizations. A 10% supervision plus 10% overhead charge will be added to the cost of any Change Order and to the cost of any other work to be performed by Landlord in the Premises after Landlord's completion of the Work. If Tenant fails to approve any such Change Order within one (1) week, it will be deemed disapproved in all respects by Tenant, and Landlord will not be authorized to proceed on it. Any increase in the cost of the Work or the

change in the Work stated in a Change Order which results from Tenant's failure to timely approve and return said Change Order will be paid by Tenant. Tenant agrees to pay Landlord the cost of any Change Order upon receipt of an invoice for the Change Order.

8. If Tenant elects to use the architect suggested by Landlord, this architect becomes solely the Tenant's agent with respect to the plans, specifications and the Work. If any change is made after completion of schematic drawings and prior to completion of final construction documents which result in a Change Order and additional costs, such costs will be the responsibility of the Tenant.

9. Prior to the earlier of the date on which the Work is substantially completed or the date on which Tenant occupies, uses or takes possession of all or any part of the Premises, Tenant will identify and list any portion of the Work which does not conform to this Workletter (" **Punch List**"). Provided: (i) Tenant prepares and submits to Landlord on the earlier of (**time being of the essence**) either the date on which The Work is substantially completed or the date Tenant first uses, occupies or takes possession of all or any part of the Premises, a written list detailing the Punch- List Items and (ii) said written list, as prepared by Tenant, is approved in writing by Landlord, in its sole discretion, then, Landlord shall use reasonable efforts to commence the performance of such Punch-List Items within thirty (30) days after Tenant receives from Landlord its written approval of said list detailing the Punch-List Items, and thereafter Landlord shall proceed with reasonable diligence in the completion thereof.

10. The terms contained in the Lease (which includes all Exhibits to the Lease) constitute Landlord's agreement with Tenant with respect to the Work.

11. Except as set forth in the last sentence of this paragraph, all Work within the Premises will become the property of Landlord upon installation. No refund, credit or removal of any Work will be permitted at the expiration or earlier termination of the Lease. Items installed that are not integrated in any way with the Work (e.g., furniture and other trade fixtures) become the property of Tenant upon installation.

12. It is agreed that notwithstanding the date provided in the Basic Lease Provisions for the Commencement Date, the term will not commence until the earlier of (i) the date Tenant (or anyone claiming under or through Tenant) occupies all or any part of the Premises or (ii) the date Landlord has "substantially completed" the Work; provided, however, that if Landlord is delayed in substantially completing the Work as a result of:

a. Tenant's failure to approve the plans and specifications in accordance with Paragraph 2 of this Workletter;

b. Tenant's failure to furnish interior finish specifications (i.e., paint colors, carpet selection, etc.) to Landlord by the fifth (5th) business day after Tenant has approved the plans and specifications pursuant to Paragraph 2;

c. Tenant's request for materials, finishes or installations other than Landlord's Building Standard;

d. Tenant's changes in the Work;

e. The performance of a person, firm, partnership or corporation employed by Tenant and the non-completion of work by such person, firm, partnership or corporation;

f. Any act or omission of Tenant which delays the Work or governmental inspections and approvals, including, if necessary and without limitation, failure to install furniture and/or failure to obtain low voltage wiring permits;

g. Any default by Tenant under the Lease, including, but not limited to, Tenant's failure to deliver the Security Deposit to Landlord, or Tenant's failure to provide Landlord with evidence of insurance;

then the Commencement Date will be accelerated by the number of days of such delay, and Tenant's obligation to pay Fixed Basic Rent and Additional Rent will commence as of such earlier date.

13. Landlord will permit Tenant and its agents to enter, as licensees only, without any rental obligation, the Premises at least fifteen (15) days prior to the Commencement Date so that Tenant may perform through its own contractors such other work and decorations as Tenant may desire at the same time Landlord's contractors are working in the Premises. The foregoing license to enter prior to the Commencement Date, however, is conditioned upon:

a. Tenant's general contractors, workmen and mechanics working in harmony and not interfering with the labor employed by Landlord, Landlord's mechanics or contractors or by any other tenant or occupant of the Building or their general contractors, mechanics or contractors, if any;

