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

FORM 10-Q

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

For the quarterly period ended September 30, 2018

OR

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

For the transition period from _________ to _________

Commission file number 001-36646

Asterias Biotherapeutics, Inc.
(Exact name of registrant as specified in its charter)

Delaware	**46-1047971**
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)

6300 Dumbarton Circle
Fremont, California 94555
(Address of principal executive offices) (Zip Code)
Registrant's telephone number, including area code
(510) 456-3800

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

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

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

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

Indicate the number of shares outstanding of each of the issuer's classes of common stock, as of the latest practicable date: 55,658,684 shares of Series A Common Stock, $0.0001 par value, as of October 29, 2018.

PART I--FINANCIAL INFORMATION

Statements made in this Report that are not historical facts may constitute forward-looking statements that are subject to risks and uncertainties that could cause actual results to differ materially from those discussed. Such risks and uncertainties include but are not limited to those discussed in this Report under Item 1 of the Notes to Financial Statements, and under Risk Factors in this Report. Words such as "expects," "may," "will," "anticipates," "intends," "plans," "believes," "seeks," "estimates," and similar expressions identify forward-looking statements.

References to "Asterias," "our" or "we" means Asterias Biotherapeutics, Inc.

The description or discussion, in this Form 10-Q, of any contract or agreement is a summary only and is qualified in all respects by reference to the full text of the applicable contract or agreement.

Item 1. Financial Statements

ASTERIAS BIOTHERAPEUTICS, INC.
CONDENSED BALANCE SHEETS
(IN THOUSANDS EXCEPT PAR VALUE AMOUNTS)

	September 30, 2018 (Unaudited)	December 31, 2017 (Note 1)
ASSETS		
CURRENT ASSETS		
Cash and cash equivalents	$ 6,424	$ 13,166
Marketable equity securities	6,161	8,329
Receivables	2,429	34
Prepaid expenses and other current assets	748	1,187
Total current assets	15,762	22,716
NONCURRENT ASSETS		
Intangible assets, net	13,430	15,444
Property, plant and equipment, net	598	4,543
Other assets	24	389
TOTAL ASSETS	$ 29,814	$ 43,092
LIABILITIES AND STOCKHOLDERS' EQUITY		
CURRENT LIABILITIES		
Accounts payable and accrued expenses	$ 2,017	$ 2,958
Deferred rent and lease incentives, current	402	—
Capital lease liability, current	7	7
Lease liability, current	—	556
Total current liabilities	2,426	3,521
NONCURRENT LIABILITIES		
Warrant liability	703	2,757
Deferred revenue	1,000	—
Capital lease liability, noncurrent	9	14
Deferred rent and lease incentives, noncurrent	1,171	316
Lease liability, noncurrent	—	2,941
TOTAL LIABILITIES	5,309	9,549
Commitments and contingencies (see Note 8)		
STOCKHOLDERS' EQUITY		
Preferred Stock, $0.0001 par value, authorized 5,000 shares; none issued and outstanding	—	—
Common Stock, $0.0001 par value, authorized 125,000 shares of Series A Common Stock and 75,000 shares of Series B Common Stock; 55,659 and 54,051 shares of Series A Common Stock issued and outstanding at September 30, 2018 and December 31, 2017, respectively; no shares of Series B Common Stock issued and outstanding at September 30, 2018 and December 31, 2017	6	5
Additional paid-in capital	156,760	152,136
Accumulated other comprehensive loss	—	(6,498)
Accumulated deficit	(132,261)	(112,100)
Total stockholders' equity	24,505	33,543
TOTAL LIABILITIES AND STOCKHOLDERS' EQUITY	$ 29,814	$ 43,092

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

ASTERIAS BIOTHERAPEUTICS, INC.
CONDENSED STATEMENTS OF OPERATIONS
(IN THOUSANDS, EXCEPT PER SHARE DATA)
(UNAUDITED)

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2018	**2017**	**2018**	**2017**
REVENUE				
Grant income	$ —	$ 1,526	$ —	$ 3,711
License revenue	—	—	366	—
Royalties from product sales	116	162	337	303
Total revenue	116	1,688	703	4,014
Cost of sales	(57)	(81)	(177)	(151)
Gross profit	59	1,607	526	3,863
EXPENSES				
Research and development	3,510	6,624	10,753	20,206
General and administrative	1,910	2,046	5,809	8,360
Total operating expenses	5,420	8,670	16,562	28,566
Loss from operations	(5,361)	(7,063)	(16,036)	(24,703)
OTHER INCOME/(EXPENSE)				
Gain from change in fair value on warrant liability	169	506	2,054	3,404
Gain from change in fair value of marketable equity securities	830	—	570	—
Interest expense, net	(88)	(112)	(289)	(351)
Other expense, net	(4)	(140)	(47)	(174)
Total other income/(expense), net	907	254	2,288	2,879
NET LOSS	$ (4,454)	$ (6,809)	$ (13,748)	$ (21,824)
BASIC AND DILUTED NET LOSS PER SHARE	$ (0.08)	$ (0.14)	$ (0.25)	$ (0.44)
WEIGHTED AVERAGE SHARES OUTSTANDING: BASIC AND DILUTED	55,531	49,771	54,956	49,110

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

ASTERIAS BIOTHERAPEUTICS, INC.
CONDENSED STATEMENTS OF COMPREHENSIVE LOSS
(IN THOUSANDS)
(UNAUDITED)

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2018	**2017**	**2018**	**2017**
NET LOSS	$ (4,454)	$ (6,809)	$ (13,748)	$ (21,824)
Other comprehensive loss:				
Unrealized loss on marketable equity securities, net of taxes	—	(764)	—	(2,892)
Realized gain on marketable equity securities, net of taxes	—	118	—	118
Total other comprehensive loss	—	(646)	—	(2,774)
COMPREHENSIVE LOSS	$ (4,454)	$ (7,455)	$ (13,748)	$ (24,598)

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

ASTERIAS BIOTHERAPEUTICS, INC.
CONDENSED STATEMENTS OF CASH FLOWS
(IN THOUSANDS)
(UNAUDITED)

	Nine Months Ended September 30, 2018	2017
CASH FLOWS FROM OPERATING ACTIVITIES:		
Net loss	$ (13,748)	$ (21,824)
Adjustments to reconcile net loss to net cash used in operating activities:		
Depreciation and amortization expense	761	840
Stock-based compensation	2,060	2,895
Amortization of intangible assets	2,014	2,014
Common stock issued for services in lieu of cash	643	858
Gain from change in fair value of warrant liability	(2,054)	(3,404)
Expense related to distribution warrant extension	—	2,042
(Gain)/loss from change in fair value of marketable equity securities	(570)	118
Loss on disposal of property, plant, and equipment	38	112
Changes in operating assets and liabilities:		
Prepaid expenses and other current assets	340	13
Other assets	237	595
Accounts payable, accrued expenses and other current liabilities	(73)	(770)
Deferred rent and lease incentives	315	44
Deferred grant income	—	(2,185)
Net cash used in operating activities	(10,037)	(18,652)
CASH FLOWS FROM INVESTING ACTIVITIES:		
Purchase of property, plant and equipment	—	(237)
Proceeds from the sale of marketable equity securities	2,738	281
Net cash provided by investing activities	2,738	44
CASH FLOWS FROM FINANCING ACTIVITIES:		
Proceeds from sale of common stock under at-the-market transactions	1,167	8,003
Financing costs for at-the-market sales	(36)	(238)
Proceeds from exercise of stock options	—	23
Repayment of lease liability and capital lease obligation	(414)	(360)
Shares retired to pay for employees' taxes	(160)	—
Net cash provided by financing activities	557	7,428
NET DECREASE IN CASH, CASH EQUIVALENTS AND RESTRICTED CASH	(6,742)	(11,180)
CASH, CASH EQUIVALENTS AND RESTRICTED CASH:		
At beginning of period	13,266	19,800
At end of period	$ 6,524	$ 8,620
SUPPLEMENTAL DISCLOSURES OF CASH FLOW INFORMATION:		
Interest paid during the period	$ 351	$ 274
Fully vested common stock and restricted stock units issued in payment for accrued employee bonuses	$ 951	$ 720

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

ASTERIAS BIOTHERAPEUTICS, INC.
NOTES TO CONDENSED FINANCIAL STATEMENTS
(UNAUDITED)

1. Organization, Basis of Presentation and Liquidity

Asterias Biotherapeutics, Inc. ("Asterias" or "the Company") is a clinical-stage biotechnology company dedicated to developing pluripotent stem cell-derived therapies to treat neurological conditions associated with demyelination and cellular immunotherapies to treat cancer. We have industry-leading technology in two cell types, each with broad potential applicability: (1) oligodendrocyte progenitor cells, which become oligodendrocytes that have the potential to remyelinate axons within the central nervous system and perform other restorative functions, and (2) antigen-presenting dendritic cells, which train T-cells in the immune system to attack and destroy solid or liquid tumor cells across multiple types of cancer. Asterias currently has three clinical-stage therapeutic programs:

- Spinal Cord Injury. AST-OPC1 is an oligodendrocyte progenitor cell population derived from pluripotent stem cells that is currently in a Phase 1/2a clinical trial for spinal cord injuries ("SCI") that has been partially funded by the California Institute for Regenerative Medicine ("CIRM").

- Non-Small Cell Lung Cancer. AST-VAC2 is a non-patient-specific ("off-the-shelf") cancer immunotherapy derived from pluripotent stem cells that is currently in a Phase 1 clinical trial in non-small cell lung cancer ("NSCLC"). The trial is being funded and sponsored by Cancer Research UK ("CRUK"), the world's largest independent cancer research charity.

- Acute Myeloid Leukemia. AST-VAC1 is a patient-specific cancer immunotherapy which has generated positive Phase 2 data in the treatment of acute myeloid leukemia ("AML"). Because AST-VAC1 and AST-VAC2 are both dendritic cells presenting the telomerase antigen, an antigen presented by 90% of all cancers, we believe that AST-VAC1 provides supportive evidence for the use of AST-VAC2 in the treatment of AML.

The accompanying unaudited condensed financial statements have been prepared in accordance with accounting principles generally accepted in the United States ("GAAP") for interim financial information and with the instructions to Form 10-Q and Article 10 of Regulation S-X of the Securities Exchange Commission. In accordance with those rules and regulations certain information and footnote disclosures normally included in comprehensive financial statements have been condensed or omitted pursuant to such rules and regulations. The balance sheet as of December 31, 2017 was derived from the audited financial statements at that date, but does not include all the information and footnotes required by GAAP. These financial statements should be read in conjunction with the audited financial statements and notes thereto included in Asterias' Annual Report on Form 10-K for the year ended December 31, 2017.

The accompanying interim condensed financial statements, in the opinion of management, include all adjustments, consisting only of normal recurring adjustments, necessary for a fair presentation of Asterias' financial condition and results of operations. The condensed results of operations are not necessarily indicative of the results to be expected for any future interim period or for the entire year.

Liquidity – Since inception, Asterias has incurred operating losses and has funded its operations primarily through the issuance of shares of Asterias common stock, sales of marketable equity securities that we hold, warrant exercise proceeds, payments from research grants, and royalties from product sales. At September 30, 2018, Asterias had an accumulated deficit of $132.3 million, working capital of $13.3 million and stockholders' equity of $24.5 million. Asterias has evaluated its projected cash flows and believes that its cash, cash equivalents, and restricted cash of $6.5 million, marketable equity securities of $6.2 million, and $2.4 million of receivables largely related to our Novo agreements (payments were received in early October 2018) as of September 30, 2018, will be sufficient to fund Asterias' operations through at least twelve months from the issuance date of these financial statements. If the value of Asterias' marketable equity securities decreases or it is unable to obtain adequate future financing or other sources of funding, it may be required to reduce or curtail its operations. Future financings or other sources of funding may not be available to Asterias at acceptable terms, or at all. Sales of additional issued equity securities would result in the dilution of interests of current shareholders.

2. Summary of Significant Accounting Policies

Revenue Recognition

Beginning January 1, 2018, the Company follows the provisions of ASC Topic 606, *Revenue from Contracts with Customers*. The guidance provides a unified model to determine how revenue is recognized.

In determining the appropriate amount of revenue to be recognized as it fulfills its obligations under the Company's agreements, the Company performs the following steps: (i) identifies the promised goods or services in the contract; (ii) determines whether the promised goods or services are performance obligations including whether they are distinct in the context of the contract; (iii) measures the transaction price, including the constraint on variable consideration; (iv) allocates the transaction price to the performance obligations based on estimated selling prices; and (v) recognizes revenue when (or as) the Company satisfies each performance obligation.

A performance obligation is a promise in a contract to transfer a distinct good or service to the customer and is the unit of account in ASC Topic 606. The Company's performance obligations generally included in customer contracts are research and development services for clinical studies or licenses to use intellectual property. Customer contracts for research and development services require significant management judgment to determine the level of effort required under an arrangement and the period over which the Company expects to complete its performance obligation. If the Company cannot reasonably estimate when its performance obligations either are completed or become inconsequential, then revenue recognition is deferred until the Company can reasonably make such estimates. Revenue is then recognized over the remaining estimated period of performance using the cumulative catch-up method. The Company considers licenses for the use of intellectual property "right of use" licenses. The Company recognizes revenues from non-refundable, up-front fees allocated to the license when the license is transferred to the customer, and the customer can use and benefit from the license. At September 30, 2018, all the performance obligations under the Company's license agreements have been satisfied as control transferred at contract inception when the customer could benefit from the right of use license. Currently, since none of the Company's contracts contain more than one performance obligation, no allocation of the transaction price is necessary. However, if the Company enters into an arrangement containing more than one performance obligation the total transaction price will be allocated to each performance obligation based on the estimated relative standalone selling prices of the promised goods or service.

Grant income: The Company generates grant income from award contracts to support the clinical development of AST-OPC1. These contracts provide for the reimbursement of qualified expenses for research and development activities. Revenue under these arrangements is recognized when the related qualified research expenses are incurred.

Milestone payments: At the inception of each arrangement that includes milestone payments, the Company evaluates whether the milestones are considered probable of being achieved and estimates 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 (such as completion of a therapeutic administration of a licensed product to a certain number of patients by the Company) is included in the transaction price. Milestone payments that are not within the control of the Company are not considered probable of being achieved until the contingent event has occurred.

License and Royalties: The Company considers licenses for the use of intellectual property "right of use" licenses. The Company recognizes revenues from non-refundable, up-front fees allocated to the license when the license is transferred to the customer, and the customer can use and benefit from the license. For arrangements that include sales-based royalties and the license is deemed to be the predominant item to which the royalties relate, the Company recognizes 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). The Company's arrangement that contain royalty minimums also contain termination clauses, therefore these royalties are considered variable consideration and included in the transaction price when the notice period has lapsed.

Option to License Patents: The Company recognizes revenues from up-front fees associated with granting a material right to, or an option to license certain intellectual property to certain third parties ("optionees"), whereby the option itself is deemed to be a performance obligation of the Company, upon the earlier of a) the date the Company and the optionee enter into a license agreement or b) if no license is consummated, at the end of the period to negotiate a license.

Comprehensive loss – ASC 220, *Comprehensive Income*, requires that an entity's change in equity or net assets during a period from transactions and other events from non-owner sources be reported. Total comprehensive loss has been disclosed in the Condensed Statements of Comprehensive Loss.

Investments in Equity Securities – Beginning January 1, 2018, the Company adopted the provisions of ASU Topic 2016-01, *Financial Instruments–Overall: Recognition and Measurement of Financial Assets and Financial Liabilities*. The guidance eliminated the available-for-sale classification for equity securities and requires unrealized holding gains/losses to be reported through earnings. Prior to the adoption of the new guidance, unrealized gains and losses, net of tax from the Company's financial instruments categorized as available-for-sale securities were reported in other comprehensive income/(loss) until realized. Realized gains and losses and declines in value judged to be other-than-temporary related to equity securities, were included in other income/(expense), net.

