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

FORM 10-Q

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

For the quarterly period ended June 30, 2019

OR

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

FOR THE TRANSITION PERIOD FROM TO

Commission File Number 001-37880

Novan, Inc.

(Exact name of registrant as specified in its charter)

Delaware	**20-4427682**
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)
4105 Hopson Road **Morrisville, North Carolina**	**27560**
(Address of principal executive offices)	(zip code)

(919) 485-8080
(Registrant's telephone number, including area code)

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

Title of Each Class	Trading Symbol(s)	Name of Each Exchange on Which Registered
Common Stock, $0.0001 par value	NOVN	Nasdaq Global Market

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

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

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

Large accelerated filer	☐	Accelerated filer	☐
Non-accelerated filer	☒	Smaller reporting company	☒
		Emerging growth company	☒

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

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

As of August 5, 2019, there were 26,069,734 shares of the registrant's Common Stock outstanding.

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PART I—FINANCIAL INFORMATION

Item 1. Financial Statements

NOVAN, INC.
Condensed Consolidated Balance Sheets
(unaudited)
(in thousands, except share and per share amounts)

	June 30, 2019	December 31, 2018
ASSETS		
Current assets:		
Cash and cash equivalents	$ 22,438	$ 8,194
Restricted cash	8,286	—
Deferred offering costs	49	49
Prepaid expenses and other current assets	1,237	1,107
Total current assets	32,010	9,350
Restricted cash	2,060	539
Intangible assets	75	75
Other assets	473	530
Property and equipment, net	11,054	15,868
Right-of-use lease assets	1,837	—
Total assets	$ 47,509	$ 26,362
LIABILITIES AND STOCKHOLDERS' (DEFICIT) EQUITY		
Current liabilities:		
Accounts payable	$ 957	$ 1,250
Accrued compensation	1,412	1,467
Accrued outside research and development services	789	563
Accrued legal and professional fees	295	498
Other accrued expenses	633	871
Deferred revenue, current portion	4,401	4,401
Research and development service obligation liability, current portion	8,286	—
Lease liabilities, current portion	1,151	11
Total current liabilities	17,924	9,061
Deferred revenue, net of current portion	4,825	2,566
Lease liabilities, net of current portion	5,395	10
Warrant liability	11,430	1,240
Research and development service obligation liability, net of current portion	1,521	—
Research and development funding arrangement liability, related party	25,000	—
Other long-term liabilities	1,630	289
Facility financing obligation	—	7,998
Total liabilities	67,725	21,164
Commitments and contingencies (Note 8)		
Stockholders' (deficit) equity		
Common stock $0.0001 par value; 200,000,000 shares authorized as of June 30, 2019 and December 31, 2018; 26,079,234 and 26,066,235 shares issued as of June 30, 2019 and December 31, 2018, respectively; 26,069,734 and 26,056,735 shares outstanding as of June 30, 2019 and December 31, 2018, respectively	3	3
Additional paid-in capital	178,100	177,677
Treasury stock at cost, 9,500 shares as of June 30, 2019 and December 31, 2018	(155)	(155)
Accumulated deficit	(198,164)	(172,327)
Total stockholders' (deficit) equity	(20,216)	5,198
Total liabilities and stockholders' (deficit) equity	$ 47,509	$ 26,362

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

NOVAN, INC.
Condensed Consolidated Statements of Operations and Comprehensive Loss
(unaudited)
(in thousands, except share and per share amounts)

	Three Months Ended June 30,		Six Months Ended June 30,	
	2019	2018	2019	2018
License and collaboration revenue	$ 1,101	$ 649	$ 2,201	$ 1,298
Research and development services revenue	—	—	—	9
Total revenue	1,101	649	2,201	1,307
Operating expenses:				
Research and development	6,189	6,176	11,016	12,511
General and administrative	3,311	2,620	6,305	5,500
Total operating expenses	9,500	8,796	17,321	18,011
Operating loss	(8,399)	(8,147)	(15,120)	(16,704)
Other (expense) income, net:				
Interest income	68	115	96	159
Interest expense	(1)	(261)	(1)	(523)
Change in fair value of warrant liability	(9,802)	711	(10,190)	4,269
Other income, net	36	4	92	4
Total other (expense) income, net	(9,699)	569	(10,003)	3,909
Net loss and comprehensive loss	$ (18,098)	$ (7,578)	$ (25,123)	$ (12,795)
Net loss per share, basic and diluted	$ (0.69)	$ (0.29)	$ (0.96)	$ (0.50)
Weighted-average common shares outstanding, basic and diluted	26,069,734	26,039,169	26,067,909	25,535,827