b. Tenant providing Landlord with evidence of Tenant's contractors and subcontractors carrying such worker's compensation insurance as required by law, commercial general liability and property insurance in amounts no less than the amounts set forth in Article 22 a) of the Lease. If at any time any disharmony or interference occurs by virtue of, directly or indirectly, the presence of Tenant or its general contractors, workmen or mechanics in the Building, Landlord shall give forty-eight (48) hours written notice to Tenant and within twenty-four (24) hours Tenant shall resolve any dispute so that the tenor of the construction process and the operation of the Building is returned to that which existed prior to Landlord's notice. Such entry will be deemed controlled by all of the terms, covenants, provisions and conditions of the Lease. Landlord will not be liable in any way for any injury, loss or damage which may occur to any of Tenant's decorations or installations made prior to the Commencement Date, the same being solely at Tenant's risk; and

c. Tenant will use union contractors if required by Landlord.

14. No part of the Premises will be deemed unavailable for occupancy by Tenant, nor will any work which the Landlord is obligated to perform in such part of the Premises be deemed incomplete for the purpose of any adjustment of Fixed Basic Rent payable under the Lease, if minor details of construction, decoration or mechanical adjustments exist and the non-completion of such details does not materially interfere with the Tenant's use of such part of the Premises.

15. If construction is to occur in a space occupied by Tenant's employees, Tenant will be liable for all costs associated with a delay, if Tenant fails to comply with a submitted construction schedule to relocate personnel, furniture or equipment. These costs will include, but not be limited to, the following:

    a. cost of construction workers time wasted;

    b. cost of any overtime work necessary to meet schedule deadlines; and

    c. any other costs associated with delays in final completion.

16. This Workletter is based on the materials and layouts set forth or referenced in the Workletter. Any change to the materials and layout will require a recalculation of construction costs and any increases in costs shall be Tenant's responsibility. Such recalculation will not negate any other Article of this Lease.

17. All sums payable by Tenant to Landlord in connection with this Exhibit C and any other work to be performed by Landlord within the Premises and billable to Tenant will be deemed Additional Rent.

-END-

EXHIBIT D

CLEANING SERVICES

TENANT'S PREMISES

1. Vacuum clean all carpeted areas.

2. Sweep and dust mop all non-carpeted areas. Wet mop whenever necessary.

3. All office furniture such as desks, chairs, files, filing cabinets, etc. will be dusted with a clean treated dust cloth whenever necessary and only if such surfaces are clear of Tenant's personal property including but not limited to plants.

4. Empty wastepaper baskets and remove waste to designated areas.

5. All vertical surfaces within arms reach will be spot cleaned to remove finger marks and smudges. Baseboard and window sills are to be spot cleaned whenever necessary.

6. All cleaning of cafeterias, vending areas, kitchen facilities and restrooms exclusively serving the Premises are excluded. Tenant may make necessary arrangements for cleaning these areas directly with Landlord's cleaning maintenance company.

7. Cleaning services will be performed Monday through Friday only

8. No cleaning service is provided on Saturday, Sunday and Building Holidays.

9. Cartons or refuse in excess of that which can be placed in wastebaskets will not be removed. Tenant is responsible to place such unusual refuse in trash dumpster.

10. Cleaning maintenance company will neither remove nor clean tea, office cups or similar containers. If such liquids are spilled in wastebaskets, the wastebaskets will be emptied but not otherwise cleaned. Landlord will not be responsible for any stained carpet caused from liquids leaking or spilling from Tenant's wastebaskets.

11. Glass entrance doors will be cleaned daily. Interior glass doors or glass partitions are excluded. Tenant may make arrangements for cleaning interior glass doors and partitions with Landlord's cleaning maintenance company.

COMMON AREAS

1. Vacuum all carpeting in entrance lobbies, outdoor mats and all corridors.

2. Wash glass doors in entrance lobby with a clean damp cloth and dry towel.

3. Sweep and/or wet mop all resilient tile flooring. Clean hard surface floors such as quarry tile, etc.

4. Wash, clean and disinfect water fountains.

5. Clean all elevator cabs and stairwells.

6. Lavatories -- Men and Women.

    a. Floors in all lavatories will be wet mopped with a germicidal detergent to ensure a clean and germ-free surface.

    b. Wash and polish all mirrors, shelves, bright work including any piping and toilet seats.

    c. Wash and disinfect wash basins and sinks using a germicidal detergent.

    d. Wash and disinfect toilet bowls and urinals.

    e. Keep lavatory partitions, tiled walls, dispensers and receptacles in a clean condition using a germicidal detergent when necessary.

    f. Empty and sanitize sanitary disposal receptacles.

    g. Fill toilet tissue holders, towel dispensers and soap dispensers. Refills to be supplied by Landlord or its cleaning contractor.