Asterias accounts for its marketable equity securities in BioTime and OncoCyte at fair value in accordance with ASC 321-10 *Investments-Equity Securities*, as the shares have a readily determinable fair value as specified by ASC 820-10 *Fair Value Measurement.* The securities are quoted on the NYSE American and are held principally for future working capital purposes, as necessary. These securities are measured at fair value and reported as current assets on the balance sheet based on the closing trading price of the security as of the date being presented (see Note 4).

Basic and diluted net loss per share – The computations of basic and diluted net loss per share are as follows (in thousands, except per share data) (unaudited):

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2018	**2017**	**2018**	**2017**
Net loss	$ (4,454)	$ (6,809)	$ (13,748)	$ (21,824)
Weighted average common shares outstanding – basic and diluted	55,531	49,771	54,956	49,110
Net loss per share – basic and diluted	$ (0.08)	$ (0.14)	$ (0.25)	$ (0.44)

The following common stock equivalents were excluded from the computation of diluted net loss per share of common stock for the periods presented as they are anti-dilutive (in thousands) (unaudited):

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2018	**2017**	**2018**	**2017**
Stock options and restricted stock units	7,047	7,272	7,047	7,272
Warrants	2,813	2,813	2,813	2,813

Recently Adopted Accounting Pronouncements – The following Accounting Standards became effective during 2018:

In May 2014, the FASB issued ASU No. 2014-09, *Revenue from Contracts with Customers (Topic 606)*, to provide guidance on revenue recognition. During 2015 and 2016, the FASB issued additional amendments to the revenue guidance in Topic 606 relating to reporting revenue on a gross versus net basis, identifying performance obligations, licensing arrangements, collectability, noncash consideration, presentation of sales tax, transition, and clarifying examples. ASU No. 2014-09 replaces all current GAAP guidance on this topic and eliminates all industry-specific guidance. The new revenue recognition guidance provides a unified model to determine how revenue is recognized. The core principal of the guidance is that an entity should recognize revenue when it transfers promised goods or services to customers in an amount that reflects the consideration to which the company expects to be entitled in exchange for those goods or services. In doing so, companies will need to use more judgment and make more estimates than under today's guidance. These may include identifying performance obligations in the contract, estimating the amount of variable consideration to include in the transaction price and allocating the transaction price to each separate performance obligation. Topic 606, as amended, is effective for interim and annual reporting periods beginning after December 15, 2017, with early adoption permitted one year earlier.

The Company adopted the new standard effective January 1, 2018 under the modified retrospective transition method applied to those contracts which were not completed as of January 1, 2018. Results for reporting periods beginning after January 1, 2018, are presented under Topic 606, while prior period amounts are not adjusted and continue to be reported in accordance with the Company's historical accounting under Topic 605. Upon adoption there was an immaterial cumulative effect to the opening accumulated deficit based on the Company's analysis of the contracts in scope at the transition date.

On January 5, 2016, the FASB issued Accounting Standards Update 2016-01, *Financial Instruments–Overall: Recognition and Measurement of Financial Assets and Financial Liabilities* (ASU No. 2016-01). Changes to the current GAAP model primarily affect the accounting for equity investments, financial liabilities under the fair value option, and the presentation and disclosure requirements for financial instruments. In addition, ASU No. 2016-01 clarified guidance related to the valuation allowance assessment when recognizing deferred tax assets resulting from unrealized losses on available-for-sale debt securities. The accounting for other financial instruments, such as loans, investments in debt securities, and financial liabilities is largely unchanged. The more significant amendments are to equity investments in unconsolidated entities.

In accordance with ASU No. 2016-01, all equity investments in unconsolidated entities (other than those accounted for using the equity method of accounting) will generally be measured at fair value through earnings. There will no longer be an available-for-sale classification (with changes in fair value reported in other comprehensive loss) for marketable equity securities with readily determinable fair values. The classification and measurement guidance is effective for public business entities in fiscal years beginning after December 15, 2017, including interim periods within those fiscal years.

The Company adopted ASU No. 2016-01 effective January 1, 2018 and has recorded a cumulative-effect adjustment under the modified retrospective transition method of $6.5 million between accumulated other comprehensive loss and the accumulated deficit in the balance sheet. The adjustment represents the cumulative unrealized holding loss from the date that the securities were acquired through the date of adoption. Refer to Note 4 for discussion regarding Asterias' marketable equity securities.

In November 2016, the FASB issued Accounting Standards Update ASU 2016-18, *Statement of Cash Flows (Topic 230); Restricted Cash* (ASU 2016-18), which defines new requirements for the presentation of restricted cash and restricted cash equivalents in the statement of cash flows. The amendments in this ASU require retrospective application to each period presented. The Company adopted this guidance effective January 1, 2018 retrospectively. This ASU requires entities to present a statement of cash flows in a manner such that it reconciles beginning and ending totals of cash, cash equivalents, restricted cash or restricted cash equivalents. Also, when cash, cash equivalents, restricted cash or restricted cash equivalents are presented in more than one line item within the statement of financial position, an entity should, for each period that a statement of financial position is presented, present on the face of the statement of cash flows or disclose in the notes to the financial statements, the line items and amounts of cash, cash equivalents, and restricted cash or restricted cash equivalents reported within the statement of financial position. The amounts, disaggregated by the line item in which they appear within the statement of financial position, shall sum to the total amount of cash, cash equivalents, and restricted cash or restricted cash equivalents at the end of the corresponding period shown in the statement of cash flows. The Company has adopted this guidance and the ending cash, cash equivalents, and restricted cash balance includes the $100,000 Asterias holds as restricted cash.

In May 2017, the FASB issued ASU No. 2017-09, *Compensation – Stock Compensation: Scope of Modification Accounting* to clarify the scope of modification accounting for share-based compensation. Under the new guidance, modification accounting is required only if the fair value, the vesting conditions, or the classification of the award (as equity or liability) changes as a result of the change in terms or conditions. The new guidance will reduce diversity in practice and result in fewer changes to the terms of an award being accounted for as modifications. The Company adopted ASU No. 2017-01 effective January 1, 2018. Upon adoption of the new standard there is no change to the Company's historical financial statements as the new guidance will be applied prospectively to awards modified on or after the adoption date.

Recently Issued Accounting Pronouncements Not Yet Adopted – The following accounting standards, which are not yet effective, are presently being evaluated by Asterias to determine the impact that they might have on its financial statements.

In February 2016, the FASB issued ASU 2016-02, *Leases (Topic 842),* which requires lessees to recognize assets and liabilities for leases with lease terms greater than twelve months in the statement of financial position. Leases will be classified as either financing or operating, with classification affecting the pattern of expense recognition in the statements of operations. ASU 2016-02 also requires improved disclosures to help users of financial statements better understand the amount, timing and uncertainty of cash flows arising from leases. ASU 2016-02 is effective for fiscal years beginning after December 15, 2018, including interim reporting periods within that reporting period. Early adoption is permitted. Although Asterias has not completed its evaluation of the impact of the adoption of ASU 2016-02, Asterias currently holds operating leases (see Note 8). As a result, the adoption of ASU 2016-02 could have a material impact to Asterias' financial statements.

In June 2018, the FASB issued ASU No. 2018-07, Compensation - Stock Compensation (Topic 718) - Improvements to Nonemployee Share-Based Payment Accounting. ASU No. 2018-07 supersedes the guidance for equity-based payments to non-employees (Topic ASC 505-50). Under the new standard, an entity should treat equity-based payments to nonemployees the same as stock-based compensation to employees in most cases. The new guidance is effective for interim and annual periods beginning after December 15, 2018, with early adoption permitted. The Company is assessing ASU 2018-07 and does not expect it to have a material impact on its financial statements.

In August 2018, the FASB issued ASU 2018-13, Fair Value Measurement (Topic 820): Disclosure Framework—Changes to the Disclosure Requirements for Fair Value Measurement, which modifies the disclosure requirements on fair value measurements. The new guidance is effective for interim and annual periods beginning after December 15, 2019. The Company is assessing ASU 2018-13 and does not expect it to have a material impact on its consolidated financial statements.

3. Balance Sheet Components

Property, plant and equipment, net

As of September 30, 2018 and December 31, 2017, property, plant and equipment consisted of the following (in thousands):

	September 30, 2018 (Unaudited)	December 31, 2017
Furniture, fixtures and leasehold improvements	$ 40	$ 5,275
Computers, machinery and equipment	1,753	2,112
	1,793	7,387
Less - accumulated depreciation and amortization	(1,195)	(2,844)
Property, plant and equipment, net	$ 598	$ 4,543

Depreciation and amortization expense for the three and nine months ended September 30, 2018 was $248,000 and $761,000, respectively. Depreciation and amortization expense for the three and nine months ended September 30, 2017 was $285,000 and $840,000, respectively.

On September 28, 2018, the Company's office and research facility lease in Fremont, California (Fremont Lease) was terminated (see Note 8). Upon of the termination of the Fremont Lease, Novo Nordisk Research Center Seattle Inc. ("NNRCSI") entered into a new lease of the facilities with the landlord and a sublease agreement with the Company for part of the facility. As a result, the Company derecognized its leasehold improvements at the office and research facility with a net book value of $3.0 million and the related lease liability to the landlord of $3.1 million. This resulted in a net gain of $76,000 which is included in the deferred rent and lease incentives on the balance sheet at September 30, 2018 and will be amortized over the term of the sublease.

Additionally, on September 28, 2018, the Company sold certain laboratory equipment to NNRCSI which it is leasing back under the sublease agreement (see Note 8). The gain on the asset sale and lease back totaling $116,000 is included in the deferred rent and lease incentives on the balance sheet at September 30, 2018 and will be amortized over the term of the sublease for the research facility space.

Receivables

As of September 30, 2018 and December 31, 2017 the Company had a receivables balance of $2.4 million and $34,000, respectively. The balance as of September 30, 2018, was largely comprised of amounts related to the Novo Nordisk option agreement payment due of $1.0 million combined with the NNRCSI lease incentive and sale of fixed asset payments due of $750,000 and $250,000, respectively. Additionally, the deposit previously held by the Landlord for our Fremont lease, which is now payable to the Company is included in the receivables balance as of September 30, 2018.

Prepaid and other current assets

Restricted cash in the amount of $100,000 is included in prepaid and other current assets on the balance sheet as of September 30, 2018 and December 31, 2017. This certificate of deposit is held as customary collateral for the Company's credit card program.

Deferred revenue

During the three months ended September 30, 2018, the Company and Novo Nordisk A/S ("Novo Nordisk") entered into an option for Novo Nordisk or its designated U.S. affiliate to license, on a non-exclusive basis, certain intellectual property related to culturing pluripotent stem cells, such as hES cells, in suspension. Under the terms of the option, Asterias will receive a one-time upfront payment of $1.0 million, in exchange for a 24-month period to negotiate a non-exclusive license during which time Asterias has agreed to not grant any exclusive licenses inconsistent with the Novo Nordisk option. This option is considered a performance obligation as it provides NNRCSI with a material right that NNRCSI would not receive without entering into the contract. This $1.0 million has been included in deferred revenue on the Company's balance sheet at September 30, 2018. The Company will recognize revenue from the option agreement at the earlier of a) the date the Company and Novo Nordisk enter into a license agreement or b) if no license agreement is consummated, at the end of the 24-month period to negotiate a non-exclusive license.

4. Investments in BioTime and OncoCyte

Investment in BioTime

The BioTime common shares held by the Company are included in marketable equity securities at fair value in current assets on the balance sheets because the shares are traded on NYSE American under the (symbol "BTX") and are available for working capital purposes. During the three months ended September 30, 2018, Asterias did not sell any BioTime shares. During the nine months ended September 30, 2018 Asterias sold 859,274 of its BioTime common shares. The weighted-average price of the shares sold for the nine months ended September 30, 2018 was $2.59. As of September 30, 2018 and December 31, 2017, Asterias held 2,621,811 and 3,481,085 BioTime shares, respectively. As of September 30, 2018 and December 31, 2017, the BioTime common shares were valued at $6.2 million and $7.5 million, respectively, based on the closing price on those dates.

Investment in OncoCyte

The OncoCyte common shares are included in marketable equity securities at fair value in current assets on the balance sheets because the shares are traded on NYSE American (symbol "OCX") and are available for working capital purposes. During the three and nine months ended September 30, 2018, Asterias sold 73,175 and 181,756 of its OncoCyte common shares at a weighted-average price of $3.56 and $3.12, respectively. As of September 30, 2018, Asterias did not hold any OncoCyte common shares. As of December 31, 2017, Asterias held 181,756 OncoCyte common shares valued at $0.8 million, based on the closing price on that date.

Adoption of ASU No. 2016-01, Financial Instruments–Overall: Recognition and Measurement of Financial Assets and Financial Liabilities

On January 1, 2018, the Company adopted ASC Topic 321 using the modified retrospective method. Results for reporting periods beginning after January 1, 2018, are presented under ASC Topic 321, while prior period amounts are not adjusted and continue to be reported in accordance with the Company's historical accounting under ASC Topic 320 (see Note 2).

The adoption of the new guidance resulted in a cumulative effect adjustment to the accumulated deficit and accumulated other comprehensive loss of $6.5 million as of January 1, 2018.

The unrealized gains for the three and nine months ended September 30, 2018 related to marketable equity securities held is calculated as follows (in thousands) (unaudited):

	Three Months Ended September 30, 2018	Nine Months Ended September 30, 2018
Net gains recognized on marketable equity securities	$ 830	$ 570
Less: Net gains recognized on marketable equity securities sold	69	46
Unrealized gains recognized on marketable equity securities held at September 30, 2018	$ 761	$ 524

5. Intangible Assets

Intangible assets net of accumulated amortization at September 30, 2018 and December 31, 2017 are shown in the following table (in thousands):

	September 30, 2018 (Unaudited)	December 31, 2017
Intangible assets	$ 26,860	$ 26,860
Less- accumulated amortization	(13,430)	(11,416)
Intangible assets, net	$ 13,430	$ 15,444

Asterias recognized $0.7 million and $2.0 million in amortization expense of intangible assets during the three and nine months ended September 30, 2018 and 2017, respectively.

6. Common Stock and Warrants

As of September 30, 2018 and December 31, 2017, Asterias had issued and outstanding 55,658,684 and 54,051,142 shares of Series A common stock and no shares of Series B common stock, respectively.

Common Stock Issuance

On March 28, 2017, Asterias entered into an amendment to its at-the-market (ATM) Sales Agreement, dated April 10, 2015, with MLV & Co. ("MLV"). The amendment to the Sales Agreement was entered into by Asterias, MLV and FBR Capital Markets & Co. ("FBR" and together with MLV, the "Agents"), which acquired MLV. In June 2017, FBR was acquired by B. Riley, and together operates as B. Riley FBR, Inc. Under the Sales Agreement, as amended, Asterias may issue and sell shares of its Series A common stock having an aggregate offering price of up to $25 million from time to time on or after March 28, 2017, through the Agents, subject to certain limitations, including the number of shares registered and available under the Company's previously filed and currently effective shelf registration statement on Form S-3 (File No. 333-215154) (the "Registration Statement"). For the nine months ended September 30, 2018, Asterias sold 713,430 shares of Series A common stock for gross proceeds of approximately $1.2 million under this ATM agreement with approximately $21.5 million of Asterias common stock available for issuance and sale pursuant to the terms of the ATM Sales Agreement. For the nine months ended September 30, 2017, Asterias sold 2.0 million shares of Series A common stock for gross proceeds of approximately $8.0 million.