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

NOVAN, INC.
Condensed Consolidated Statements of Stockholders' (Deficit) Equity
(unaudited)
(in thousands, except share amounts)

	Six Months Ended June 30, 2019					
	Common Stock		Additional Paid-In	Treasury	Accumulated	
	Shares	Amount	Capital	Stock	Deficit	Total
Balance as of December 31, 2018	26,056,735	$ 3	$ 177,677	$ (155)	$ (172,327)	$ 5,198
Share-based compensation	—	—	168	—	—	168
Exercise of stock options	12,999	—	10	—	—	10
Net loss	—	—	—	—	(7,025)	(7,025)
Adoption of new accounting standards (Note 1)	—	—	—	—	(714)	(714)
Balance as of March 31, 2019	26,069,734	$ 3	$ 177,855	$ (155)	$ (180,066)	$ (2,363)
Share-based compensation	—	—	245	—	—	245
Net loss	—	—	—	—	(18,098)	(18,098)
Balance as of June 30, 2019	26,069,734	$ 3	$ 178,100	$ (155)	$ (198,164)	$ (20,216)

	Six Months Ended June 30, 2018					
	Common Stock		Additional Paid-In	Treasury	Accumulated	
	Shares	Amount	Capital	Stock	Deficit	Total
Balance as of December 31, 2017	16,005,408	$ 2	$ 158,091	$ (155)	$ (159,654)	$ (1,716)
Share-based compensation	—	—	887	—	—	887
Common stock issued through public offering, net of underwriting discounts, warrants, commissions and offering costs (Note 1)	10,000,000	1	17,387	—	—	17,388
Exercise of stock options	33,334	—	37	—	—	37
Net loss	—	—	—	—	(5,217)	(5,217)
Balance as of March 31, 2018	26,038,742	$ 3	$ 176,402	$ (155)	$ (164,871)	$ 11,379
Share-based compensation	—	—	546	—	—	546
Exercise of stock options	1,700	—	5	—		5
Net loss					(7,578)	(7,578)
Balance as of June 30, 2018	26,040,442	$ 3	$ 176,953	$ (155)	$ (172,449)	$ 4,352

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

NOVAN, INC.
Condensed Consolidated Statements of Cash Flows
(unaudited)
(in thousands)

	Six Months Ended June 30,	
	2019	**2018**
Cash flow from operating activities:		
Net loss	$ (25,123)	$ (12,795)
Adjustments to reconcile net loss to net cash used in operating activities:		
Depreciation and amortization	1,021	809
Share-based compensation	1,754	1,433
Loss on disposal and write-offs of property and equipment	32	93
Change in fair value of warrant liability	10,190	(4,269)
Changes in operating assets and liabilities:		
Prepaid expenses and other current assets	(130)	308
Accounts payable	(293)	567
Accrued compensation	(55)	(788)
Accrued outside research and development services	226	16
Accrued legal and professional fees	(162)	(99)
Other accrued expenses	(238)	(489)
Deferred revenue	2,259	(1,334)
Advanced payment for research and development service obligation	12,000	—
Research and development service obligation liabilities	(2,193)	—
Other long-term assets and liabilities	(214)	31
Net cash used in operating activities	(926)	(16,517)
Cash flow from investing activities:		
Purchases of property and equipment	(33)	(403)
Proceeds from the sale of property and equipment	—	40
Net cash used in investing activities	(33)	(363)
Cash flow from financing activities:		
Proceeds from research and development funding arrangement	25,000	—
Proceeds from public offering, net of underwriting fees and commissions	—	35,625
Payments related to public offering costs	—	(322)
Proceeds from exercise of stock options	10	42
Payments on capital lease obligation	—	(5)
Net cash provided by financing activities	25,010	35,340
Net increase in cash, cash equivalents and restricted cash	24,051	18,460
Cash, cash equivalents and restricted cash as of beginning of period	8,733	3,063
Cash, cash equivalents and restricted cash as of end of period	$ 32,784	$ 21,523
Supplemental disclosure of non-cash investing and financing activities:		
Purchases of property and equipment with accounts payable and accrued expenses	$ —	$ 322
Deferred offering costs reclassified to additional paid-in capital	$ —	$ 431
Reconciliation to condensed consolidated balance sheets:		
Cash and cash equivalents	$ 22,438	$ 20,984
Restricted cash included in current assets	8,286	—
Restricted cash included in noncurrent assets	2,060	539
Total cash, cash equivalents and restricted cash shown in the statement of cash flows	$ 32,784	$ 21,523

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

NOVAN, INC.

NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS
(unaudited)
(dollar values in thousands, except per share data)

Note 1: Organization and Significant Accounting Policies

Business Description and Basis of Presentation

Novan, Inc. ("Novan" and together with its subsidiaries, the "Company"), is a North Carolina-based clinical development-stage biotechnology company focused on leveraging nitric oxide's naturally occurring anti-microbial and immunomodulatory mechanisms of action to treat a range of diseases with significant unmet needs. Novan was incorporated in January 2006 under the state laws of Delaware. The wholly-owned subsidiary, Novan Therapeutics, LLC was organized in 2015 under the state laws of North Carolina. On March 14, 2019, the Company completed registration of a wholly-owned Ireland-based subsidiary, Novan Therapeutics, Limited.

The accompanying condensed consolidated financial statements of the Company have been prepared in accordance with generally accepted accounting principles in the United States of America ("U.S. GAAP"). The December 31, 2018 year-end condensed consolidated balance sheet data was derived from audited financial statements but does not include all disclosures required by U.S. GAAP. Additionally, the Company's independent registered public accounting firm report for the December 31, 2018 financial statements included an explanatory paragraph indicating that there is substantial doubt about the Company's ability to continue as a going concern.

Basis of Consolidation

The accompanying condensed consolidated financial statements reflect the operations of the Company and its wholly owned subsidiaries. All intercompany accounts and transactions have been eliminated in consolidation.

Liquidity and Ability to Continue as a Going Concern

The Company's condensed consolidated financial statements have been prepared assuming that the Company will continue as a going concern, which contemplates the realization of assets and the settlement of liabilities and commitments in the normal course of business. The accompanying condensed consolidated financial statements do not include any adjustments to reflect the possible future effects on the recoverability and classification of assets or the amounts and classification of liabilities that may result from uncertainty related to the Company's ability to continue as a going concern.

The Company has evaluated principal conditions and events that may raise substantial doubt about its ability to continue as a going concern within one year from the date that these financial statements are issued. The Company identified the following conditions:

- The Company has reported a net loss in all fiscal periods since inception and, as of June 30, 2019, the Company had an accumulated deficit of $198,164.

- As described in Note 6—Research and Development Arrangements, in April 2019 and May 2019 the Company entered into (i) a royalty and milestone payments purchase agreement with a stockholder providing $25,000 of immediate funding, with an additional $10,000 contingent upon achieving successful top-line results of the SB206 Phase 3 clinical trials no later than March 31, 2020; and (ii) a development funding and royalties agreement with a corporate partner providing $12,000 of immediate funding.

- The Company believes that its existing cash, cash equivalents and restricted cash balance, including the $25,000 and $12,000 received through research and development arrangements described in Note 6—Research and Development Arrangements, and expected contractual payments to be received in connection with previous licensing agreements will (i) provide the Company with adequate liquidity to fund its planned operating needs into the first quarter of 2020, including through expected top-line results of the Phase 3 molluscum clinical program targeted in the first quarter of 2020, or before; and (ii) into the second quarter of 2020, if paired with the potential $10,000 funding contingent upon achieving successful top-line results of the SB206 Phase 3 clinical trials no later than March 31, 2020.

- As of June 30, 2019, the Company had a total cash, cash equivalents and restricted cash balance of $32,784.

- The Company's primary use of cash is to fund its operating expenses, which consist principally of research and development expenditures necessary to advance its product candidates. The Company has evaluated its expected, probable future cash flow needs and has determined that it expects to incur substantial losses in the future as it conducts planned operating activities. As such, the Company has concluded that the prevailing conditions and ongoing liquidity risks it faces raise substantial doubt about its ability to continue as a going concern. The Company will need substantial additional funding to continue its operating activities and make further advancements in its drug development programs beyond those planned in 2019 and certain activities in the first half of 2020.