7. Clean all air ventilation grill work in ceilings.

8. Common Area cleaning services will be performed Monday through Friday only

9. No Common Area cleaning service will be provided on Saturday, Sunday and Building Holidays.

EXHIBIT E

BUILDING HOLIDAYS

BUILDING CLOSED

* NEW YEAR'S DAY *

* MEMORIAL DAY *

* INDEPENDENCE DAY *

* LABOR DAY *

* THANKSGIVING DAY *

* CHRISTMAS DAY *

-- END --

EXHIBIT F
COMMENCEMENT DATE AGREEMENT

1.0 PARTIES

THIS AGREEMENT made the _____day of _____, 2016 is by and between _____ ("**Landlord**") whose address is c/o Mack-Cali Realty Corporation, Harborside 3, 210 Hudson Street, Suite 400, Jersey City, New Jersey 07311 and _____ ("**Tenant**") whose address is _____.

2.0 STATEMENT OF FACTS

2.1 Landlord and Tenant entered into a Lease dated _____, 2016 (referred to as the "**Lease**" in this Agreement) setting forth the terms of occupancy by Tenant of approximately _____ gross rentable square feet on the _____ (___) floor (referred to as the "**Premises**" in this Agreement) at _____ (referred to as "**Building**" in this Agreement); and

center279427500 2.2 The Commencement Date of the Term of the Lease has been determined in accordance with the provisions of Article 20 of the Lease.

3.0 STATEMENT OF TERMS

The parties conclusively agree that they have received good and valuable consideration for making the following agreements:

3.1 The Commencement Date of the Term of the Lease is _____, 2016 and the Expiration Date of the Term is _____, 2016, and Articles 4 and 6 of the Basic Lease Provisions are modified accordingly.

3.2 Tenant represents and warrants to Landlord that (i) there exists no default under the Lease either by Tenant or Landlord; and (ii) there exists no offset, defense or counterclaim to Tenant's obligations under the Lease.

3.3 This Agreement is executed by the parties hereto for the purpose of providing a record of the Commencement and Expiration Dates of the Lease.

EXCEPT as modified in this Agreement, the Lease will remain in full force and effect as if the same were set forth in full in this Agreement, and Landlord and Tenant ratify and confirm all the terms and conditions of the Lease as modified by this Agreement.

THIS AGREEMENT will be binding upon and inure to the benefit of the parties hereto and their respective legal representatives, successors and permitted assigns.

EACH PARTY AGREES that it will not raise or assert as a defense to any obligation under the Lease or this Agreement or make any claim that the Lease or this Agreement is invalid or unenforceable due to any failure of this document to comply with ministerial requirements including, but not limited to, requirements for corporate seals, attestations, witnesses, notarizations or other similar requirements, and each party waives the right to assert any such defense or make any claim of invalidity or unenforceability due to any of the failures described above.

Landlord and Tenant have executed this Agreement as of the date and year first above written and represent and warrant to each other that the individual signing this Agreement on its behalf possesses the requisite authority to sign this Agreement.

LANDLORD	TENANT
By: _____	By: _____
Name:	Name:
Title:	Title:

EXHIBIT G

TAX AND OPERATING COST RIDER

Tenant will pay in addition to the Fixed Basic Rent provided in this Lease, Additional Rent to cover Tenant's Percentage of the increased cost to Landlord, for each of the categories enumerated in this Exhibit, over the "**Base Period Costs**" for these categories.