For the nine months ended September 30, 2018 and 2017, pursuant to a services agreement with Cell Therapy Catapult Services Limited, Asterias issued 364,727 and 217,193 shares of Asterias Series A common stock with a fair value of $643,000 and $858,000 respectively (see Note 11).

For the nine months ended September 30, 2018, Asterias issued 487,529 shares of Series A common stock with a fair value of $951,000 in payment of accrued employee bonuses. For the nine months ended September 30, 2017, Asterias issued 201,112 shares of Series A common stock with a fair value of $720,000 in payment of accrued employee bonuses.

Warrants classified as a liability

On May 13, 2016, as part of the Asterias Series A Common Stock Offering, Asterias issued 2,959,559 warrants (the "Asterias Offering Warrants"). The Asterias Offering Warrants have an exercise price of $4.37 per share and expire in five years of the issuance date, or May 13, 2021. The Asterias Offering Warrants also contain certain provisions in the event of a Fundamental Transaction, as defined in the warrant agreement governing the Asterias Offering Warrants ("Warrant Agreement"), that Asterias or any successor entity will be required to purchase, at a holder's option, exercisable at any time concurrently with or within thirty days after the consummation of the fundamental transaction, the Asterias Offering Warrants for cash. This cash settlement will be in an amount equal to the value of the unexercised portion of such holder's warrants, determined in accordance with the Black-Scholes option pricing model as specified in the Warrant Agreement.

In accordance with ASC 815-40, *Accounting for Derivative Financial Instruments Indexed to, and Potentially Settled in, a Company's Own Stock*, contracts that require or may require the issuer to settle the contract for cash are liabilities recorded at fair value, irrespective of the likelihood of the transaction occurring that triggers the net cash settlement feature. Changes to the fair value of those liabilities are recorded in the Condensed Statements of Operations. Accordingly, since Asterias may be required to net cash settle the Asterias Offering Warrants in the event of a Fundamental Transaction; the Asterias Offering Warrants are classified as noncurrent liabilities at fair value, with changes in fair value recorded in other income or expense, net, in the Condensed Statements of Operations.

The fair value of the Asterias Offering Warrants at the time of issuance was determined by using a combination of the Binomial Lattice and Black-Scholes option pricing models under various probability-weighted outcomes which take into consideration the probability of the fundamental transaction and net cash settlement occurring, using the contractual term of the warrants. In applying these models, the fair value is determined by applying Level 3 inputs, as defined by ASC 820; these inputs have included assumptions related to the estimated future stock price of Asterias common stock, volatility and the timing of, and varying probabilities that certain events will occur. The Asterias Offering Warrants are revalued each reporting period using the same methodology described above. Changes in any of the key assumptions used to value the Asterias Offering Warrants could materially impact the fair value of the warrants and Asterias' financial statements.

At September 30, 2018, based on a valuation performed on the Asterias Offering Warrants using the methodology described above, the fair value of the Asterias Offering Warrants liability was $0.7 million, resulting in Asterias recording a noncash gain of $2.1 million for the nine months ended September 30, 2018, included in other income and expenses, net, in the Condensed Statements of Operations.

Warrants classified as equity

On March 30, 2016, Asterias' board of directors declared a distribution of Asterias common stock purchase warrants to all Asterias shareholders other than BioTime, in the ratio of one warrant for every five shares of Asterias common stock owned of record as of the close of business on April 11, 2016. On April 25, 2016, Asterias distributed 3,331,229 warrants (the "Distribution Warrants"). The distribution of the Distribution Warrants was treated as a disproportionate distribution since no warrants were distributed to BioTime. The Distribution Warrants were classified as equity, have an exercise price of $5.00 per share, and were set to expire on September 30, 2016. Asterias recorded the Distribution Warrants at a fair value of $3.1 million with a non-cash charge to shareholder expense included in general and administrative expenses and a corresponding increase to equity as of March 30, 2016 as the Distribution Warrants were deemed to be issued for accounting purposes on that date.

On September 19, 2016, Asterias extended the expiration date of the Distribution Warrants to February 15, 2017, no other terms were changed. As a result of the extension of the expiration date of these warrants, Asterias recorded a $2.0 million non-cash charge to shareholder expense included in general and administrative expenses and a corresponding increase to equity for the year ended December 31, 2016. On February 3, 2017, Asterias extended the expiration date of the Distribution Warrants to September 29, 2017. As a result of this extension, Asterias recorded a $1.7 million non-cash charge to shareholder expense included in general and administrative expenses and a corresponding increase to equity for the quarter ended March 31, 2017. These warrants expired unexercised on September 29, 2017.

In connection with the warrant distribution to shareholders discussed above, 350,000 warrants with an exercise price of $5.00 per share held by Romulus Films, Ltd. were adjusted to become exercisable into 409,152 shares at an exercise price of $4.28 per share (the "Romulus Warrants"). These warrants had an original expiration date of September 30, 2016. On September 19, 2016, Asterias extended the expiration date of the Romulus Warrants to February 15, 2017, no other terms were changed. As a result of the extension of the expiration date of these warrants, Asterias recorded a $0.2 million non-cash charge to shareholder expense included in general and administrative expenses and a corresponding increase to equity for the year ended December 31, 2016. On February 3, 2017, Asterias extended the expiration date of the Romulus Warrants to September 29, 2017. As a result of this extension of the expiration date of these warrants, Asterias recorded a $0.3 million non-cash charge to shareholder expense included in general and administrative expenses and a corresponding increase to equity for the quarter ended March 31, 2017. These warrants expired on September 29, 2017.

7. Stock-Based Compensation

The following table shows the stock-based compensation expenses included in the operating expenses for the three and nine months ended September 30, 2018 and 2017 (in thousands) (unaudited):

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2018	2017	2018	2017
Research and development	$ 355	$ 518	$ 1,076	$ 1,598
General and administrative	364	389	984	1,297
Total stock-based compensation expense	$ 719	$ 907	$ 2,060	$ 2,895

The weighted average assumptions used to calculate the grant date fair value of the Company's stock options granted during the three and nine month periods ended September 30, 2018 and 2017 are as follows (unaudited):

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2018	2017	2018	2017
Expected life (in years)	6.08	6.08	5.96	5.76
Risk-free interest rates	2.86%	1.85%	2.68%	1.88%
Volatility	73.15%	73.31%	71.27%	74.73%
Dividend yield	—	—	—	—

The risk-free interest rate is based on the interest rates in effect at the date of grant for zero coupon U.S. Treasury notes with maturities approximately equal to each grant's expected term. A dividend yield of zero is applied since Asterias has not historically paid dividends and does not expect to pay dividends in the foreseeable future. The expected volatility is based upon the volatility of Asterias' own trading stock and a group of publicly traded industry peer companies. The expected term of options granted is derived using the simplified method under SEC *Staff Accounting Bulletin* Topic 14.

The determination of stock-based compensation is inherently uncertain and subjective and involves the application of valuation models and assumptions requiring the use of judgment. If Asterias had made different assumptions, its stock-based compensation expense and net loss for the three and nine months ended September 30, 2018 and 2017 may have been significantly different.

8. Commitments and Contingencies

Development and Manufacturing Services Agreement

On August 3, 2016, Asterias entered into a Development and Manufacturing Services Agreement (the "Services Agreement") with Cognate BioServices, Inc. ("Cognate"), a fully-integrated contract bioservices organization providing development and current Good Manufacturing Practice ("cGMP") manufacturing services to companies and institutions engaged in the development of cell-based products.

Under the Services Agreement, Cognate is performing under an Initial Statement of Work process development studies in support of Asterias' clinical and commercial development activities of AST-VAC1 and production and manufacturing services of AST-VAC1 under cGMP under the Second Statement of Work. In consideration for the process development services set forth in the Initial Statement of Work, Asterias agreed to make aggregate payments of up to approximately $1.7 million in fees over the term of the Initial Statement of Work and pay for additional pass through costs for materials and equipment estimated by management to be approximately $0.5 million. In consideration of the production and manufacturing services set forth in the Second Statement of Work, once the services under the Initial Statement of Work are completed and if Asterias receives United States Food and Drug Administration ("FDA") concurrence on the clinical protocol for an AST-VAC1 trial, then Asterias will make an initial start-up payment, a monthly payment for dedicated manufacturing capacity, and certain other manufacturing fees.

On August 16, 2017, the Company amended SOW 1 ("Amended SOW 1") and entered into a Statement of Work 1.5 ("SOW 1.5") with Cognate to modify the timing of certain process development studies being performed by Cognate under the Services Agreement. Under Amended SOW 1 and SOW 1.5, Cognate will perform certain process development studies initially contemplated by SOW 1 under SOW 1.5 after Cognate has completed the activities under Amended SOW 1 and the Company provides written notice to commence the activities under SOW 1.5.

The Services Agreement will expire on the later of (a) August 3, 2019; or (b) the completion of all services contracted for by the parties in the Statements of Work under the Services Agreement prior to August 3, 2019. The term of the Services Agreement and any then pending Statements of Work thereunder may be extended by Asterias continuously for additional two year periods upon written notice to Cognate with at least 30 days prior to the expiration of the then-current term.

The Services Agreement provides certain termination rights to each party and customary provisions relating to indemnity, confidentiality and other matters. Asterias incurred $47,000 and $536,000 of expense to Cognate pursuant to the Services Agreement for the nine months ended September 30, 2018 and 2017, respectively. As of January 31, 2018, Cognate has completed the activities under SOW 1 but the Company has not provided notice to commence activities under SOW 1.5.

Fremont Lease

On December 30, 2013, Asterias entered into a lease for an office and research facility located in Fremont, California ("Fremont Lease"), consisting of an existing building with approximately 44,000 square feet of space ("Leased Space"). Asterias completed the tenant improvements in November 2015, which cost approximately $4.9 million, of which the maximum of $4.4 million was paid to Asterias by the landlord. Asterias placed the asset into service in November 2015 and is amortizing the leasehold improvements and the landlord liability over the remaining lease term through September 30, 2022.

On September 28, 2018, the Company terminated the Fremont Lease agreement with the landlord. Simultaneously with the termination of the Lease, Novo Nordisk Research Center Seattle, Inc. ("NNRSCI"), an affiliate of Novo Nordisk, a Denmark-based multinational pharmaceutical company, entered into a new lease agreement with the landlord for the Leased Space, whereupon the Company and NNRSCI immediately entered into a sublease agreement for the Company to occupy and use part of the Leased Space (the "Sublease"). Upon execution of the Sublease, the Company received approximately $1.1 million from Novo Nordisk. The Company did not incur any early termination fees in in connection with the termination of the Fremont Lease.

The Company has accounted for the Fremont Lease termination, Sublease, and other related agreements with the landlord and the affiliate of Novo Nordisk and as follows:

1) The $1.1 million received from Novo Nordisk has been accounted for as lease incentives to enter into the sublease under ASC 840-10-35, and will be recognized as a reduction of rent expense over the Sublease term for the office space of 39 months. This amount is included in the deferred rent and lease incentives on the balance sheet. As of September 30, 2018 and December 31, 2017, the deferred rent and lease incentives were $1.6 million and $316,000, respectively.

2) Upon termination of the Fremont Lease agreement with the landlord, the leasehold improvements of $3.0 million (net of accumulated depreciation) and the related lease liability of $3.1 million to the landlord were derecognized and the resulting gain of $76,000 is included in the deferred rent and lease incentives and will be recognized over the Sublease term under ASC 840. Additionally, Asterias sold certain fixed assets (laboratory equipment) to Novo Nordisk. This equipment had a net book value of $134,000. The gain on the sale of the laboratory equipment of $116,000 is included in the deferred rent and lease incentives and will be recognized over the sublease term, for the research space of 25 months, as this transaction is deemed to be a sale-leaseback transaction.

On September 28, 2018, Asterias entered into a Sublease agreement for office and research facilities located at its current location in Fremont, California. This sublease initially consists of a total of 31,373 square feet of space of which 16,452 square feet of space is for the exclusive use of Asterias and 14,921 square feet of space that will be shared with the sublessor. On October 31, 2020, the sublease space will be reduced to 23,108 square feet of space, excluding the research space. The leased facilities are being used by Asterias as a combined office and research facility. Under the terms of the Sublease, the initial monthly rent for the subleased space is $67,814. As a result of the Sublease, the Company expects to lower its facilities related costs over the next several years by approximately $1.0 million annually. The Sublease expires on December 31, 2021. The Company may terminate the Sublease, with no penalty, prior to its expiration upon three months prior written notice.

As of September 30, 2018, minimum sublease payments are as follows (in thousands) (unaudited):

Year	Minimum Lease Payments
2018	$ 203
2019	820
2020	812
2021	681
Total	$ 2,516

Litigation – General

Asterias is subject to various claims and contingencies in the ordinary course of its business, including those related to litigation, business transactions, employee-related matters, and others. When Asterias is aware of a claim or potential claim, it assesses the likelihood of any loss or exposure. If it is probable that a loss will result and the amount of the loss can be reasonably estimated, Asterias will record a liability for the loss. If the loss is not probable or the amount of the loss cannot be reasonably estimated, Asterias discloses the claim if the likelihood of a potential loss is reasonably possible and the amount involved could be material. Asterias is not aware of any claims likely to have a material adverse effect on its financial condition or results of operations.

Employment Contracts

Asterias has entered into employment contracts with certain executive officers. Under the provisions of the contracts, Asterias may be required to incur severance obligations for matters relating to changes in control, as defined and involuntary terminations.

Indemnification

In the normal course of business, Asterias may provide indemnifications of varying scope under Asterias' agreements with other companies or consultants, typically Asterias' clinical research organizations, investigators, clinical sites, suppliers and others. Pursuant to these agreements, Asterias will generally agree to indemnify, hold harmless, and reimburse the indemnified parties for losses and expenses suffered or incurred by the indemnified parties arising from claims of third parties in connection with the use or testing of Asterias' products and services. Indemnification provisions could also cover third party infringement claims with respect to patent rights, copyrights, or other intellectual property pertaining to Asterias products and services. The term of these indemnification agreements will generally continue in effect after the termination or expiration of the particular research, development, services, or license agreement to which they relate. The potential future payments Asterias could be required to make under these indemnification agreements will generally not be subject to any specified maximum amount. Historically, Asterias has not been subject to any claims or demands for indemnification. Asterias also maintains various liability insurance policies that limit Asterias' exposure. As a result, Asterias believes the fair value of these indemnification agreements is minimal. Accordingly, Asterias has not recorded any liabilities for these agreements as of September 30, 2018 and December 31, 2017.

9. Shared Facilities and Services Agreement

BioTime

On April 1, 2013, Asterias and BioTime executed a Shared Facilities and Services Agreement ("Shared Services Agreement"). Under the terms of the Shared Services Agreement, Asterias has the right to use BioTime's premises and equipment located at Alameda, California, for the sole purpose of conducting Asterias' business. BioTime charges Asterias a fee for the services and usage of facilities, equipment, and supplies provided under the shared services agreement. For each billing period, BioTime equitably prorates and allocates its employee costs, equipment costs, insurance costs, lease costs, professional costs, software costs, supply costs, and utilities costs, if any, between BioTime and Asterias based upon actual documented use and cost by or for Asterias or upon proportionate usage by BioTime and Asterias, as reasonably estimated by BioTime. Asterias pays 105% of the allocated costs (the "Use Fee"). The allocated cost of BioTime employees and contractors who provide services is based upon records maintained of the number of hours of such personnel devoted to the performance of services.

The Use Fee is determined and invoiced to Asterias on a quarterly basis for each calendar quarter of each calendar year. If the Shared Services Agreement terminates prior to the last day of a billing period, the Use Fee will be determined for the number of days in the billing period elapsed prior to the termination of the Shared Services Agreement. Each invoice is payable in full by Asterias within 30 days after receipt. Any invoice or portion thereof not paid in full when due will bear interest at the rate of 15% per annum until paid, unless the failure to make a payment is due to any inaction or delay in making a payment by BioTime employees from Asterias funds available for such purpose, rather than from the unavailability of sufficient funds legally available for payment or from an act, omission, or delay by any employee or agent of Asterias.