The failure of the Company to obtain sufficient funds on acceptable terms, or the failure to trigger the $10,000 contingent payment under the Company's royalty and milestone payments purchase agreement, could have a material adverse effect on the Company's business and cause the Company to alter or reduce its planned operating activities, including but not limited to delaying, reducing, terminating or eliminating planned product candidate development activities, to conserve its cash and cash equivalents. The Company intends to secure additional capital as needed. Additional capital may potentially include (i) non-dilutive sources, such as partnerships, collaborations, licensing, grants or other strategic relationships; or (ii) equity or debt financings, which could cause dilution.

January 2018 Offering

On January 9, 2018, the Company completed a public offering of its common stock and warrants pursuant to the Company's effective shelf registration statement (the "January 2018 Offering"). The Company sold an aggregate of 10,000,000 shares of common stock and warrants to purchase up to 10,000,000 shares of the Company's common stock at a public offering price of $3.80 per share of common stock and accompanying warrant. The warrant exercise price is $4.66 per share and will expire four years from the date of issuance. Net proceeds from the offering were approximately $35,194 after deducting underwriting discounts and commissions and offering expenses of approximately $2,806.

The Company incurred costs directly related to (i) the shelf registration statement filing totaling $110; and (ii) the January 2018 Offering completed in January 2018 totaling $370, all of which were initially capitalized and included in deferred offering costs. A pro-rata portion of the shelf registration offering costs and all of the January 2018 Offering costs were reclassified to additional paid-in capital upon completion of the January 2018 Offering.

Use of Estimates

The preparation of financial statements in conformity with U.S. GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities at the date of the financial statements and the reported amount of revenues and expenses during the reporting period. Actual results could differ from these estimates.

Unaudited Interim Condensed Consolidated Financial Statements

The accompanying interim condensed consolidated financial statements and the related footnote disclosures are unaudited. These unaudited condensed consolidated financial statements have been prepared in accordance with U.S. GAAP and applicable rules and regulations of the Securities and Exchange Commission's ("SEC") Rule 10-01 of Regulation S-X for interim financial information. The condensed consolidated financial statements were prepared on the same basis as the audited consolidated financial statements and in the opinion of management, reflect all adjustments of a normal, recurring nature that are necessary for the fair statement of the Company's financial position and its results of operations and cash flows. The results of operations for interim periods are not necessarily indicative of the results expected for the full fiscal year or any future period. These interim financial statements should be read in conjunction with the financial statements and notes for the year ended December 31, 2018 set forth in the Company's Annual Report on Form 10-K filed with the SEC on March 27, 2019.

Restricted Cash

Restricted cash as of June 30, 2019 and December 31, 2018 includes $539 of funds maintained in a separate deposit account to secure a letter of credit for the benefit of the lessor of facility space leased by the Company. Restricted cash as of June 30, 2019 also includes $9,807 to be used for the development of SB206 for the treatment of molluscum contagiosum, pursuant to the funding agreement with Ligand Pharmaceuticals Incorporated ("Ligand") described in Note 6—Research and Development Arrangements.

Leases

The Company's significant accounting policies regarding leases are described in Note 1 of the Notes to the Consolidated Financial Statements included in its Annual Report on Form 10-K for the year ended December 31, 2018. Updates to the Company's accounting policies, including impacts from the adoption of new accounting standards, are discussed within the section below, "Accounting Pronouncements Adopted", and within Note 8—Commitments and Contingencies.

Net Loss Per Share

Basic net loss per share is calculated by dividing net loss by the weighted average shares outstanding during the period, without consideration of common stock equivalents. Diluted net loss per share is calculated by adjusting weighted average shares outstanding for the dilutive effect of common stock equivalents outstanding for the period. Diluted net loss per share is the same as basic net loss per share, since the effects of potentially dilutive securities are anti-dilutive for all periods presented.

The following securities, presented on a common stock equivalent basis, have been excluded from the calculation of weighted average common shares outstanding for the three and six months ended June 30, 2019 and 2018 because the effect is anti-dilutive due to the net loss reported in each of those periods. All share amounts presented in the table below represent the total number outstanding as of the end of each period. In addition, as described in Note 11—Share-Based Compensation, the Company's board granted 1,000,000 stock appreciation rights ("SARs") on a contingent basis in the third quarter of 2018. These securities were subject to stockholder approval and therefore were not considered outstanding as of June 30, 2019.