a. **Operating Cost Escalation** -- If the Operating Costs incurred for the Real Property for any Lease Year or Partial Lease Year during the Term will be greater than the Base Operating Costs (reduced proportionately to correspond to the duration of periods less than a Lease Year), then Tenant will pay to Landlord, as Additional Rent, Tenant's Percentage of all such excess Operating Costs. Operating Costs will include, by way of illustration and not of limitation: personal property taxes; management fees; labor, including all wages and salaries; social security and other taxes which may be levied against Landlord upon such wages and salaries; supplies; repairs and maintenance; maintenance and service contracts; painting; wall and window washing; tools and equipment (which are not required to be capitalized for federal income tax purposes); trash removal; lawn care; snow removal; fire casualty, property damage, liability and other insurance costs, together with any deductibles, utility costs including the cost of electric current which is supplied to the Building and Common Facilities electric and lighting, for the Building and Real Property, including any applicable fuel surcharges and sales or use taxes, incurred for water, sewer, Common Facilities electric and lighting and gas for the Building (not separately billed or metered within the Building) incurred by Landlord in connection with its operation of the Building and the Real Property and all other items properly constituting direct operating costs according to standard accounting practices (collectively referred to as the "**Operating Costs**" in this Lease); but not including depreciation of Building or equipment; interest; income or excess profits taxes; costs of maintaining the Landlord's corporate existence; franchise taxes; any expenditures required to be capitalized for federal income tax purposes, unless said expenditures are for the purpose of reducing Operating Costs at the Real Property, or those which under generally applied real estate practice are expensed or regarded as deferred expenses or are required under any Legal Requirement, in which event the costs thereof shall be included. Notwithstanding anything contained herein to the contrary, any additional costs incurred by Landlord during the Calendar Year by reason of Landlord or any of its vendors entering into new labor contracts or renewals or modifications of existing labor contracts will not be included in Base Operating Costs. In addition, Tenant will pay Landlord Tenant's Percentage of all costs and expenses incurred by Landlord in connection with complying with any "homeland security" requirements and such costs and expenses will not be included in Operating Costs.

In addition, the following shall not be included in Operating Costs: (i) taxes, (ii) debt service on mortgages, (ii) leasing commissions, (iv) the cost of electrical energy and other utilities furnished directly or indirectly to Tenant and other leasable areas of the Property, (v) the cost of tenant installations (and any redecorating or renovations) incurred in connection with preparing space for a new tenant or for a tenant renewing its lease and any other contribution by Landlord to the cost of tenant improvements, and costs for renovating or improving vacant or unleased rentable space in the Property, (vi) salaries of personnel above the grade of Senior Vice President of Property Management, (v) rent paid under Superior Leases, (vi) any expense for which Landlord is otherwise compensated through the proceeds of insurance or is otherwise compensated by any tenant (including Tenant) of the Property for services in excess of the services Landlord is obligated to furnish to Tenant hereunder, (vii) legal fees and any other expenses incurred in connection with any negotiation of, or disputes arising out of, any space lease in the Property, sales, financings and refinances (including any mortgage), and accounting and appraisal fees in connection with leasing, sales, financings or refinancings, (viii) Landlord's advertising and promotional costs for the Property, (ix) intentionally omitted (x) management fees in an amount in excess of a commercially reasonable management fee for comparable services in the same geographic area for comparable space, (xi) the cost of any work or service performed for any tenant of the Property (including Tenant), whether at the expense of Landlord or such tenant, to the extent that such work or service is in excess of the work or service that Landlord is required to furnish Tenant under this Lease at the expense of Landlord, (xii) damages and attorneys' fees and disbursements and any other costs in connection with any proceeding, judgment, settlement or arbitration award resulting from any liability of Landlord and fines or penalties due to Landlord's negligence or wrongful acts, (xiii) any compensation paid to clerks, attendants or other persons in commercial concessions operated by Landlord, (xiv) any expenses which are not paid or incurred in respect of the Property but rather in respect of other real property owned by Landlord or an affiliate of Landlord, provided that with respect to any expenses attributable in part to the Property and in part to other real property, Operating Expenses shall include only such portion thereof as are apportioned by Landlord to the project on a fair and equitable basis, (xv) intentionally omitted, (xvi) expenses of treating, removing and disposing of any hazardous materials present in the Property and any expenses incurred in connection therewith (other than the costs of monitoring such hazardous materials, which shall be included in Operating Expenses), (xvii) costs incurred with respect to a sale or transfer of all or any portion of the Property or any interest therein, (xviii) lease takeover or take-back costs, (xix) the cost of installing, operating and maintaining any specialty facility such as a luncheon club, recreational club, child care or similar facility, auditorium, cafeteria, dining facility, broadcasting facility or conference center, (xx) costs incurred in connection with the acquisition or sale of air rights, transferable development rights, easements or other real property interests, (xxi) to the extent the same are separately metered, costs of electricity and overtime HVAC and condenser water or chilled water for supplemental systems furnished to the Premises or any other rentable space in the Building; costs of acquiring or replacing any separate electrical meters Landlord may provide to Building tenants,(xxii) the costs of acquiring, leasing, installing, maintaining, displaying, protecting, insuring, restoring or renewing works of art, (xxiii) amounts otherwise includable in Operating Expenses but reimbursed to Landlord directly by Tenant or other tenants (other than through Operating Expense reimbursements), (xxiv) the cost of any judgment, settlement or arbitration award resulting from any liability of Landlord (other than any liability for amounts otherwise includable in Operating Expenses) and expenses incurred in connection therewith, (xxv) any insurance costs in excess of those that are customary for first-class office buildings located in the same geographic area,