Asterias in turn may charge BioTime or any Other Subsidiary for similar services provided by Asterias at the same rate and terms as aforementioned. "Other Subsidiary" means a subsidiary of BioTime other than a subsidiary of Asterias.

The Shared Services Agreement was renewed through December 31, 2018. The term of the Shared Services Agreement will automatically be renewed and the termination date will be extended for an additional year each year, unless either party gives the other party written notice stating that the Shared Services Agreement will terminate on December 31 of that year.

BioTime allocated $10,000 and $117,000 of general overhead expenses to Asterias during the nine months ended September 30, 2018, and 2017, respectively. At September 30, 2018, Asterias had no net payable to BioTime under the Shared Services Agreement.

Novo Nordisk Research Center Seattle, Inc.

On September 28, 2018, Asterias and Novo Nordisk Research Center Seattle, Inc. ("NNRCSI") executed a Sublease Agreement which includes a provision for shared facilities and services costs. Under the terms of this agreement, Asterias has the right to exclusive use a certain portion of the facilities and a shared use of a certain portion of the facilities. Additionally, it allows for shared use of certain equipment located at Fremont, California, for the sole purpose of conducting Asterias' business. For each billing period, the common facilities costs will be prorated and allocated (based on space usage) between NNRCSI and Asterias.

10. Income Taxes

The provision for income taxes is determined using an estimated annual effective tax rate. The effective tax rate may be subject to fluctuations during the year as new information is obtained, which may affect the assumptions used to estimate the annual effective tax rate, including factors such as valuation allowances against deferred tax assets, the recognition or de-recognition of tax benefits related to uncertain tax positions, if any, and changes in or the interpretation of tax laws in jurisdictions where Asterias conducts business.

Management believes that the Asterias net operating losses generated during the nine months ended September 30, 2018 will result in no income tax benefit or provision in the current year due to the full valuation allowance on its net deferred tax assets for the year ended December 31, 2017 and a full valuation allowance expected on its net deferred tax assets for the year ending December 31, 2018.

For state income tax purposes, Asterias has a full valuation allowance on its state deferred tax assets as of September 30, 2018 and December 31, 2017. Accordingly, no state tax provision or benefit was recorded for any period presented.

On December 22, 2017 the Tax Cuts and Jobs Act (the "Act") was signed into law. Among other provisions, the Act reduces the federal statutory corporate income tax rate to 21%. This rate reduction has a significant impact on Asterias' net deferred tax assets as of December 31, 2017, resulting in a one-time revaluation of its deferred tax assets and liabilities to reflect the new lower rate. However, because Asterias maintains a full valuation allowance against its deferred taxes, the impact of the change is fully offset by the valuation allowance.

11. License and Royalty Obligations

Services Agreement with Cell Therapy Catapult Services Limited

In October 2015, Asterias entered into a Services Agreement (the "Services Agreement") with Cell Therapy Catapult Services Limited ("Catapult"), a research organization specializing in the development of technologies which speed the growth of the cell and gene therapy industry. Under the Services Agreement, Catapult will license to Asterias, certain background intellectual property and will develop a scalable manufacturing and differentiation process for Asterias' human embryonic stem cell derived dendritic cell cancer vaccine development program. In consideration for the license and Catapult's performance of services, at the time of the Services Agreement Asterias agreed to make aggregate payments of up to GBP £4,350,000 over the period from October 2015 through January 2020 (approximately $5.7 million based on the foreign currency exchange rate on September 30, 2018). At the option of Asterias, up to GBP £3,600,000 (approximately $4.7 million based on the foreign currency exchange rate on September 30, 2018) of such payments historically may have been settled in shares of Asterias Series A common stock instead of cash. Commencing January 1, 2018, all payments due will be made in shares of Asterias Series A common stock. If Catapult is unable to sell the stock in the market within 60 days of issuance, after reasonable and diligent efforts through its broker, Catapult may request that the unsold portion of the stock payment, if any, be paid by Asterias in cash at a value equal to approximately 91% of the total amount that was issued in stock. This right by Catapult to have unsold shares redeemed by to Asterias for cash expires upon the earlier to occur of the sale of the stock in the market or after 60 days of issuance.

Advance payments for research and development services to be performed by Catapult are deferred and recognized as research and development expense ratably as the services are performed. Advance payments related to licenses are expensed when paid due to the experimental nature of the project. Pursuant to the Services Agreement, if there are any issued, but unsold Asterias stock, to Catapult for payment of services and the 60-day put right has not expired as of the period end being reported on, Asterias will present that amount as "temporary" equity in accordance with ASC 480-10-S99. Once the put right expires or the shares are sold by Catapult, the temporary equity amount will be reclassified by Asterias to permanent equity without adjustment to the carrying value of the stock.

During the nine months ended September 30, 2018 and 2017 Asterias paid $643,000 and $1.2 million, respectively, for services pursuant to the Services Agreement. Asterias paid $295,000 in cash for these services for the nine months ended September 30, 2017 and the remainder was paid with Asterias Series A common stock. Asterias issued Series A common stock to pay for services for the nine months ended September 30, 2018. For the nine months ended September 30, 2018 and 2017 Asterias issued 364,727 and 217,193 shares of Asterias Series A common stock, respectively, with fair values of $643,000 and $858,000, respectively, at the time of issuance which Asterias subsequently reclassified into permanent equity.

12. Clinical Trial and Option Agreement with CRUK and CIRM Grant Award

During September 2014, Asterias entered into a Clinical Trial and Option Agreement (the "CRUK Agreement") with Cancer Research UK ("CRUK") and Cancer Research Technology Limited, a wholly-owned subsidiary of CRUK, pursuant to which CRUK has agreed to fund Phase 1 clinical development of Asterias' human embryonic stem cell derived AST-VAC2 allogeneic (non-patient specific) dendritic cancer vaccine product candidate. Asterias, at its own cost, completed process development and manufacturing scale-up of the AST-VAC2 manufacturing process and transferred the resulting cGMP-compatible process to CRUK. CRUK will, at its own cost, manufacture clinical grade AST-VAC2 and will carry out the Phase 1 clinical trial of AST-VAC2 in cancer patients both resected early-stage and advanced forms of lung cancer. Asterias will have an exclusive first option to obtain a license to use the data from the clinical trial. If Asterias exercises that option, then Asterias will be obligated to make payments upon the execution of the License Agreement, upon the achievement of various milestones, and royalties on sales of products. In connection with the CRUK Agreement, Asterias sublicensed to CRUK for use in the clinical trials and product manufacturing process certain patents that have been licensed or sublicensed to it by third parties. Asterias would also be obligated to make payments to those licensors and sublicensors upon the achievement of various milestones, and then royalties on sales of products if AST-VAC2 is successfully developed and commercialized.

On October 16, 2014 Asterias signed a Notice of Grant Award ("NGA") with CIRM, effective October 1, 2014, with respect to a $14.3 million grant award for clinical development of Asterias' product, AST-OPC1. The NGA was subsequently amended effective November 26, 2014 and March 2, 2016. The NGA includes the terms under which CIRM will release grant funds to Asterias. Under the NGA as amended on March 2, 2016, CIRM disbursed the grant funds to Asterias based on Asterias' attainment of certain progress milestones.

Asterias received an initial payment from CIRM in the amount of $917,000 during October 2014 and had received $12.8 million through December 31, 2016. In September 2017, Asterias received the final $1.5 million payment under the CIRM grant which was due upon achievement of certain progress milestones. Asterias had no deferred grant income relating to the CIRM grant as of September 30, 2018 and December 31, 2017. Asterias recognized no grant income for the three and nine months ended September 30, 2018 and $1.5 million and $3.7 million in grant income for the three and nine months ended September 30, 2017, respectively.

13. Subsequent Events

On November 7, 2018, we entered into a definitive agreement with BioTime, pursuant to which BioTime will acquire all of our outstanding shares that BioTime does not already own, in a stock-for-stock transaction pursuant to which our shareholders will receive 0.71 shares of BioTime common share for every share of our common stock. Following the transaction, our shareholders will own approximately 16.2% of BioTime, based on the number of BioTime shares outstanding on November 7, 2018. If the transaction is consummated, we would cease to exist as a public company and BioTime will consolidate our operations and results with its consolidated results beginning upon the consummation of the transaction. The transaction is subject to certain customary closing conditions, including approval of our shareholders, as well as the shareholders of BioTme.

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

The matters addressed in this Item 2 that are not historical information constitute "forward-looking statements" within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, including statements about any of the following: any projections of earnings, revenue, gross profit, cash, effective tax rate, use of net operating losses, or any other financial items; the plans, strategies and objectives of management for future operations or prospects for achieving such plans, and any statements of assumptions underlying any of the foregoing. Any statements contained herein that are not statements of historical fact may be deemed to be forward-looking statements. Without limiting the foregoing, the words "believes," "anticipates," "plans," "expects," "seeks," "estimates," and similar expressions are intended to identify forward-looking statements. While Asterias may elect to update forward-looking statements in the future, it specifically disclaims any obligation to do so, even if the Asterias' estimates change and readers should not rely on those forward-looking statements as representing Asterias' views as of any date subsequent to the date of the filing of this Quarterly Report. Although we believe that the expectations reflected in these forward-looking statements are reasonable, such statements are inherently subject to risks and Asterias can give no assurances that its expectations will prove to be correct. Actual results could differ materially from those described in this report because of numerous factors, many of which are beyond the control of Asterias. A number of important factors could cause the results of the company to differ materially from those indicated by such forward-looking statements, including those detailed under the heading "Risk Factors" in Part I, Item 1A of Asterias' Form 10-K for the year ended December 31, 2017.

The following discussion should be read in conjunction with Asterias' interim condensed financial statements and the related notes provided under "Item 1- Financial Statements" above.

Company Overview

Asterias Biotherapeutics, Inc. ("Asterias") is a clinical-stage biotechnology company dedicated to developing pluripotent stem cell-derived therapies to treat neurological conditions associated with demyelination and cellular immunotherapies to treat cancer. We have industry-leading technology in two cell types, each with broad potential applicability: (1) oligodendrocyte progenitor cells, which become oligodendrocytes that have the potential to remyelinate axons within the central nervous system and perform other restorative functions, and (2) antigen-presenting dendritic cells, which train T-cells in the immune system to attack and destroy solid or liquid tumor cells across multiple types of cancer. Asterias currently has three clinical-stage therapeutic programs:

- Spinal Cord Injury. AST-OPC1 is an oligodendrocyte progenitor cell population derived from pluripotent stem cells that is currently in a Phase 1/2a clinical trial for spinal cord injuries (“SCI”) that has been partially funded by the California Institute for Regenerative Medicine (“CIRM”).

- Non-Small Cell Lung Cancer. AST-VAC2 is a non-patient-specific (“off-the-shelf”) cancer immunotherapy derived from pluripotent stem cells that is currently in a Phase 1 clinical trial in non-small cell lung cancer. The trial is being funded and sponsored by Cancer Research UK (“CRUK”), the world’s largest independent cancer research charity.

- Acute Myeloid Leukemia. AST-VAC1 is a patient-specific cancer immunotherapy which has generated positive Phase 2 data in the treatment of acute myeloid leukemia (“AML”). Because AST-VAC1 and AST-VAC2 are both dendritic cells presenting the telomerase antigen, an antigen presented by 90% of all cancers, we believe that AST-VAC1 provides supportive evidence for the use of AST-VAC2 in the treatment of AML.

Like chimeric antigen receptor, or CAR-T, therapies, AST-VAC1 is an “autologous” therapy meaning that it is sourced from a patient’s own cells through a standard process known as leukapheresis. For AST-OPC1 and AST-VAC2, we use human embryonic stem (“hES”) cell lines, which were originally isolated in the 1990s and which have almost unlimited capacity to expand and differentiate into the various cell types of the body. For AST-OPC1, hES cells are induced to become an oligodendrocyte progenitor cell population that supplements the body’s natural axon remyelination function, which can be damaged or otherwise rendered insufficient as a result of certain neurological events or conditions including spinal cord injury. For AST-VAC2, the hES cells are differentiated to mature dendritic cells that educate the immune system to target telomerase, a protein produced by most tumor cells.

Asterias believes that its experience, expertise, and intellectual property surrounding oligodendrocyte progenitor cells and dendritic cells provide the Company with two distinct technology platforms in neurology and cancer immunotherapy. The Company’s neurology platform has the potential for application in additional indications, such as advanced multiple sclerosis and white matter stroke, and its immunotherapy platform potentially could be employed in any immunogenic cancer and could be designed to target antigens other than or in addition to telomerase.

Recent Developments

In June 2018, we announced enrollment and dosing of the first patient in the Phase 1 clinical trial of AST-VAC2 in NSCLC. This initial clinical trial will examine the safety and tolerability of AST-VAC2 in NSCLC as the study’s primary endpoints. Secondary and tertiary endpoints of the study include evaluations of the immunogenicity of AST-VAC2 in NSCLC. In July 2018, we announced that the Safety Review Committee for the trial held a scheduled meeting to review the safety and tolerability data generated in the first patient enrolled in the study and recommended continuation of the study and moving to parallel enrollment of the second and third patients in the advanced cancer cohort, as planned per the study’s protocol. In September 2018, we announced that the Safety Review Committee for the first clinical trial of VAC2 held its second scheduled meeting to review the safety and tolerability data generated in patients two and three enrolled in the study and recommended continuation of the study and moving to open enrollment in the advanced disease cohort, as planned per the study’s protocol. The fourth patient in the study to receive VAC2 has recently been dosed and enrollment for the study is ongoing.

In late July 2018, we provided a clinical trial update on the AST-OPC1 SCiStar study that highlighted, among other things, the following:

Positive Safety Profile - We have dosed 25 subjects with AST-OPC1 in the SCiStar study and a total of 30 subjects including the five subjects from a previous Phase 1 safety trial in thoracic spinal cord injury who have been followed for as long as seven years. The results-to-date continue to support the safety of AST-OPC1.

Cell Engraftment - 92% (11/12) of Cohort 3 and 4 subjects have magnetic resonance imaging (MRI) scans at twelve months consistent with the formation of a tissue matrix at the injury site, which is encouraging evidence that AST-OPC1 cells have engrafted at the injury site and helped to prevent cavitation. The 12-month MRI results-to-date for 94% (17/18) of the Cohort 2-4 subjects provide supportive evidence that AST-OPC1 cells have durably engrafted at the injury site and helped to prevent cavitation. In addition, 100% (4/4) of Cohort 5 subjects had MRI scans at six months consistent with the formation of a tissue matrix at the injury site. Cavitation is a destructive process that occurs within the spinal cord following spinal cord injuries, and typically results in permanent loss of motor and sensory function. Additionally, a patient with cavitation can develop a condition known as syringomyelia, which results in additional neurological and functional damage to the patient and can result in chronic pain.

Improved Motor Function - At twelve months, 94% (17/18) of Cohort 2-4 subjects recovered at least one motor level on at least one side and 33% (6/18) of these subjects recovered two or more motor levels on at least one side. The Company expects to report the 12-month top-line readout for the entire study early in the first quarter of 2019.

In September 2018, we announced that the FDA has accepted our request to meet to discuss proposed next steps for the OPC1 clinical development program. The meeting with the FDA under OPC1's RMAT designation is scheduled to take place in November 2018. In October 2018, we announced a positive outcome from an independent Data Review Panel's review of the data generated by patients enrolled in the SCiStar study.