	June 30,	
	2019	**2018**
Warrants to purchase common stock associated with January 2018 public offering (Note 10)	10,000,000	10,000,000
Stock options outstanding under the 2008 and 2016 Plans (Note 11)	1,522,300	1,686,142
Inducement options outstanding (Note 11)	100,500	100,500

Segment and Geographic Information

The Company has determined that it operates in one segment. The Company uses its nitric oxide-based technology to develop product candidates. The Chief Executive Officer, who is the Company's chief operating decision maker, reviews financial information on an aggregate basis for purposes of allocating resources and evaluating financial performance. The Company has only had limited revenue since its inception, but all revenue was derived from licensing agreements originating in the United States. All of the Company's long-lived assets are maintained in the United States.

Although all operations are based in the United States, the Company generated revenue from its licensing partner in Japan of $1,101 and $2,201 during the three and six months ended June 30, 2019, respectively, and $649 and $1,298 during the three and six months ended June 30, 2018, respectively. During the three and six months ended June 30, 2019 and 2018, substantially all revenue was generated from the Company's licensing partner in Japan.

Recently Issued Accounting Standards

Accounting Pronouncements Adopted

In February 2016, the FASB issued Accounting Standards Update ("ASU") No. 2016-02, *Leases (Topic 842)*. This guidance revises the accounting related to leases by requiring lessees to recognize a lease liability and a right-of-use asset for all leases. The new lease guidance also simplifies the accounting for sale and leaseback transactions. In July 2018, the FASB issued ASU No. 2018-10, *Codification Improvements to Topic 842, Leases* and ASU 2018-11, *Leases (Topic 842): Targeted Improvements,* and in March 2019, the FASB issued ASU 2019-01, *Leases (Topic 842): Codification Improvements.* These additional ASUs were issued to provide expanded or clarifying guidance associated with the application of certain principles. Under the guidance, lessees are required to recognize assets and lease liabilities on the balance sheet for most leases including operating leases and provide enhanced disclosures. There are optional practical expedients that a company may elect to apply. The guidance was effective for the Company beginning in its first quarter of 2019.

The Company adopted Topic 842 as of January 1, 2019 using the modified alternative retrospective transition method and initially applied the transition provisions as of January 1, 2019. This transition method allowed the Company to continue to apply the legacy guidance in ASC 840 for periods prior to 2019 and recognize a cumulative-effect adjustment to the opening balance of accumulated deficit as of the date of adoption.

The Company elected the package of transition practical expedients, which, among other things, allowed the Company to keep the historical lease classifications and not have to reassess the lease classification and initial direct costs for any existing or expired leases as of the date of adoption. The Company also made an accounting policy election to apply the short-term lease exception, which allows the Company to exclude leases with an initial term of twelve months or less from the consolidated balance sheets. Lease expense for leases with an initial term of twelve months or less will be recognized over the lease term, similar to the accounting treatment under ASC 840.

As a result of the adoption of Topic 842, the Company derecognized $10,557 of building assets (property, plant and equipment), and the $7,998 facility financing obligation associated with the previously existing build-to-suit arrangement related to its sole corporate and manufacturing facility. The Company also capitalized leasehold improvements and ROU assets of $5,885 and $1,827, respectively, and recorded lease liabilities for operating leases totaling $6,786, as of January 1, 2019. The capitalized leasehold improvement assets recorded as part of the adoption of Topic 842 were previously included within the derecognized building asset as part of the previous build-to-suit arrangement. The Company also recognized an increase of $714 to accumulated deficit related to its de-recognition of its previously recorded build-to-suit arrangement. The impact of the adoption of this guidance is non-cash in nature and did not affect the Company's cash flows.

See Note 8—Commitments and Contingencies, for additional information related to the adoption of Topic 842.

In June 2018, the FASB issued ASU No. 2018-07 *Compensation-Stock Compensation (Topic 718): Improvements to Nonemployee Share-Based Payment Accounting*. This guidance simplifies the accounting for non-employee share-based payment transactions by expanding the scope of Topic 718 to include share-based payment transactions for acquiring goods and services from non-employees. Under the new standard, most of the guidance on stock compensation payments to non-employees would be aligned with the requirements for share-based payments granted to employees. This standard is effective for annual reporting periods beginning after December 15, 2018, including interim reporting periods within those annual reporting periods, with early adoption permitted. This ASU was effective for the Company as of January 1, 2019. The adoption of this new accounting guidance did not have a material impact on the Company's condensed consolidated financial statements.