(xxvi) costs incurred by Landlord which result from Landlord's or any other tenant's breach of a lease, (xxvii) the cost of repairs or replacements or restorations by reason of fire or other casualty or condemnation, other than any "deductible" amounts under any policies of insurance, provided such deductibles are reasonable for a first-class office building located in the same geographic area or are otherwise required by any institutional mortgagee, (xxvii) costs and expenses incurred by Landlord in connection with any obligation of Landlord to indemnify any Building tenant pursuant to its lease or otherwise, (xxviii) any bad debt loss, rent loss or reserves for bad debts or rent loss, (xxix) all costs associated with Landlord's voluntary political contributions, voluntary civic contributions or voluntary charitable contributions, (xxx) expenses of relocating or moving any tenants of the Building, (xxxi)intentionally omitted, (xxxii) the cost of any repairs made by Landlord to remedy damage to the extent caused by or resulting from the negligence of Landlord, its agents, contractors or employees, and (xxxiii) the cost of works of art of the quality and nature of "fine art" rather than decorative art work customarily found in first-class office buildings in the same geographic area which are comparable to the Building.

If any repair, replacement or improvement within the definition of Operating Costs is capitalized under generally accepted accounting principles, then (A) the cost of any such repair, replacement or improvement shall only be included in Operating Costs if such repair, replacement or improvement (i) is necessary to comply with any governmental or quasi-governmental law, statute, ordinance, rule, order, requirements or regulation, which is enacted or promulgated after the date hereof, (ii) is reasonably intended to reduce Operating Costs or (iii) constitutes a repair, replacement or improvement which in Landlord's reasonable judgment is economically prudent to make in lieu of repairs, (B) the cost thereof shall be amortized over the lesser of ten (10) years or the useful life of such replacement or improvement, (C) the amount so amortized attributable to such repair, replacement or improvement shall be included in Operating Costs in each Lease Year for such portion of the amortization period which occurs during the Term, provided, however, that all amounts thereof included in Operating Costs in any Lease Year subsequent to the year paid shall have added thereto interest from the date Landlord incurred such cost. For amortization purposes, applicable interest shall be two (2) percentage points in excess of the prime rate charged by JP Morgan Chase Bank, or its successor, at the time of expenditure.

b. Intentionally Omitted.

c. **Tax Escalation** -- If the Real Estate Taxes for the Real Property for any Lease Year or Partial Lease Year during the Lease Term will be greater than the Base Real Estate Taxes (reduced proportionately to correspond to the duration of periods less than a Lease Year), then Tenant will pay to Landlord as Additional Rent, Tenant's Percentage of all such excess Real Estate Taxes.

As used in this Lease, "**Real Estate Taxes**" mean the property taxes and assessments imposed upon the Building and other portions of the Real Property, or upon the rent payable to the Landlord, including, but not limited to, real estate, city, county, village, school and transit taxes, or taxes, assessments, or charges levied, imposed or assessed against the Real Property by any taxing authority, whether general or specific, ordinary or extraordinary, foreseen or unforeseen. If due to a future change in the method of taxation, any franchise, income or profit tax will be levied against Landlord in substitution for, or in lieu of, or in addition to, any tax which would otherwise constitute a Real Estate Tax, such franchise, income or profit tax will be deemed to be a Real Estate Tax for purposes of this Lease.