Critical Accounting Policies

This Management's Discussion and Analysis of Financial Condition and Results of Operations discusses and analyzes data in our unaudited Condensed Financial Statements, which we have prepared in accordance with U.S. generally accepted accounting principles. Preparation of these financial statements requires management to make estimates and assumptions that affect the reported amounts of assets, liabilities, revenue and expenses, and related disclosure of contingent assets and liabilities. Management bases its estimates on historical experience and on various other assumptions that it believes to be reasonable under the circumstances, the results of which form the basis for making judgments about the carrying values of assets and liabilities that are not readily apparent from other sources. Senior management has discussed the development, selection and disclosure of these estimates with the Audit Committee of our Board of Directors. Actual conditions may differ from our assumptions and actual results may differ from our estimates.

An accounting policy is deemed critical if it requires an accounting estimate to be made based on assumptions about matters that are highly uncertain at the time the estimate is made, if different estimates reasonably could have been used, or if changes in the estimate that are reasonably likely to occur could materially impact the financial statements. Please see Note 2 of Part I, Item 1 of this Quarterly Report on Form 10-Q for a summary of changes in significant accounting policies. In addition, our critical accounting policies and estimates are disclosed in our Annual Report on Form 10-K for the fiscal year ended December 31, 2017. During the three and nine months ended September 30, 2018, there have been no other significant changes in our critical accounting policies and estimates.

Results of Operations

Comparison of three and nine months ended September 30, 2018 and 2017.

For the three months ended September 30, 2018 and 2017, we recorded net losses of $4.5 million and $6.8 million, respectively. For the nine months ended September 30, 2018 and 2017, we recorded net losses of $13.7 million and $21.8 million, respectively.

Revenues

The following table shows certain information about our revenues for the three and nine months ended September 30, 2018 and 2017 (in thousands, except for percentages):

	Three Months Ended September 30, 2018	Three Months Ended September 30, 2017	$ Increase/ Decrease	% Increase/ Decrease
Grant income	$ —	$ 1,526	$ (1,526)	(100)%
Royalties from product sales	116	162	(46)	(28)%
Total revenues	116	1,688	(1,572)	(93)%
Cost of sales	(57)	(81)	24	30%
Gross profit	$ 59	$ 1,607	$ (1,548)	(96)%

	Nine Months Ended September 30, 2018	Nine Months Ended September 30, 2017	$ Increase/ Decrease	% Increase/ Decrease
Grant income	$ —	$ 3,711	$ (3,711)	(100)%
License revenue	366	—	366	100%
Royalties from product sales	337	303	34	11%
Total revenues	703	4,014	(3,311)	(82)%
Cost of sales	(177)	(151)	(26)	(17)%
Gross profit	$ 526	$ 3,863	$ (3,337)	(86)%

Grant income in 2017 was entirely from CIRM, which awarded us a $14.3 million grant for clinical development of AST-OPC1. For the three and nine months ended September 30, 2018 we had no grant or income. For the three and nine months ended September 30, 2017, we recognized $1.5 million and $3.7 million of this grant income, respectively. Since the clinical trial for AST-VAC2 is being paid for and carried out by CRUK, we do not recognize grant income related to this trial.

License revenue for the nine months ended September 30, 2018 results from licensing of certain intellectual property and a material transfer agreement for certain hESC-derived differentiated cells that are unrelated to our core programs.

Royalty revenues from product sales are substantially from non-exclusive license agreements with StemCell Technologies, Inc., Corning Life Sciences, Life Technologies, GE Healthcare and EMD Millipore, each of which we assumed as part of the consideration received from Geron under the 2013 Asset Contribution Agreement. Additional royalty revenues come from a non-exclusive license agreement with Ajinomoto, Inc.

Operating Expenses

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

	Three Months Ended September 30, 2018	Three Months Ended September 30, 2017	$ Increase/ Decrease	% Increase/ Decrease
Research and development expenses	$ 3,510	$ 6,624	$ (3,114)	(47)%
General and administrative expenses	1,910	2,046	(136)	(7)%

	Nine Months Ended September 30, 2018	Nine Months Ended September 30, 2017	$ Increase/ Decrease	% Increase/ Decrease
Research and development expenses	$ 10,753	$ 20,206	$ (9,453)	(47)%
General and administrative expenses	5,809	8,360	(2,551)	(31)%

Research and development expenses – Research and development expenses decreased $3.1 million to $3.5 million for the three months ended September 30, 2018 compared to $6.6 million for the three months ending September 30, 2017. This decrease was largely associated with a reduction in staffing and related costs of $1.4 million, clinical trial expenses of $0.6 million, and contract manufacturing and process development costs of $0.1 million. In December 2017, Asterias completed a significant reduction in staffing and curtailed certain operations, which resulted in a reduction of the Company's operating expenses and cash utilization.

Research and development expenses decreased $9.5 million to $10.8 million for the nine months ended September 30, 2018 compared to $20.2 million for the nine months ending September 30, 2017. This decrease was largely associated with a reduction in staffing and related costs of $4.6 million, clinical trial expenses of $1.7 million, outside research and quality control testing of $1.3 million and contract manufacturing and process development costs of $0.7 million. In December 2017, Asterias completed a significant reduction in staffing and curtailed certain operations, which resulted in a reduction of the Company's operating expenses and cash utilization.

General and administrative expenses – General and administrative expenses remained relatively flat for the three months ended September 30, 2018 compared to the same period in 2017.

General and administrative expenses decreased by approximately $2.6 million to $5.8 million for the nine months ended September 30, 2018 compared to $8.4 million for the same period in 2017. The decrease in general and administrative expense is primarily attributable to a decrease of $2.0 million in shareholder warrant distribution expense related to revaluing warrants outstanding and $0.3 million in reduced staffing related expenses resulting from the December 2017 reduction in staffing.

Other income/(expense), net

Other expense, net, in 2018 and 2017 consists primarily of the change in fair value of the warrants classified as liabilities and the changes in fair value of our investments in marketable equity securities.

Income Taxes

Management believes that our net operating losses incurred during the three and nine months ended September 30, 2018 will result in no income tax benefits in the current year due to the full valuation allowance as of December 31, 2017 and a full valuation allowance expected on our net deferred tax assets for the year ending December 31, 2018.

Liquidity and Capital Resources

At September 30, 2018, we had $6.5 million of cash, cash equivalents and restricted cash, held 2,621,811 shares of BioTime common stock, with a market value of $6.2 million, and $2.4 million of receivables largely related to our Novo agreements (payments were received in early October 2018) as of September 30, 2018. We may raise capital from time to time through the sale of shares of our Series A common stock or other derivatives, and our BioTime shares. We may sell shares of our Series A common stock or other securities in public offerings registered under the Securities Act of 1933, as amended (the "Securities Act"), including in at-the-market transactions, or in private placements to select investors. We may sell our BioTime common shares, from time to time, by any method that is deemed to be an "at-the-market" equity offering as defined in Rule 415 promulgated under the Securities Act, including sales made directly on or through the NYSE American or any other existing trading market for the common shares in the U.S. or to or through a market maker, at prices related to the prevailing market price, or through block trades in which the broker-dealer will attempt to sell the shares as agent but may position and resell a portion of the block as principal to facilitate the transaction, or through one more of the foregoing transactions. We may also sell some or all of our BioTime common shares by any other method permitted by law, including in privately negotiated transactions. We will bear all broker-dealer commissions payable in connection with the sale of shares of our Series A common stock, our BioTime common shares, or other securities. Broker-dealers may receive commissions or discounts from us (or, if any broker-dealer acts as agent for the purchaser of shares, from the purchaser) in amounts to be negotiated. The prices at which we may issue and sell shares of our Series A common stock, our BioTime common shares, or other securities in the future are not presently determinable and will depend upon many factors, including prevailing prices for those securities in the public market.

On March 28, 2017, we entered into an amendment to our at-the-market (ATM) Sales Agreement, dated April 10, 2015, with MLV. The amendment to the Sales Agreement was entered into by us, MLV and FBR Capital Markets & Co. (“FBR” and together with MLV, the “Agents”), which acquired MLV. Under the Sales Agreement, as amended, we may issue and sell shares of its Series A common stock having an aggregate offering price of up to $25 million from time to time on or after March 28, 2017, through the Agents, subject to certain limitations, including the number of shares registered and available under our previously filed and currently effective shelf registration statement on Form S-3 (File No. 333-215154) (the “Registration Statement”). For the nine months ended September 30, 2018, we sold 713,430 shares of Series A common stock for gross proceeds of approximately $1.2 million under this ATM agreement with approximately $21.5 million of Asterias common stock available for issuance and sale pursuant to the terms of the ATM Sales Agreement. For the nine months ended September 30, 2017, we sold 2.0 million shares of Series A common stock for gross proceeds of approximately $8.0 million.

We plan to use the proceeds and other cash we have available for general corporate purposes, including to fund our ongoing clinical programs, to develop certain of our product candidates and technology, to acquire new stem cell products and technology through licenses or similar agreements from other companies, and to defray overhead expenses and to pay general and administrative expenses.

Since inception, we have incurred net losses and have funded our operations primarily through the sales of our marketable equity securities, issuance of common stock, warrants, license fees, payments from research grants, and royalties from product sales. At September 30, 2018 we had an accumulated deficit of $132.3 million, working capital of $13.3 million and stockholders’ equity of $24.5 million. We have evaluated our projected cash flows and believe that our cash, cash equivalents, and restricted cash of $6.5 million as of September 30, 2018, our marketable equity securities of $6.2 million as of September 30, 2018, and $2.4 million of receivables largely related to our Novo agreements (payments were received in early October 2018) will be sufficient to fund our operations through at least the next twelve months from the issuance date of these financial statements. Additionally, in December 2017 we expanded our operating expense reduction efforts in order to further reduce our cash usage. If the value of our marketable equity securities decreases or we are unable to obtain future adequate financing or other funding for our clinical trials, we may be required to delay, postpone, or cancel our clinical trials or limit the number of clinical trial sites, or otherwise reduce or curtail our operations. Future financings or other funding may not be available to us at acceptable terms, or at all. Sales of additional issued equity securities would result in the dilution of interests of current shareholders.

During the nine months ended September 30, 2018, our total research and development expenditures were $10.8 million and our general and administrative expenses were $5.8 million. Our sources of cash during the nine months ended September 30, 2018 primarily consisted of $2.7 million from sales of our marketable equity securities and $1.2 million in from sales of Asterias equity securities. As of September 30, 2018 and December 2017, we had a working capital surplus of $13.3 million and $19.2 million, respectively.

Cash used in operations

Net cash used in operating activities during the nine months ended September 30, 2018 amounted to $10.0 million. The difference between the net loss and net cash used in operating activities during the period was primarily attributable to the following non-cash items: $2.1 million of stock-based compensation, $2.0 million in amortization of intangible assets, $643,000 of stock issued in lieu of cash to a contract vendor, $761,000 in depreciation and amortization expense, and a $570,000 gain on the change in fair value of equity investment securities offset by $2.1 million in non-cash decrease on the Asterias Offering Warrants classified as a liability. The remaining $819,000 is associated with changes in our operating assets and liabilities, primarily related to decreases in accounts payable and other accrued liabilities.

Net cash used in operating activities during the nine months ended September 30, 2017 amounted to $18.7 million. The difference between the net loss and net cash used in operating activities during the period was primarily attributable to the following non-cash items: Asterias Warrants classified as equity non-cash expense in the amount of $2.0 million related to the modification of expiration date, stock-based compensation of $2.9 million, $2.0 million in amortization of intangible assets, $858,000 of stock issued in lieu of cash to a contract vendor and $840,000 in depreciation and amortization expense offset by $3.4 million in non-cash decrease on the Asterias Offering Warrants classified as a liability. The remaining $2.3 million is associated with changes in our operating assets and liabilities; of which $2.2 million is associated with decreases in our deferred grant income, and $0.8 million is associated with decreases in accounts payable and other accrued liabilities offset by a $608,000 decrease in our prepaid and other current assets and other assets.

Investing and financing activities

During the nine months ended September 30, 2018, we had $2.7 million for cash provided by investing activities, which was related to the sales of our marketable equity securities.

During the nine months ended September 30, 2018, Asterias raised $1.2 million in gross proceeds under its ATM from the sale of 713,430 shares of its common stock at a weighted average price of $1.64 per share, offset by $414,000 related to the payment of capital lease liabilities and lease liabilities $160,000 related to payments of taxes for vesting of employees restricted stock units.

During the nine months ended September 30, 2017, we had $44,000 of cash provided by investing activities, which was related to the $281,000 sales of our marketable equity securities. This amount was offset by $237,000 used to purchase equipment.

During the nine months ended September 30, 2017, Asterias raised approximately $8.0 million in gross proceeds under its ATM from the sale of 2,005,784 shares of its common stock at a weighted average price of $3.99 per share.

Contractual Obligations

As of September 30, 2018, our contractual obligations for the next five years and thereafter were as follows (in thousands):

	Payments Due by Period				
Contractual Obligations (1)	**Total**	**Less than 1 year**	**1-3 Year**	**4-5 years**	**After 5 years**
Operating leases (2)	$ 2,516	$ 814	$ 1,416	$ 286	$ —
Capital lease (3)	$ 16	$ 7	$ 9	$ —	$ —
Total Contractual Obligation	$ 2,532	$ 821	$ 1,425	$ 286	$ —

(1) This table does not include payments to key employees that could arise if they were involuntarily terminated or if their employment terminated following a change in control.

(2) Includes the lease of our principal office and research facilities in Fremont, California (see Note 8 to our financial statements included in Item 1).

(3) Includes one capital lease for phone equipment.

Off-Balance Sheet Arrangements

As of September 30, 2018 and December 31, 2017, we did not have any off-balance sheet arrangements, as defined in Item 303(a)(4)(ii) of SEC Regulation S-K.

Item 3. Quantitative and Qualitative Disclosures about Market Risk

There have been no material changes in Asterias' qualitative and quantitative market risk since the disclosure in Asterias' Annual Report on Form 10-K for the year ended December 31, 2017, except as follows.

Marketable equity securities at fair value

As of September 30, 2018, we held 2,621,811 shares of BioTime common stock at fair value. Our marketable equity securities' values are subject to changes in the stock price of BioTime. BioTime common stock trades on the NYSE American under the ticker "BTX". As of September 30, 2018, the 52-week high/low stock price per share range for BioTime shares were $1.98 - $3.16.

Item. 4 Controls and Procedures

Evaluation of Disclosure Controls and Procedures

Our management, including our principal executive officer and principal financial officer, have reviewed and evaluated the effectiveness of our disclosure controls and procedures as of the end of the period covered by this report. Following this review and evaluation, the principal executive officer and principal financial officer determined that our disclosure controls and procedures are effective to ensure that information required to be disclosed by us in reports that we file or submit under the Exchange Act (i) is recorded, processed, summarized, and reported within the time periods specified in SEC rules and forms, and (ii) is accumulated and communicated to management, including our principal executive officer, and principal financial officer, as appropriate to allow timely decisions regarding required disclosure.

Changes in Internal Controls

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

PART II - OTHER INFORMATION

Item 1. Legal Proceedings

From time to time, we may be involved in routine litigation incidental to the conduct of our business. We are not presently involved in any other material litigation or proceedings, and to our knowledge no such litigation or proceedings are contemplated.

Item 1a. Risk Factors

Our business is subject to various risks, including those described below. You should consider the following risk factors, together with all of the other information included in this report and the risks described in our Annual Report on Form 10-K for the year ended December 31, 2017, which could materially adversely affect our proposed operations, business prospects, and financial condition, and the value of an investment in our business. There may be other factors that are not mentioned here or of which we are not presently aware that could also affect our business operations and prospects.

Risks related to the proposed merger with BioTime.

The market value of our shares and the shares of BioTime may vary significantly.