Accounting Pronouncements Being Evaluated

In August 2018, the FASB issued ASU No. 2018-13 *Fair Value Measurement (Topic 820): Disclosure Framework—Changes to the Disclosure Requirements for Fair Value Measurement.* This guidance is intended to improve the effectiveness of disclosure requirements on fair value measurements in Topic 820. The new standard modifies certain disclosure requirements and will be effective for annual reporting periods beginning after December 15, 2019. The Company is currently evaluating the impact of adoption of this ASU and does not expect the adoption of this new standard to have a material impact on its condensed consolidated financial statements.

In October 2018, the FASB issued ASU No. 2018-17 *Consolidation (Topic 810): Targeted Improvements to Related Party Guidance for Variable Interest Entities.* This guidance is intended to improve the accounting for variable interest entities and whether the entity should be consolidated. This guidance is effective for annual reporting periods beginning after December 15, 2019, including interim reporting periods within those annual reporting periods, with early adoption permitted. The Company is evaluating the impact of adoption of this ASU and does not currently expect the adoption of this new standard to have a material impact on its condensed consolidated financial statements.

In November 2018, the FASB issued ASU No. 2018-18 *Collaborative Arrangements (Topic 808): Clarifying the Interaction between Topic 808 and Topic 606*. This guidance is intended to reduce diversity in practice and clarify the interaction between Topic 808, *Collaborative Arrangements*, and Topic 606, *Revenue from Contracts with Customers*. This ASU provided guidance on whether certain transactions between collaborative arrangement participants should be accounted for with revenue under Topic 606. This guidance is effective for annual reporting periods beginning after December 15, 2019, including interim reporting periods within those annual reporting periods, with early adoption permitted. The Company is currently evaluating the impact of adoption of this ASU and does not expect the adoption of this new standard to have a material impact on its condensed consolidated financial statements.

Note 2: KNOW Bio, LLC

On December 30, 2015, the Company completed the distribution of 100% of the outstanding member interests of KNOW Bio, LLC ("KNOW Bio"), a former wholly owned subsidiary of the Company, to Novan's stockholders (the "Distribution"), pursuant to which KNOW Bio became an independent privately held company.

KNOW Bio is an independent, privately held company with a portfolio of operating subsidiaries that are advancing nitric oxide-based therapies using technology that is proprietary and/or in fields where they have exclusive intellectual property rights. The Company does not own any equity interest in KNOW Bio, has no common management or board representation at KNOW Bio, and the contractual arrangements between the two entities do not provide the Company with decision-making authority or power to influence KNOW Bio's drug and medical device development activities.

The Company conducted an initial assessment of KNOW Bio under the variable interest consolidation model pursuant to FASB ASC 810, *Consolidation*, at the time of the Distribution in 2015 and has monitored KNOW Bio during each subsequent reporting period, including two required ASC 810 reassessments performed during 2017. The Company has consistently determined that KNOW Bio should not be consolidated in its consolidated financial statements. In the fourth quarter of 2018, KNOW Bio and its operating subsidiaries received significant additional equity investments that enable progression of their technology. These events required the Company to conduct another reassessment of variable interest entity characteristics, pursuant to FASB ASC 810-10, *Consolidation*, in which it determined that KNOW Bio should not be consolidated in its consolidated financial statements.

KNOW Bio Technology Agreements

In connection with the Distribution, the Company entered into exclusive license agreements and sublicense agreements with KNOW Bio, as described below. The agreements will continue for so long as there is a valid patent claim under the respective agreement, unless earlier terminated, and upon expiration, will continue as perpetual non-exclusive licenses. KNOW Bio has the right to terminate each such agreement, for any reason upon 90 days advance written notice to the Company.

License of existing and potential future intellectual property to KNOW Bio. The Company and KNOW Bio entered into an exclusive license agreement dated December 29, 2015 (the "KNOW Bio License Agreement"). Pursuant to the terms of the KNOW Bio License Agreement, the Company granted to KNOW Bio exclusive licenses, with the right to sublicense, under certain U.S. and foreign patents and patent applications that were controlled by the Company as of December 29, 2015 or that became controlled by the Company between that date and December 29, 2018, directed towards nitric-oxide releasing compositions and methods of manufacturing thereof, including methods of manufacturing Nitricil compounds and other nitric oxide-based therapeutics.