Landlord, will have the exclusive right, but not the obligation, to contest or appeal any Real Estate Tax assessment levied on all or any part of the Real Property.

c. **Lease Year** -- As used in this Lease, Lease Year will mean a calendar year. Any portion of the Term which is less than a Lease Year, that is, from the Commencement Date through the following December 31, and from the last January 1 falling within the Term to the end of the Term, will be deemed a "**Partial Lease Year**". Any reference in this Lease to a Lease Year will, unless the context clearly indicates otherwise, be deemed to be a reference to a Partial Lease Year if the period in question involves a Partial Lease Year.

d. **Payment** -- Prior to each Lease Year, Landlord will give Tenant an estimate of amounts payable under this Rider for such Lease Year or Partial Lease Year. By the first day of each month during such Lease Year or Partial Lease Year, Tenant will pay Landlord one-twelfth (1/12th) of the estimated amount. If, however, the estimate is not given before such Lease Year or Partial Lease Year begins, Tenant will continue to pay by the first day of each month on the basis of last year's estimate, if any, until the month after the new estimate is given. As soon as practicable after each Lease Year or Partial Lease Year ends, Landlord will give Tenant a statement (the "**Statement**") showing the actual amounts payable by Tenant under this Rider for such Lease Year. If the Statement shows that the actual amount Tenant owes for such Lease Year or Partial Lease Year is less than the estimated amount paid by Tenant during such Lease Year or Partial Lease Year, Landlord, at its option, will either return the difference or credit the difference against the next succeeding payment(s) of Additional Rent. If the Statement shows that the actual amount Tenant owes is more than the estimated Additional Rent paid by Tenant during such Lease Year or Partial Lease Year, Tenant will pay the difference within thirty (30) days after the Statement is delivered to Tenant.

e. **Books and Reports** -- Landlord will maintain books of account which, provided that Tenant is not the in default under this Lease beyond the expiration of any applicable notice and cure period, will be open to Tenant and its representatives at all reasonable times so that Tenant can determine that such Operating Costs, Real Estate Taxes and Building Electric have, in fact, been paid or incurred. Tenant's representatives will mean only (i) Tenant's employees or (ii) a Certified Public Accounting firm, and neither Tenant's employees nor any Certified Public Accounting firm will be permitted to perform such inspection and/or audit on a contingency basis or for any other tenant in the Building. At Landlord's request, Tenant and/or Tenant's Certified Public Accounting firm will execute a confidentiality agreement reasonably acceptable to Landlord prior to any examination of Landlord's books and records. In the event Tenant disputes any one or more of

such charges, Tenant will attempt to resolve such dispute with Landlord, provided that if such dispute is not satisfactorily settled between Landlord and Tenant within thirty (30) days, then upon request of either party, the dispute will be referred to an indepen dent certified public accountant to be mutually agreed upon to arbitrate the dispute, and if such an accountant cannot be agreed upon, the American Arbitration Association may be asked by either party to select an arbitrator, whose decision on the dispute will be final and binding upon both parties, who will jointly share any cost of such arbitration. Pending resolution of the dispute, the Tenant will pay to Landlord the sum so billed by Landlord, subject to its ultimate resolution as set forth above. The arbitration mechanism set forth above shall be the sole process available to resolve such disputes.

f. **Right of Review** -- Once Landlord will have finally determined the Operating Costs, Real Estate Taxes or Building Electric at the expiration of a Lease Year, then as to the item so established, Tenant will only be entitled to dispute such charge for a period of six (6) months after such charge is billed to Tenant, and Tenant specifically waives any right to dispute any such charge any time after the expiration of said six (6) month period.

g. **Occupancy Adjustment** -- If the Building is less than ninety-five percent (95%) occupied during the Calendar Year or during any Lease Year or Partial Lease Year subsequent to the Calendar Year, then the Operating Costs will be adjusted during the Calendar Year and the Operating Costs and Building Electric will be adjusted during any such Lease Year or Partial Lease Year so as to reflect ninety-five percent (95%) occupancy. The aforesaid adjustment will only be made with respect to those items that are in fact affected by variations in occupancy levels.