The price of our common stock at the time of the merger may vary significantly from the date the merger agreement was executed to the date on which the vote on the merger takes place and through the closing of the proposed merger.

The merger agreement has set the exchange ratio at 0.71 shares of BioTime common stock for every one share of Asterias common stock. Any changes in the market price of BioTime common stock or Asterias common stock before the closing of the merger will not change the number of shares Asterias securityholders will be entitled to receive pursuant to the merger agreement. Therefore, if before the closing of the merger the market price of BioTime common stock declines, or the market price of Asterias common stock increases, from their respective market prices on the date of the merger agreement, then Asterias stockholders could receive merger consideration with substantially lower value for their shares of Asterias capital stock than the parties had negotiated for in the establishment of the exchange ratio. Similarly, if before the closing of the merger the market price of BioTime common stock increases or the market price of Asterias common stock decreases from the their respective market prices on the date of the merger agreement, then Asterias stockholders could receive merger consideration with substantially more value for their shares of Asterias capital stock than the parties had negotiated for in the establishment of the exchange ratio.

Changes in the market prices of our common stock may result from a variety of factors that are beyond our control, including changes in our business, operations and prospects, capital requirements, regulatory considerations, governmental actions, and legal proceedings and developments. Market assessments of the benefits of the merger, the likelihood that the merger will be completed, and general and industry-specific market and economic conditions may also have an effect on the market price of our common stock. Changes in the market price of our common stock may also be caused by fluctuations and developments affecting domestic and global securities markets. Neither BioTime nor Asterias is permitted to terminate the merger agreement solely because of changes in the market price of either party's respective common stock price.

As a result, the market value of our common stock and of BioTime's common stock may vary significantly from the date of the execution of the merger agreement to the date of the completion of the merger. There is no assurance that the merger will be completed, that there will not be a delay in the consummation of the merger or that all or any of the anticipated benefits of the merger will be obtained.

Failure to successfully consummate the proposed merger may adversely affect our future results.

The consummation of the proposed merger is subject to many contingencies, including, the approval of our shareholders, the approval of the BioTime shareholders, the absence of any event, change or other circumstances that could give rise to the termination of the merger agreement, and the effectiveness of the BioTime registration statement on Form S-4, among other conditions to consummation specified in the merger agreement. We cannot make any assurances that the proposed merger will be successfully completed. In the event that the proposed merger is not completed, we may be required to pay a termination fee, as well as certain costs relating to the merger, such as significant fees and expenses relating to legal, accounting, financial advisory and printing fees. In addition, if the merger is not completed, we may experience negative reactions from the financial markets. We also could be subject to litigation related to a failure to complete the merger or to enforce our rights under the merger agreement. If the merger is not consummated, we cannot assure you that the risks described will not materially affect our business, financial results and stock price.

Consummating the mergers may divert management's attention away from our operations.

Successful consummation of the propose merger could place a significant burden on our management and our internal resources. The diversion of management attention and any difficulties encountered in closing the transition could harm our business, financial condition, operating results and evaluating strategic actions.

We will be subject to business uncertainties and contractual restrictions while the merger is pending.

Uncertainty about the effect of the merger on employees and programs in development may have an adverse effect on our business. These uncertainties may impair our ability to retain and motivate key personnel and could cause third parties that deal with us to defer entering into contracts with us or making other decisions concerning us or to seek changes in their existing business relationships with us. In addition, if key employees depart because of uncertainty about their future roles and the potential complexities of the merger, our business could be harmed. In addition, we may not undertake certain decisions or actions pending the closing of the merger, unless waived by BioTime. These covenants may prevent us from pursuing attractive business opportunities that may arise prior to the completion of the merger.

If the conditions to the merger are not met, the merger may not occur.

The merger agreement specifies certain conditions must be satisfied or waived to complete the merger. We cannot assure you that all of the conditions will be satisfied or waived. If the conditions are not satisfied or waived, the merger may not occur or may be delayed, and we may lose some or all of the intended benefits of the merger.

The merger may be completed even though material adverse changes may result from the announcement of the merger, industry-wide changes and other causes.

In general, either BioTime or Asterias can refuse to complete the merger if there is a material adverse change affecting the other party between November 7, 2018, the date of the merger agreement, and the closing. However, certain types of changes do not permit either party to refuse to complete the merger, even if such change could be said to have a material adverse effect on BioTime or Asterias, including:

- conditions in the industries in which BioTime and Asterias operate;
- general economic conditions in the United States or any other country;
- conditions in the securities markets, credit markets, currency markets or other financial markets in the United States or any other country;
- political conditions in the United States or any other country or acts of war, sabotage or terrorism in the United States or any other country;
- earthquakes, hurricanes, tsunamis, tornadoes, floods, mudslides, wild fires or other natural disasters, weather conditions and other force majeure events in the United States or any other country;
- changes in law or other legal or regulatory conditions or changes in GAAP or other accounting standards;
- changes in stock price or the trading volume of BioTime's or Asterias' stock, or any failure by BioTime or Asterias to meet any public estimates or expectations of Asterias' revenue, earnings or other financial performance or results of operations for any period, but not, in each case, the underlying cause of such changes or failures; and
- effects directly resulting from the announcement of the merger agreement or the pendency of the merger, including any loss of employees of Asterias and/or BioTime.

If adverse changes occur and BioTime and Asterias nonetheless consummate the merger, the combined company stock price may suffer. This in turn may reduce the value of the merger.

We will incur significant transaction and merger-related transition costs in connection with the merger.

We expect to incur significant, non-recurring costs in connection with the negotiation and potential consummation of the merger. We may incur additional costs to maintain employee morale and to retain key employees. We will also incur additional significant fees and expenses relating to legal, accounting and other transaction fees and other costs associated with the merger. Some of these costs are payable regardless of whether the merger is completed.

Moreover, under specified circumstances, the merger agreement contains certain termination rights which, under specified circumstances, provide that Asterias or BioTime, as applicable, would be required to pay the other party a termination fee of $2,000,000 or, under specified circumstances, reimbursable expenses in an amount not to exceed $1,500,000.

We must continue to retain and motivate executives and other key employees, which may be difficult in light of uncertainty regarding the merger, and failure to do so could negatively affect our business.

During the period before the merger is completed, we must continue to retain and motivate executives and other key employees. Experienced employees in our industry are in high demand and competition for their talents can be intense. Our employees may experience uncertainty about their future role with the combined company until, or even after, strategies with regard to the combined company are announced or executed. The potential implications of the merger may adversely affect our ability to retain and motivate executives and other key employees and keep them focused on applicable strategies and goals. Our failure to retain and motivate executives and other key employees during the period prior to the completion of the merger or thereafter could have a negative impact on our business.

BioTime's ability to use our net operating loss carryforwards (NOLs) may be limited.

Under the provisions of the Internal Revenue Code, changes in our ownership, in certain circumstances, will limit the amount of U.S. federal NOLs that can be utilized annually in the future to offset taxable income. In particular, Section 382 of the Internal Revenue Code imposes limitations on a company's ability to use NOLs upon certain changes in such ownership. Calculations pursuant to Section 382 of the Internal Revenue Code can be very complicated and no assurance can be given that upon further analysis, BioTime's ability to take advantage of our NOLs may be limited to a greater extent than anticipated.

The combined company may need to raise additional capital by issuing securities or debt or through licensing arrangements, which may cause dilution to the combined company's shareholders or restrict the combined company's operations or proprietary rights.

The combined company may be required to raise additional funds sooner than currently planned. Additional financing may not be available to the combined company when needed, on favorable terms, or at all. To the extent that the combined company raises additional capital by issuing equity securities, such issuance may cause significant dilution to the combined company's shareholders' ownership and the terms of any new equity securities may have preferences over the combined company's common stock. Any debt financing the combined company enters into may involve covenants that restrict its operations. These restrictive covenants may include limitations on additional borrowing and specific restrictions on the use of the combined company's assets, as well as prohibitions on its ability to create liens, pay dividends, redeem its stock or make investments. In addition, if the combined company raises additional funds through licensing arrangements, it may be necessary to grant licenses on terms that are not favorable to the combined company.

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

None.

Item 3. Default Upon Senior Securities

None.

Item 4. Mine Safety Disclosures

Not applicable.

Item 5. Other Information

None.

Item 6. Exhibits

Exhibit Number		Description
10.1	*	Sublease Agreement between the Company and Novo Nordisk Research Center Seattle, Inc.
31.1	*	Certification of Chief Executive Officer pursuant to Exchange Act Rules 13a-14(a) and 15d-14(a), as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002
31.2	*	Certification of Chief Financial Officer pursuant to Exchange Act Rules 13a-14(a) and 15d-14(a), as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002
32.1	**	Certifications of Chief Executive Officer and Chief Financial Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002
101	*	XBRL Instance Document
101.INS	*	XBRL Taxonomy Extension Schema
101.CAL	*	XBRL Taxonomy Extension Calculation Linkbase
101.DEF	*	XBRL Taxonomy Extension Definition Linkbase
101.LAB	*	XBRL Taxonomy Extension Label Linkbase
101.PRE	*	XBRL Taxonomy Extension Presentation Linkbase

* Filed herewith.

** Furnished herewith.

SIGNATURES

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

ASTERIAS BIOTHERAPEUTICS, INC.

Date: November 9, 2018 /s/ Michael H. Mulroy

Michael H. Mulroy
President and Chief Executive Officer

Date: November 9, 2018 /s/ Ryan Chavez

Ryan Chavez
Chief Financial Officer

Exhibit 10.1

SUBLEASE AGREEMENT

THIS SUBLEASE AGREEMENT (together with any and all future amendments or modifications thereto, the "**Sublease**") is entered into as of September 27, 2018 (the "**Effective Date**"), by and between NOVO NORDISK RESEARCH CENTER SEATTLE, INC., a Delaware corporation ("**NNRCSI**") and ASTERIAS BIOTHERAPEUTICS, INC., a Delaware corporation ("**Asterias**").

THE PARTIES ENTER this Sublease on the basis of the following facts, understandings and intentions:

A. NNRCSI is the tenant of the Premises (as defined below) pursuant to that certain Lease effective as of September 27, 2018 (the "**Master Lease**") by and between BMR - 6300 DUMBARTON CIRCLE LP, a Delaware limited partnership ("**BMR**"), as landlord, and NNRCSI, as tenant. A copy of the Master Lease with all exhibits and addenda thereto is attached hereto as **Exhibit C**.

B. NNRCSI desires to sublease the Sublet Space (defined below) to Asterias and Asterias desires to sublease the Sublet Space from NNRCSI on all of the terms, covenants and conditions hereinafter set forth.

C. All of the terms and definitions in the Defined Terms section are incorporated herein by this reference. Any capitalized terms used and not defined herein shall have the meanings ascribed to them in the Master Lease.

NOW, THEREFORE, IN CONSIDERATION of the mutual covenants and promises of the parties, and incorporating this Sublease's recitals and exhibits as part of their agreement as if fully stated herein, the parties hereto agree as follows:

I. DEFINED TERMS

Rent: (i) From the Commencement Date until the Strategic Space Expiration Date (defined below) (which may be accelerated pursuant to Section 16 below or extended pursuant to Section 1.3 below): the Monthly Base Rent paid by Asterias will be (this table does not change the below defined Expiration Dates):

Mos. 1-12	$67,814.00
Mos. 13-24	$69,731.00
Mos. 25-36*	$71,888.00
Mos. 37-48**	$74,045.00

*Strategic Space Expiration Date is 10/31/2020
**First Floor Space Expiration Date is 12/31/2021

(ii) If the Strategic Space Expiration Date occurs prior to the First Floor Space Expiration Date, then the Monthly Base for the remainder of the Term (i.e. until the subsequently occurring First Floor Space Expiration Date (which may be accelerated pursuant to Section 16 below or extended pursuant to Section 1.3 below) will be (this table does not change the before defined First Floor Space Expiration Date):

Mos. 1-12	$53,146.00
Mos. 13-24	$54,648.00
Mos. 25-36	$56,339.00
Mos. 37-48*	$58,029.00

*First Floor Space Expiration Date is 12/31/2021

Rent:	"**Rent**" refers to Base Rent, Additional Rent and all other amounts due from Asterias to NNRCSI under this Sublease (including without limitation the Asterias OpEx Share of the NNRCSI Direct Operating Expenses – all defined below).
Building:	Means the "**Building**" as defined in the Master Lease, which is located at 16300 Dumbarton Circle, Fremont, California.
Commencement Date:	September 27, 2018
Strategic Space Expiration Date:	October 31, 2020
First Floor Space Expiration Date:	December 31, 2021
Permitted Use:	The Permitted Use as defined in the Master Lease.
Premises:	44,000 RSF (as more particularly defined in the Master Lease).
Security Deposit:	$150,000.00
Asterias' Notice Address:	Asterias Biotherapeutics, Inc. 6300 Dumbarton Circle Fremont, California 94555
NNRCSI' s Address:	530 Fairview Avenue North Seattle, Washington 98109 Attn: Jan Beck With a mandatory copy to: Novo Nordisk, Inc. 800 Scudders Mill Road Plainsboro, NJ 08536 Attn: Legal Department

Sublet Space:

- This Sublease grants Asterias the exclusive use of a portion of the Sublet Space and non-exclusive use, in common with NNRCSI, its affiliates, employees, agents, contractors, lenders, and invitees (collectively, with NNRCSI the "**NNRCSI Users**") for other portions of the Sublet Space. The measurements used in this Sublease are not subject to remeasurement unless BMR elects to remeasure the Premises pursuant to the Master Lease, in which case any new measurement figures applied to the Master Lease will be used to proportionately adjust the both the measurements of the Sublet Space and the Rent.

- The "**Sublet Space**" consists of the "**Strategic Space**" and the "**First Floor Space**."

- The **Strategic Space** is the portion of the Premises located on the second floor of the Building. As depicted on **Exhibit A** (the "**Floor Plan**"), approximately **2,001 RSF** of the Strategic Space will be exclusively sublet to Asterias (identified on the Floor Plan as the Dedicated Space/Functionally Asterias, referred to herein as the "**Exclusive Strategic Space**"), while approximately **6,264 RSF** of the Strategic Space will be used in common with the NNRCSI Users (identified on the Floor Plan as Shared Space/Functionality, referred to herein as the "**Shared Strategic Space**").

- The **First Floor Space** is approximately the portion of the Premises located on the first floor of the Building as depicted on the Floor Plan, approximately **14,451 RSF** of the First Floor Space will be exclusively sublet to Asterias (identified on the Floor Plan as the Dedicated Space/Functionally Asterias, referred to as the "**Exclusive First Floor Space**"), while approximately **8,657 RSF** of the First Floor Space used in common with the NNRCSI Users (identified on the Floor Plan as Shared Space/Functionality, referred to as the "**Shared First Floor Space**").