Sublicense of UNC and other third party intellectual property to KNOW Bio. The Company and KNOW Bio also entered into sublicense agreements dated December 29, 2015 (the "KNOW Bio Sublicense Agreements" and together with the KNOW Bio License Agreement, the "Original KNOW Bio Agreements"). Pursuant to the terms of the KNOW Bio Sublicense Agreements, the Company granted to KNOW Bio exclusive sublicenses, with the ability to further sublicense, under certain of the U.S. and foreign patents and patent applications exclusively licensed to the Company from UNC (the "UNC License Agreement") and another third party directed towards nitric oxide-releasing compositions, to develop and commercialize products utilizing the licensed technology. Under the exclusive sublicense to the UNC patents and applications (the "UNC Sublicense Agreement"), KNOW Bio is subject to the terms and conditions under the UNC License Agreement, including milestone and diligence payment obligations. However, pursuant to the terms of the UNC License Agreement, the Company is directly obligated to pay UNC any future milestones or royalties, including those resulting from actions conducted by the Company's sublicensees, including KNOW Bio. Therefore, in the event of KNOW Bio non-performance with respect to its obligations under the UNC Sublicense Agreement, the Company would be obligated to make such payments to UNC. KNOW Bio would then become obligated to repay the Company pursuant to the UNC Sublicense Agreement, otherwise KNOW Bio would be in breach of its agreements with the Company and intellectual property rights would revert back to the Company. There were no milestone or royalty payments required during the six months ended June 30, 2019 and 2018.

Amendments to License and Sublicense Agreements with KNOW Bio

On October 13, 2017, the Company and KNOW Bio entered into certain amendments to the Original KNOW Bio Agreements (the "KNOW Bio Amendments"). Pursuant to the terms of the KNOW Bio Amendments, the Company re-acquired from KNOW Bio exclusive, worldwide rights under certain U.S. and foreign patents and patent applications controlled by the Company as of December 29, 2015, and that became controlled by the Company between December 29, 2015 and December 29, 2018, directed towards nitric oxide-releasing compositions and methods of manufacturing thereof, including methods of manufacturing Nitricil compounds, and other nitric oxide-based therapeutics, to develop and commercialize products for all diagnostic, therapeutic, prophylactic and palliative uses for any disease, condition or disorder caused by certain oncoviruses (the "Oncovirus Field"). The Company also obtained a three-year exclusive option, subject to payment of separate option exercise fees, to include up to four additional specified oncoviruses in the Oncovirus Field.

KNOW Bio also granted to the Company an exclusive license, with the right to sublicense, under any patents and patent applications which became controlled by KNOW Bio during the three-year period between December 29, 2015 and December 29, 2018 and directed towards nitric oxide-releasing compositions and methods of manufacturing thereof, including methods of manufacturing Nitricil compounds, and other nitric oxide-based therapeutics, but not towards medical devices, to develop and commercialize products for use in the Oncovirus Field.

Upon execution of the KNOW Bio Amendments, in exchange for the Oncovirus Field rights, the Company paid a non-refundable upfront payment of $250. Products the Company develops in the Oncovirus Field based on Nitricil will not be subject to any further milestones, royalties or sublicensing payment obligations to KNOW Bio under the KNOW Bio Amendments. However, if the Company develops products in the Oncovirus Field that incorporate a certain nitric oxide-releasing composition specified in the KNOW Bio Amendments and (i) are covered by KNOW Bio patents; or (ii) materially use or incorporate know-how of KNOW Bio or the Company related to such composition that was created between December 29, 2015 and December 29, 2018, the Company would be obligated to make certain contingent milestone and royalty payments to KNOW Bio under the KNOW Bio Amendments.

The rights granted to the Company in the Oncovirus Field in the KNOW Bio Amendments continue for so long as there is a valid patent claim under the Original KNOW Bio Agreements, and upon expiration continue on a perpetual non-exclusive basis, and are subject to the termination rights of KNOW Bio and the Company that are set forth in the Original KNOW Bio Agreements. In addition, under the KNOW Bio Amendments, KNOW Bio may terminate the rights granted to the Company in the Oncovirus Field if: (i) the Company does not file a first investigational new drug ("IND") application with the FDA for a product in the Oncovirus Field by October 2020; or (ii) the Company does not file a first new drug application ("NDA") with the FDA by October 2025 for a product in the Oncovirus Field and does not otherwise have any active clinical programs related to the Oncovirus Field at such time.

The KNOW Bio Amendments also provide a mechanism whereby either party can cause a new chemical entity ("NCE") covered by the Original KNOW Bio Agreements to become exclusive to such party by filing an IND on the NCE. An NCE that becomes exclusive to a party under this provision may not be commercialized by the other party until the later of expiration of patents covering the NCE or regulatory exclusivity covering the NCE. A party who obtains exclusivity for an NCE must advance development of the NCE pursuant to terms of the KNOW Bio Amendments in order to maintain such exclusivity; otherwise, such exclusivity will expire.