h. The parties agree that Tenant's Percentage, as defined in the Basic Lease Provisions, reflects and will be continually adjusted to reflect the ratio of the gross square feet of the area rented to Tenant (including an allocable share of all Common Facilities) [the numerator] as compared with the total number of gross square feet of the entire Building (or additional buildings that may be constructed within the Real Property) [the denominator] measured outside wall to outside wall, but excluding therefrom any storage areas. Landlord shall have the right to make changes or revisions in the Common Facilities of the Building so as to provide additional leasing area. Landlord shall also have the right to construct additional buildings in the Real Property for such purposes as Landlord may deem appropriate, and subdivide the lands for that purpose if necessary, and upon so doing, the Real Property shall become the subdivided lot on which the Building in which the Premises is located. However, if any service provided for in subparagraph a. is separately billed or separately metered within the Building, then the square footage so billed or metered shall be subtracted from the denominator and the Tenant's proportionate share for such service and/or utility shall be separately computed, and the Base Period Costs for such item shall not include any charges attributable to said square footage. Tenant understands that as a result of changes in the layout of the Common Facilities from time to time occurring due to, by way of example and not by way of limitation, the rearrangement of corridors, the aggregate of all Building tenant proportionate shares may be equal to, less than or greater than one hundred percent (100%).

– END –

EXHIBIT H

ELECTRICITY RIDER

ELECTRICITY: The cost of electric current which is supplied by Landlord for use by Tenant in the Premises, other than for heating or air conditioning purposes, will be reimbursed to Landlord at the then effective Cost per Kilowatt Hour.

"**Cost per Kilowatt Hour**" shall mean the total cost for electricity service incurred by Landlord to service the Premises during a particular time period (including all applicable surcharges, demand, energy, losses, fuel adjustment and time of use charges (if any), taxes and other sums payable in respect thereof) divided by the total kilowatt hours purchased by Landlord during such period.

a. From and after the Commencement Date, Tenant agrees to pay as Additional Rent an estimated electrical charge of $.15 per gross rentable square foot per month, payable on the first day of each and every month, until such time as an electrical survey can be performed pursuant to subparagraph b. below.

b. Landlord will have an electrical engineering consultant make a survey of the electric power used in the Premises to determine Tenant's average monthly electric consumption, and the costs of such survey will be borne by Tenant. The findings of the consultant will be conclusive and binding on Landlord and Tenant. After Landlord's consultant has submitted its report, Tenant will pay to Landlord, within thirty (30) days after demand therefor by Landlord, the amount (based on the average monthly consumption found by such consultant and applying the then effective Cost per Kilowatt Hour thereto) owing from the Commencement Date through and including the then current month, adjusted for the estimated electrical charges already paid, and thereafter, on the first day of every month, in advance, the cost of the electricity used in the Premises based on the amount set forth as the average monthly consumption in the report. Such costs will constitute Additional Rent due under the Lease. Proportionate sums will be payable for periods less than a full month.

c. In the event that there will be an increase or decrease in the Cost per Kilowatt Hour, the Additional Rent payable for electricity will be adjusted equitably to reflect the increase or decrease in the then effective Cost per Kilowatt Hour.

d. Tenant will notify Landlord immediately upon the introduction of any office equipment or lighting materially different from or in addition to that on the Premises as of Landlord's electrical survey. The introduction of any new or materially different equipment or lighting will, at Landlord's election, be cause for a resurveying of the Premises at Tenant's expense. Landlord reserves the right to inspect the Premises to insure compliance with this provision.

e. Landlord will not be liable in any way to Tenant for any loss, damage or expense which Tenant may sustain or incur as a result of any failure, defect or change in the quantity or character of electrical energy available for redistribution to the Premises pursuant to this Exhibit H, nor for any interruption in the supply, and Tenant agrees that such supply may be interrupted for inspections, repairs and replacements and in emergencies. In no event will Landlord be liable for any business interruption suffered by Tenant.

f. Landlord, at Tenant's expense, will furnish and install all replacement lighting tubes, lamps, ballasts, starters and bulbs required in the Premises.

g. Tenant's use of electrical service in excess of Building Hours will, at Landlord's election, be cause for a resurveying of the Premises at Tenant's expense, but in no event no more than two (2) times during the Term.

– END –

EXHIBIT I

SAMPLE FORM – LETTER OF CREDIT

[DATE]

TO:
[Name of Beneficiary]
[Address]

Re: Irrevocable Letter of Credit

Gentlemen:

By order of our client, _____, we hereby establish our irrevocable Letter of Credit No. _____ in your favor for a sum or sums not to exceed $_____- (_____U.S. Dollars) in the aggregate, effective immediately.

This Letter of Credit shall be payable in immediately available funds in U.S. Dollars. Funds under this credit are payable to you upon your presentation to us of a sight draft drawn on us in the form annexed hereto. All drafts must be marked: "Drawn under Letter of Credit No. ____ of [Name of Issuing Bank].