- Collectively the Exclusive Strategic Space and Exclusive First Floor Space is referred to as the "**Exclusive Sublet Space**" and the Shared Strategic Space and Shared First Floor Space is referred to as the "**Shared Sublet Space**"

	• For purposes of reimbursing NNRCSI for expenses NNRCSI pays directly relating to the Sublet Space, for the entire Sublet Space, the parties will use 54.46% as the "**Asterias OpEx Share**", and for that portion of time when Asterias is only subletting the First Floor Space the "Asterias OpEx Share" will be reduced to 42.68%. The parties agree to these percentages, regardless of the actual size of the Sublet Space and agree it roughly translates to 100% of the Sublet Space exclusively sublet to Asterias, and 50% of the Sublet Space shared with others.
Term:	• **As to the Strategic Space**: Commencing on the Commencement Date and expiring on the Strategic Space Expiration Date. • **As to the First Floor Space**: Commencing on the Commencement Date and expiring on the First Floor Space Expiration Date.
Other Defined Terms	• **"Indemnity"** (and variations thereof) means to "indemnify, defend (with counsel reasonably acceptable to indemnitee), save and hold harmless the indemnitee. • **"Claims"** means, collectively: demands, claims, liabilities, losses, costs, expenses, actions, causes of action, damages, suits or judgments, and all reasonable expenses (including reasonable attorneys' fees, charges and disbursements, regardless of whether the applicable demand, claim, action, cause of action or suit is voluntarily withdrawn or dismissed) incurred in investigating or resisting the same.
Exhibits and Schedule:	Exhibit A – Floor Plan Exhibit B – Initial NNRCSI Work Exhibit C – Master Lease Exhibit D – Shared Equipment

II. SUBLEASE

1. Sublease. NNRCSI hereby subleases the Sublet Space to Asterias, and Asterias hereby subleases the Sublet Space from NNRCSI, for the Term hereof, subject to all of the terms and conditions of this Sublease. As to those portions of the Sublet Space identified as the Exclusive Strategic Space and the Exclusive First Floor Space (collectively the "**Exclusive Portion of Sublet Space**"), during the Term applicable to each of those spaces, Asterias will have exclusive use of such space, subject to NNRCSI's rights under this Sublease and BMR's rights under the Master Lease. As to those portions of the Sublet Space identified as the Shared Strategic Space and the Shared First Floor Space (collectively the "**Shared Portion of Sublet Space**"), during the Term applicable to each of those Spaces, Asterias will share access to the Shared Portion of Sublet Space with NNRCSI Users, and subject to NNRCSI's rights under this Sublease and BMR's rights under the Master Lease. NNRCSI shall deliver the Sublet Space to Asterias not later than the Commencement Date, provided that NNRCSI will thereafter complete certain Alterations to the Premises to demise the Exclusive Portion of Sublet Space to reflect the Floor Plan shown on **Exhibit A**, at NNRCSI's sole expense, as soon as reasonably practicable following the Commencement Date (the "**Demising Alterations**"), although Asterias' obligation to pay Rent will commence on the Commencement Date, even though the Demising Alterations are not completed. If the Term commences on a date other than the Commencement Date, NNRCSI and Asterias shall execute a memorandum setting forth the actual date of commencement of the Term. Although NNRCSI agrees to construct the Demising Alterations and all other NNRCSI Work at NNRCSI's sole cost and expense, Asterias shall cause all Asterias' personal property to be secured and then moved into the Sublet Space from the other portions of the Premises, at Asterias' sole expense, and with Asterias assuming all risks relating thereto.

1.1 Condition of Sublet Space. Prior to the Commencement Date, Asterias was the tenant of the entire Premises under a direct lease with BMR, which terminated on the same date as this Sublease's Commencement Date (the "**BMR-Asterias Lease**"). NNRCSI shall deliver the Sublet Premises to Asterias in its "AS IS" condition. Asterias further acknowledges that NNRCSI has made no representations of any kind in connection with improvements or physical conditions of, or bearing on, the use of the Sublet Space. Asterias shall rely solely on Asterias's own inspection and examination of the Sublet Space, and not on any representations of NNRCSI, express or implied. Except for the Demising Alterations, Asterias has no right to require, and NNRCSI is not required to perform, any alterations to the Sublet Space, however NNRCSI reserves such rights under Section 1.3 below.

1.2 Limitation of NNRCSI's Obligations. Asterias expressly acknowledges and agrees that no affirmative obligations are imposed upon NNRCSI under this Sublease to perform BMR's obligations under the Master Lease; and confirms that NNRCSI's only obligations under this Sublease are to (a) pay its Rent and otherwise perform its duties as a tenant under the Master Lease (except as to the Sublet Space which is addressed as Asterias' obligations in Section 2.1 below); (b) construct the Demising Alterations; and (c) except as otherwise agreed upon in Section 1.3 below, not unreasonably interfere with Asterias' business operations from the Exclusive Portion of Sublet Space during the construction of NNRCSI Work. Asterias further recognizes and agrees that except for the Demising Alterations, neither NNRCSI nor BMR shall be required to perform any construction, alteration or maintenance of or to the Sublet Space. Notwithstanding the foregoing, NNRCSI agrees to act as a conduit only (with no other performance obligations) to relay to BMR any requests Asterias may have for BMR to perform or provide services. To be clear, if there are any obligations, whether payment of money, performance, other obligations or Indemnities (defined in Master Lease) imposed on NNRCSI under the Master Lease to perform an act or provide a service, then as to the Exclusive Portion of Sublet Space, such obligations are assumed by Asterias and not NNRCSI, and for the Shared Portion of Sublet Space, both NNRCSI and Asterias are obligated to perform such obligations and provide such Indemnities to the extent applicable to each of their Tenant Parties (as defined in the Master Lease).

1.3 **<u>NNRCSI Work Obligations</u>**. Neither the Demising Alterations nor any other initial Tenant Improvements (defined in the Master Lease) are required to be performed prior to the Commencement Date (the Demising Alterations and the initial Tenant Improvements are hereinafter referred to collectively as "**NNRCSI Work**"). The only NNRCSI Work which NNRCSI is required to perform is the Demising Alterations as set forth in Section 1 above. Asterias agrees that NNRCSI has the right, but not the obligation, to cause other Alterations (defined in the Master Lease), including any initial Tenant Improvements to be performed to the Sublet Premises during the Term, in NNRCSI's sole, good faith discretion and without causing a constructive eviction, or affording Asterias any Claim, deduction or offset to the amounts due to NNRCSI under this Sublease; provided that (a) NNRCSI agrees to use commercially reasonable efforts to complete the initial Tenant Improvements it intends to perform and the Demising Alterations prior to December 31, 2018, and (b) except in the event of an emergency, NNRCSI agrees to use commercially reasonable, good faith efforts not to unreasonably interfere with Asterias' use of the Sublet Space during construction of NNRCSI Work during the Term. Except for in the event of an emergency, if NNRCSI elects to alter the Sublet Space during the Term, but such alterations would unreasonably interfere with Asterias' use of the Sublet Space (as reasonably and in good faith determined by Asterias) the alterations will not proceed; however, within 48 hours of a request by either party the parties shall have designated representatives meet to discuss in good faith how to work together to allow NNRCSI to proceed with performing the Alterations in a reasonable manner and timeframe that will not unreasonably interfere with Asterias' use of the Sublet Space. The designated representatives for NNRCSI shall be **<u>JOHN FRANDSEN</u>** and the designated representatives for Asterias shall be **<u>CRAIG HALBERSTADT</u>**. If, notwithstanding such good faith attempt to minimize disturbance caused by NNRCSI Work in the Sublet Space, NNRCSI elects to proceed with the NNRCSI Work in the Sublet Space, and such work has caused a delay in Asterias performing operating its business from the Sublet Space for the Permitted Use (an "**NNRCSI Delay**"), then the Term (as to both the Strategic Space and the First Floor Space) will, at Asterias' option, be extended by one day, for each day of delay caused by the NNRCSI Delay. If Asterias elects to exercise this option to extend the Term, Asterias shall deliver notice to the above noted NNRCSI designated representative within five (5) business days from the start of the alleged NNRCSI Delay, informing NNRCSI that Asterias is claiming an NNRCSI Delay, and again within ten (10) business days from the cessation of the NNRCSI Delay, informing NNRCSI of the scope of the delay caused by the NNRCSI Work (with reasonable documentation thereof), and Asterias' proposed changes to the Strategic Space Expiration Date and the First Floor Space Expiration Date. NNRCSI will have ten (10) business days from receipt of the second notice to confirm its agreement with such new dates, request additional information, or inform Asterias that it contests its claim of an NNRCSI Delay or the proposed dates, with NNRCSI's silence deemed approval of the new dates. Notwithstanding any NNRCSI Delay, under no circumstances will the Term continue beyond the expiration or earlier termination of the Master Lease.

1.4 **Shared Equipment License**. During the Term only, NNRCSI shall grant Asterias a non-exclusive, non-cancellable license, at no additional cost to Asterias, to use certain items of NNRCSI's personal property located within the Sublet Space and listed on attached **Exhibit D** (the "**Shared Equipment**"); this license is subject to the following conditions: (a) Asterias accepts the Shared Equipment in as-is, where-is condition; (b) Asterias assumes all risk and waives all Claims arising from or relating to the Shared Equipment, except to the extent caused by the negligence or willful misconduct of NNRCSI Indemnitees; (c) Asterias covenants to properly use, maintain and repair any of the Shared Equipment when Asterias uses and completes the use of such equipment; (d) Asterias is prohibited from exercising its rights to use the Shared Equipment during any time when there is an uncured Asterias default under this Sublease; and (e) if both Asterias and NNRCSI wish to use a certain item of Shared Equipment at the same time, NNRCSI shall have the senior right to use such item(s), and Asterias agrees it has no Claim against NNRCSI for the failure of such item(s) to be readily available as and when Asterias request. NNRCSI shall retain ownership of the Shared Equipment, except as otherwise agreed upon in the Master Lease.

2. Sublease Subject to Master Lease.

2.1 **Inclusions.** It is expressly understood, acknowledged and agreed by Asterias that all of the other terms, conditions and covenants of this Sublease shall be those stated in the Master Lease except as excluded in Section 2.2 below, modified as appropriate in the circumstances so as to make the provisions of the Master Lease applicable only to the subleasing hereunder by NNRCSI of the particular Sublet Space covered hereby. Whenever the word "Premises" is used in the Master Lease, for purposes of this Sublease, the word Sublet Space shall be substituted. Asterias shall be subject to, bound by and comply with all of said Articles and Sections of the Master Lease with respect to the Sublet Space and shall satisfy all applicable terms and conditions of the Master Lease relating to the Sublet Space for the benefit of both NNRCSI and BMR, it being understood and agreed that wherever in the Master Lease the word "Tenant" appears, for the purposes of this Sublease, the word "Asterias" shall be substituted, wherever the word "Landlord" appears, for the purposes of this Sublease, the word "NNRCSI" shall be substituted; and that upon the breach of any of said terms, conditions or covenants of the Master Lease by Asterias or upon the failure of Asterias to pay Rent or comply with any of the provisions of this Sublease, NNRCSI may exercise any and all rights and remedies granted to BMR as the Landlord under the Master Lease. If there is a conflict between the terms of this Sublease and the Master Lease, the terms of this Sublease shall control. It is further understood and agreed that NNRCSI has no duty or obligation to Asterias under the aforesaid Articles and Sections of the Master Lease other than to perform the obligations of NNRCSI as tenant under the Master Lease during the Term of this Sublease. Whenever the provisions of the Master Lease incorporated as provisions of this Sublease require the written consent of the Landlord, said provisions shall be construed to require the written consent of both BMR and NNRCSI. Asterias hereby acknowledges that it has read and is familiar with all of the terms of the Master Lease and agrees that this Sublease is subordinate and subject to the Master Lease and that any termination thereof not due to a default by NNRCSI thereunder shall likewise terminate this Sublease. For the avoidance of doubt, if NNRCSI terminates the Master Lease pursuant to any right to terminate the Master Lease provided therein, this Sublease shall terminate as of the termination of the Master Lease and NNRCSI shall not have any liability to Asterias as a result of such termination; provided that if such early termination is voluntary (and specifically not arising from a termination by BMR or its Lender, or relating to a casualty or a condemnation), then NNRCSI will deliver at least 12 months advanced written notice of such termination to Asterias, which will include the Term's accelerated expiration date.

2.2 **<u>Exclusions</u>.** The terms and provisions of the following Sections and portions of the Master Lease are not incorporated into this Sublease and shall not be binding upon either Asterias or Asterias under this Sublease: Recitals A, B, Sections 1, 2.1-2.6, 2.8-2.11, 2.12 (references to Exhibits A, B-1, C, G), 3, 4, 7.1-7.3 (except to the extent needed in connection with Section 3 of this Sublease), 13.3, 16.4 (as to Shared Sublet Space only), 17.1 and 18.1 (both modified to eliminate floor dollar amounts for obtaining NNRCSI consents but otherwise applicable), 24.1-24.8 (as to providing Asterias any right to terminate this Sublease based on a casualty, but otherwise applicable), 27.1, 27.2, 40, 42, Exhibits A, C, G. For purposes of this Sublease, all notices shall be delivered to the parties at the addresses set forth above.

2.3 **<u>Time for Notice</u>.** The time limits provided for in the provisions of the Master Lease for the giving of notice, making of demands, performance of any act, condition or covenant, or the exercise of any right, remedy or option, are amended for the purposes of this Sublease by lengthening or shortening the same in each instance by three (3) days, as appropriate, so that notices may be given, demands made, or any act, condition or covenant performed, or any right, remedy or option hereunder exercised, by NNRCSI or Asterias, as the case may be, within the time limit relating thereto contained in the Master Lease. If the Master Lease allows only three (3) days or less for NNRCSI to perform any act, or to undertake to perform such act, or to correct any failure relating to the Sublet Space or this Sublease, then Asterias shall nevertheless be allowed two (2) days to perform such act, undertake such act and/or correct such failure.

3. **Rent.**

3.1 **Base Rent.** Upon execution hereof, Asterias shall deliver the first months' Base Rent to NNRCSI and the first months' estimated Additional Rent, to be applied against Asterias's first obligation to pay Rent hereunder. Asterias shall pay to NNRCSI the Rent in advance on the first day of each month of the Term, commencing on the Commencement Date without being invoiced by NNRCSI. In the event the first day of the Term shall not be the first day of a calendar month or the last day of the Term is not the last day of the calendar month, the Rent shall be appropriately prorated based on the actual number of days in such month. All installments of Rent shall be delivered to NNRCSI's Address, or at such other place as may be designated in writing from time to time by NNRCSI, in lawful money of the United States and without deduction or offset for any cause whatsoever.

3.2 **Additional Rent.** Asterias shall pay NNRCSI, as additional rent, the Asterias OpEx Share of all Additional Rent charged by BMR to NNRCSI under the Master Lease, in monthly installments and the same shall be due and payable in advance on the first day of each calendar month.

3.3 **Reimbursement for Direct Expenses**. Under the Master Lease, NNRCSI is obligated to perform certain maintenance, repair and replacement obligations for the entirety of the Premises (the "**NNRCSI Direct Expenses**"). To the extent there are NNRCSI Direct Expenses which relate to the Sublet Space and are payable by Asterias under Section 2.1 above, Asterias will pay the Asterias OpEx Share of such NNRCSI Direct Expenses as additional rent. Asterias shall have the right to review the Annual Statement with respect to the Asterias OpEx Share of such NNRCSI Direct Expenses and timely contest any item of additional rent pursuant to Section 16.3 of the Master Lease.

4. **Security Deposit.** Upon execution hereof, and as a condition concurrent to the effectiveness of this Sublease, Asterias shall deposit the Security Deposit with NNRCSI. The Security Deposit shall secure Asterias's obligations under this Sublease to pay Rent and other monetary amounts, to maintain the Sublet Space and repair damages thereto, to surrender the Sublet Space to NNRCSI in clean condition and repair upon termination of this Sublease and to discharge Asterias's other obligations hereunder. NNRCSI may use and commingle the Security Deposit with other funds of NNRCSI. If Asterias is in default hereunder, NNRCSI may, but without any obligation to do so, apply all or any portion of the Security Deposit towards fulfillment of Asterias's unperformed obligations. If NNRCSI does so apply any portion of the Security Deposit, Asterias's failure to remit to NNRCSI a sufficient amount in cash to restore the Security Deposit to the original amount within ten (10) days after receipt of NNRCSI's written demand to do so shall constitute an event of default. Upon the termination of this Sublease and provided that there are not any uncured events of default hereunder, NNRCSI shall return the balance of the Security Deposit after NNRCSI has applied all or a portion of the Security Deposit against Asterias's obligations hereunder, to Asterias without payment of interest. Asterias hereby waives any and all rights under the provisions of Section 1950.7 of the California Civil Code or other laws regarding security deposits.