This Letter of Credit shall expire twelve (12) months from the date hereof; but is automatically extendable, so that this Letter of Credit shall be deemed automatically extended, from time to time, without amendment, for one year from the expiration date hereof and from each and every future expiration date, unless at least sixty (60) days prior to any expiration date we shall notify you by registered mail that we elect not to consider this Letter of Credit renewed for any such additional period. The final expiration date hereof shall be no earlier than [fill in suitable date after expiration of lease].

This Letter of Credit is transferable and may be transferred one or more times. However, no transfer shall be effective unless advice of such transfer is received by us in our standard form. Our client, _____, shall be solely responsible for any transfer fees imposed by the Bank.

Partial drawings are permitted.

We hereby agree to honor each draft drawn under and in compliance with this Letter of Credit, if duly presented at our offices at _____or at any other of our offices.

This Letter of Credit is subject to the International Standby Practices 1998, International Chamber of Commerce Publication No. 590.

[Name of Bank]

By:

[Annex Bank's Form of Sight Draft]

EXHIBIT 31.1

CERTIFICATION PURSUANT TO
FORM OF RULE 13A-14(A)
AS ADOPTED PURSUANT TO
SECTION 302(A) OF THE SARBANES-OXLEY ACT OF 2002

I, John A. Scarlett, M.D., certify that:

1. I have reviewed this quarterly report on Form 10-Q of Geron Corporation;

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

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

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

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

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

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

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

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

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

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

Date: May 2, 2019

/s/ JOHN A. SCARLETT

JOHN A. SCARLETT, M.D.
President and Chief Executive Officer

EXHIBIT 31.2

CERTIFICATION PURSUANT TO
FORM OF RULE 13A-14(A)
AS ADOPTED PURSUANT TO
SECTION 302(A) OF THE SARBANES-OXLEY ACT OF 2002

I, Olivia K. Bloom, certify that:

1. I have reviewed this quarterly report on Form 10-Q of Geron Corporation;

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

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

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

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

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

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

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

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

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

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

Date: May 2, 2019

/s/ OLIVIA K. BLOOM

OLIVIA K. BLOOM

Executive Vice President, Finance, Chief Financial Officer and Treasurer

EXHIBIT 32.1

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

Pursuant to 18 U.S.C. Section 1350, as created by Section 906 of the Sarbanes-Oxley Act of 2002, the undersigned officer of Geron Corporation (the "Company") hereby certifies, to such officer's knowledge, that:

(i) the accompanying quarterly report on Form 10-Q of the Company for the quarter ended March 31, 2019 (the "Report") fully complies with the requirements of Section 13(a) or Section 15(d), as applicable, of the Securities Exchange Act of 1934, as amended; and

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

Dated: May 2, 2019

/s/ JOHN A. SCARLETT

JOHN A. SCARLETT, M.D.

President and Chief Executive Officer

This certification accompanies the Form 10-Q to which it relates, is not deemed filed with the Securities and Exchange Commission and is not to be incorporated by reference into any filing of the Company under the Securities Act of 1933, as amended, or the Securities Exchange Act of 1934, as amended (whether made before or after the date of the Form 10-Q), irrespective of any general incorporation language contained in such filing.

EXHIBIT 32.2

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

Pursuant to 18 U.S.C. Section 1350, as created by Section 906 of the Sarbanes-Oxley Act of 2002, the undersigned officer of Geron Corporation (the "Company") hereby certifies, to such officer's knowledge, that:

(i) the accompanying quarterly report on Form 10-Q of the Company for the quarter ended March 31, 2019 (the "Report") fully complies with the requirements of Section 13(a) or Section 15(d), as applicable, of the Securities Exchange Act of 1934, as amended; and

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

Dated: May 2, 2019

/s/ OLIVIA K. BLOOM

OLIVIA K. BLOOM

Executive Vice President, Finance, Chief Financial Officer and Treasurer

This certification accompanies the Form 10-Q to which it relates, is not deemed filed with the Securities and Exchange Commission and is not to be incorporated by reference into any filing of the Company under the Securities Act of 1933, as amended, or the Securities Exchange Act of 1934, as amended (whether made before or after the date of the Form 10-Q), irrespective of any general incorporation language contained in such filing.