5. **Use.** The Sublet Space is to be used for the Permitted Use, and for no other purpose or business without the prior written consent of both NNRCSI and BMR. In no event shall the Sublet Space be used for a purpose or use prohibited by the Master Lease.

6. **Holdover.** This Sublease shall terminate without further notice at the expiration of the Term. If after expiration of the Term, Asterias remains in possession of the Sublet Space, Asterias shall become a tenant from month to month only, upon all the provisions of this Sublease (except as to Term and Base Rent), but the installments of monthly Base Rent payable by Asterias during such holdover shall be equal to one hundred fifty percent (150%) of the installments of monthly Base Rent in effect during the last thirty (30) days of the Term as a result of such holdover. Such Base Rent shall be payable in advance on or before the first day of each month. If either party desires to terminate such month to month tenancy, it shall give the other party not less than thirty (30) days advance written notice of the date of termination.

7. **Damage and Destruction.** If BMR or NNRCSI exercises any option either may have to terminate the Master Lease as a result of damage or destruction of the Premises, this Sublease shall terminate as of the date of the termination of the Master Lease.

8. **Eminent Domain.**

8.1 **Total Condemnation.** If all of the Sublet Space is condemned by eminent domain, inversely condemned or sold in lieu of condemnation, for any public or a quasi-public use or purpose ("**Condemned**" or "**Condemnation**"), this Sublease shall terminate as of the date of title vesting in such proceeding, and Asterias shall not have any obligation hereunder, including the payment of Rent, subsequent to such date of termination.

8.2 **Partial Condemnation.** If the Master Lease is terminated due to a partial condemnation of the Premises, this Sublease shall automatically terminate as of the date of the termination of the Master Lease. If this Sublease is not terminated following any such partial condemnation, this Sublease shall remain in full force and effect.

9. **Insurance.** Asterias shall obtain and keep in full force and effect, at Asterias' sole cost and expense, during the Term the insurance required to be carried by the "Tenant" under the Master Lease. Asterias shall include NNRCSI and BMR as additional insureds in any policy of liability insurance carried by Asterias in connection with this Sublease.

10. **No Brokers.** Asterias warrants and represents to NNRCSI that it has not dealt with any real estate broker or agent in connection with this Sublease or its negotiation. NNRCSI warrants and represents to Asterias that it has not dealt with any real estate broker or agent in connection with this Sublease or its negotiation. Asterias shall Indemnify NNRCSI from and against any Claims resulting from any claim for a fee or commission by any broker or finder making a claim through Asterias in connection with the Sublet Space and this Sublease. NNRCSI shall Indemnify Asterias from and against any Claims resulting from any claim for a fee or commission by any broker or finder making a claim through NNRCSI in connection with the Sublet Space and this Sublease.

11. **Right to Cure Defaults**.

11.1 **Asterias's Defaults.** If Asterias shall at any time fail to make any payment or perform any other obligation of Asterias hereunder, then NNRCSI shall have the right, but not the obligation, after the lesser of five (5) days' notice to Asterias or the time within which BMR may act on NNRCSI's behalf under the Master Lease, or without notice to Asterias in the case of any emergency, without causing an NNRCSI Delay, and without waiving or releasing Asterias from any obligations of Asterias hereunder, to make such payment or perform such other obligation of Asterias in such manner and to such extent as NNRCSI shall deem necessary, and in exercising any such right, to pay any reasonable, incidental costs and expenses, employ attorneys and other professionals, and incur and pay reasonable attorneys' fees and other costs reasonably required in connection therewith. Asterias shall pay to NNRCSI within ten (10) days after written demand, all sums so paid by NNRCSI and all incidental costs and expenses of NNRCSI in connection therewith, together with interest thereon, at the Default Rate, accruing from the date which is the eleventh (11th) day following Asterias' receipt of such written demand.

11.2 **NNRCSI's Defaults.** If NNRCSI receives any notice from BMR regarding a default of NNRCSI under the Master Lease, NNRCSI shall immediately provide Asterias written notice of the same, including a copy of the notice from BMR. Asterias shall have the right, but not the obligation, upon written notice to NNRCSI, and without waiving or releasing NNRCSI from any obligations of NNRCSI hereunder, to, after the expiration of any applicable notice and cure period afforded NNRCSI under the Master Lease, (i) make such payment directly to BMR if NNRCSI does not pay the same within five (5) days after NNRCSI receives written demand therefor from BMR, or (ii) perform such act of NNRCSI. NNRCSI shall pay to Asterias within (10) days after written demand, all sums so paid by Asterias and all reasonable costs and expenses of performing any such act, as applicable. Asterias shall have the right to apply any amounts owing to Asterias pursuant to the foregoing against Asterias's obligation to pay Rent hereunder.

12. **Parking.** Asterias will have the right, on an unreserved basis, to use up to seventy-five (75) parking stalls at the Premises during the Term through the First Floor Space Expiration Date.

13. **Assignment and Subletting.** The application of Master Lease Section 29 is limited to only allow assignment and subletting as agreed upon in this Section 13. Asterias shall not Transfer its interest in this Sublease or further sublet or assign all or any part of the Sublet Space without the prior written consent of NNRCSI and BMR, provided, however, that NNRCSI's consent shall not be unreasonably withheld, except in connection with a Transfer to a competitor of NNRCSI or its affiliates (as determined in NNRCSI's sole discretion), or a transfer which includes access or use of any of the Shared Sublet Space, in which cases NNRCSI may withhold consent in its sole discretion. To be clear, the term Transfer is defined by reference to the Master Lease, however there are no "Exempt Transfers" under this Sublease. Notwithstanding the foregoing, Asterias shall have the right to assign this Sublease or sublet the Premises, without NNRCSI's prior consent, (i) in connection with an assignment to a transferee of all or substantially all of the assets or stock of Asterias, and (ii) in connection with an assignment or subletting of all or a portion of the Premises to an affiliate of Asterias (an entity which is controlled by, controls, or is under common control with, Asterias). Notwithstanding anything to the contrary in this Sublease, if Asterias or any proposed transferee claims that NNRCSI and BMR have unreasonably withheld or delayed their consent under this Section or otherwise has breached or acted unreasonably under this Section, their sole remedies shall be a declaratory judgment and an injunction for the relief sought, and Asterias hereby waives the provisions of Section 1995.310 of the California Civil Code, or any successor statute, and all other remedies, including, without limitation, any right at law or equity to terminate this Sublease, on its own behalf and, to the extent permitted under all applicable laws, on behalf of the proposed transferee.

14. **Signage.** Asterias shall not place or display in any manner any sign, graphic, or other advertising matter or material anywhere in or about the Sublet Space or the Building or elsewhere about the Premises, unless approved by both BMR and NNRCSI, with NNRCSI's approval not unreasonably withheld. Any such signage of Asterias shall be constructed and installed at the sole cost and expense of Asterias, is subject to all conditions regarding Signage in the Master Lease, shall be removed by Asterias upon the expiration or earlier termination of this Sublease and any damage caused by such removal shall be repaired, all by Asterias at Asterias' sole risk, cost, and expense.

15. **Environmental Indemnity.** Without limiting the incorporation of the various Indemnity agreements in the Master Lease, including without limitation in the Master Lease's Articles 20 and 27, Asterias hereby directly agrees to Indemnify NNRCSI and its affiliates, employees, agents, contractors, Lenders, and invitees (collectively, the "**NNRCSI Indemnitees**") from all Claims arising from or relating to Hazardous Materials (a) Asterias, its employees, agents, contractors or invitees (collectively "**Asterias Parties**") causing or knowingly permitting Hazardous Materials to be brought upon, kept or used in or about the Premises in violation of Applicable Laws, or (b) contamination of the Premises occurs as a result of Hazardous Materials that are placed on or under or are released into the Premises by any Asterias Party, then Asterias shall Indemnify the NNRCSI Indemnitees from and against any and all Claims of any kind or nature, including (w) diminution in value of the Premises or any portion thereof, (x) damages for the loss or restriction on use of rentable or usable space or of any amenity of the Premises, (y) without duplicating damages under (w) and (x), damages arising from any adverse impact on marketing of space in the Premises or any portion thereof and (z) sums paid in settlement of Claims that arise before, during or after the Term as a result of such breach or contamination. This Indemnification does not apply to any contamination to the extent arising from or relating to the actions, negligence or breach of this Lease by any of the NNRCSI Indemnitees.

16. **Early Termination by Asterias.** NNRCSI hereby grant Asterias the right to accelerate either or both of the Strategic Space Expiration Date or the First Floor Space Expiration Date at any time (as to each, a "**Termination Option**"), provided that: (a) the acceleration of an expiration date applies to the entirety of either or both of the Strategic Space or the First Floor Space; (b) Asterias can exercise its Termination Option as to the Strategic Space separately from the exercise of its termination Option for the First Floor Space, and the exercise of one Termination Option will not void Asterias' right to subsequently exercise its Termination Option as to the other; (c) for Asterias' exercise of a Termination Option to be effective, the accelerated expiration date must be the first day of the month following delivery of at least 90 days advance, irrevocable notice delivered to NNRCSI (a "**Termination Notice**"); and (d) Asterias is not then currently in default beyond any applicable cure period under this Sublease at the time Asterias delivers the Termination Notice.

17. **Miscellaneous.**

17.1 **Entire Agreement; Counterparts; Digital Versions.** This Sublease and the Master Lease, as incorporated herein, contain all of the covenants, conditions and agreements between the parties concerning the Sublet Space, and shall supersede all prior correspondence, agreements and understandings concerning the Sublet Space, both oral and written. No addition or modification of any term or provision of this Sublease shall be effective unless set forth in writing and signed by both NNRCSI and Asterias. This Sublease may be executed in counterparts which, when assembled, will comprise a single Sublease. Executed counterparts of this Sublease can be delivered electronically (e.g. fax, email PDF) and are binding as originals upon receipt.

17.2 **Captions.** All captions and headings in this Sublease are for the purposes of reference and convenience and shall not limit or expand the provisions of this Sublease.

17.3 **BMR's Consent; Amendment of BMR-Asterias Lease.** This Sublease is conditioned upon (i) BMR's concurrent, written approval of this Sublease and concurrent execution of an amendment to the BMR-Asterias Lease, accelerating the BMR-Asterias Lease's expiration date to match the Commencement Date under the Master Lease and this Sublease, and (ii) Asterias' concurrent (or prior) written approval of the Master Lease. If BMR refuses to consent to this Sublease or amend the BMR-Asterias Lease as required hereunder, this Sublease shall terminate and neither party shall have any continuing obligation to the other with respect to the Sublet Space; provided NNRCSI shall return the Security Deposit and Base Rent, if previously delivered to NNRCSI, to Asterias.

17.4 **Authority.** Each person executing this Sublease on behalf of a party hereto represents and warrants that he or she is authorized and empowered to do so and to thereby bind the party on whose behalf he or she is signing.

17.5 **Attorneys' Fees.** In the event either party shall bring any action or proceeding for damages or for an alleged breach of any provision of this Sublease to recover rents, or to enforce, protect or establish any right or remedy hereunder, the prevailing party shall be entitled to recover reasonable attorneys' fees and court costs as part of such action or proceeding.

17.6 **Notices.** The notice provisions of the Master Lease control, provided that NNRCSI's Address or the Asterias's Address given in the Defined Terms above or to such other address as the party to receive the notice or request so designates by written notice to the other parties.

17.7 **Consents**. If, under the Master Lease, Asterias is required to obtain the consent of any Landlord Parties (as defined in the Master Lease) to any matter as to which BMR's or other Landlord Parties' consent is required pursuant to the terms of this Sublease or the Master Lease, NNRCSI shall promptly, upon Asterias' request, make commercially reasonable efforts to obtain such consent from the applicable Landlord Parties; provided that NNRCSI is not required to make any payment, incur any expense or liability, or initiate any legal proceedings. Without limiting the foregoing, Asterias hereby agrees to pay any costs and expenses (including reasonable attorney's fees) either incurred by NNRCSI relating to Asterias' request for such consent, or charged by any Landlord Party in accordance with the Master Lease, in connection with the request for such consent.

17.8 **Time.** Time is of the essence of every provision of this Sublease.

17.9 **Certified Access Specialist**. NNRCSI discloses that to NNRCSI's knowledge, neither the Building, the Premises nor the Sublet Space have undergone inspection by a Certified Access Specialist. Furthermore, pursuant to Section 1938 of the California Civil Code, NNRCSI notifies Asterias of the following: "A Certified Access Specialist (CASp) can inspect the subject premises and determine whether the subject premises comply with all of the applicable construction-related accessibility standards under state law. Although California state law does not require a CASp inspection of the subject premises, the commercial property owner or lessor may not prohibit the lessee or tenant from obtaining a CASp inspection of the subject premises for the occupancy or potential occupancy of the lessee or tenant, if requested by the lessee or tenant. The parties shall mutually agree on the arrangements for the time and manner of any such CASp inspection, the payment of the costs and fees for the CASp inspection and the cost of making any repairs necessary to correct violations of construction-related accessibility standards within the Sublet Space." Asterias agrees that (a) Asterias may, at its option and at its sole cost, cause a CASp to inspect the Sublet Space and determine whether the Sublet Space complies with all of the applicable construction-related accessibility standards under California law, (b) the parties shall mutually coordinate and reasonably approve of the timing of any such CASp inspection so that NNRCSI and BMR may, at its option, have a representative present during such inspection, and (c) Asterias shall be solely responsible for the cost of any repairs necessary to correct violations of construction-related accessibility standards within the Sublet Space and Building identified by any such CASp inspection, any and all such alterations and repairs within the Sublet Space to be performed by Asterias shall be subject to BMR's consent and in accordance with the Master Lease.

[Signatures appear on the following page]

IN WITNESS WHEREOF, the parties hereto have executed this Sublease, dated as of the Effective Date.

"**NNRCSI**"

NOVO NORDISK RESEARCH CENTER SEATTLE, INC., a Delaware corporation

By: /s/Jan Beck

Print Name: Jan Beck

Its: Site Head

"**Asterias**"

ASTERIAS BIOTHERAPEUTICS, INC., a Delaware corporation

By: /s/Ryan D. Chavez

Print Name: Ryan D. Chavez

Its: CFO & General Counsel

Exhibit 31.1

CERTIFICATIONS

I, Michael H. Mulroy, certify that:

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

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

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

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rule 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 periodic 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 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 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 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: November 9, 2018

/s/ Michael H. Mulroy
Michael H. Mulroy
President and Chief Executive Officer
(principal executive officer)

Exhibit 31.2

CERTIFICATIONS

I, Ryan Chavez, certify that:

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

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

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

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rule 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 periodic 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 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 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 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: November 9, 2018

/s/ Ryan Chavez
Ryan Chavez
Chief Financial Officer
(principal financial officer)

Exhibit 32.1

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

In connection with the Quarterly Report on Form 10-Q of Asterias Biotherapeutics, Inc. (the "Company") for the quarter ended September 30, 2018 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), each of the undersigned, Michael H. Mulroy and Ryan Chavez, certify pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that:

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

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

Date: November 9, 2018

/s/ Michael H. Mulroy

Michael H. Mulroy
President and Chief Executive Officer

/s/ Ryan Chavez

Ryan Chavez
Chief Financial Officer

The Foregoing certification is being furnished pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 and shall not be deemed "filed" for purposes of Section 18 of the Securities Exchange Act of 1934, or otherwise subject to the liability of that section. This certification will not be deemed incorporated by reference into any filing under the Securities Act of 1933 or the Securities Exchange Act of 1934.