The terms of the KNOW Bio Amendments were negotiated at arms-length and do not provide the Company with an ability to significantly influence KNOW Bio or its operations.

Note 3: Research and Development Licenses

The Company has entered into various licensing agreements with universities and other research institutions under which the Company receives the rights, and in some cases substantially all of the rights, of the inventors, assignees or co-assignees to produce and market technology protected by certain patents and patent applications. The Company's primary license agreement is with UNC and has been described in further detail within the subsection below. The counterparties to the Company's various other licensing agreements are the University of Akron Research Foundation, Hospital for Special Surgery, Strakan International S.a.r.l., which is a licensee of the University of Aberdeen, KIPAX AB and KNOW Bio. The Company is generally required to make milestone payments based on development milestones and will be required to make royalty payments based on a percentage of future sales of covered products or a percentage of sublicensing revenue. As future royalty payments are directly related to future revenues (either sales or sublicensing), future commitments cannot be determined. No accrual for future payments under these agreements has been recorded, as the Company cannot estimate if, when or in what amount payments may become due.

UNC License Agreement

The Amended, Restated and Consolidated License Agreement dated June 27, 2012, as amended, (the "UNC License Agreement") provides the Company with an exclusive license to issued patents and pending applications directed to the Company's library of Nitricil compounds, including patents issued in the U.S., Japan and Australia, with claims intended to cover NVN1000, the NCE for the Company's current product candidates. The UNC License Agreement requires the Company to pay UNC up to $425 in regulatory and commercial milestones on a licensed product by licensed product basis and a running royalty percentage in the low single digits on net sales of licensed products. Licensed products include any products being developed by the Company or by its sublicensees.

Unless earlier terminated by the Company at its election, or if the Company materially breaches the agreement or becomes bankrupt, the UNC License Agreement remains in effect on a country by country and licensed product by licensed product basis until the expiration of the last to expire issued patent covering such licensed product in the applicable country.

Note 4: Licensing Arrangements

Sato License Agreement

Significant Terms

On January 12, 2017, the Company entered into a license agreement, and related amendment, with Sato Pharmaceutical Co., Ltd. ("Sato"), relating to SB204, its drug candidate for the treatment of acne vulgaris in Japan (the "Sato Agreement"). Pursuant to the Sato Agreement, the Company granted to Sato an exclusive, royalty-bearing, non-transferable right and license under certain of the Company's intellectual property rights, with the right to sublicense with the Company's prior written consent, to develop, use and sell products in Japan that incorporate SB204 in certain topical dosage forms for the treatment of acne vulgaris, and to make the finished form of such products.

On October 5, 2018, the Company and Sato entered into the second amendment (the "Sato Amendment") to the Sato Agreement (collectively, the "Amended Sato Agreement"). The Sato Amendment expanded the Sato Agreement to include SB206, the Company's drug candidate for the treatment of viral skin infections. Pursuant to the Amended Sato Agreement, the Company granted to Sato an exclusive, royalty-bearing, non-transferable license under certain of its intellectual property rights, with the right to sublicense with the Company's prior written consent, to develop, use and sell products in Japan that incorporate SB204 or SB206 in certain topical dosage forms for the treatment of acne vulgaris or viral skin infections, respectively, and to make the finished form of such products. The Company or its designated contract manufacturer will supply finished product to Sato for use in the development of SB204 and SB206 in the licensed territory. The rights granted to Sato do not include the right to manufacture the active pharmaceutical ingredient ("API") of SB204 or SB206; rather, the parties agreed to negotiate a commercial supply agreement pursuant to which the Company or its designated contract manufacturer would be the exclusive supplier to Sato of the API for the commercial manufacture of licensed products in the licensed territory. Under the terms of the Amended Sato Agreement, the Company also has exclusive rights to certain intellectual property that may be developed by Sato in the future, which the Company could choose to use for its own development and commercialization of SB204 or SB206 outside of Japan.

Under the Amended Sato Agreement, in exchange for the SB204 and SB206 license rights granted to Sato, Sato agreed to pay the Company the following:

- An upfront payment of 1.25 billion Japanese Yen, or "JPY", payable in installments of 0.25 billion JPY, 0.5 billion JPY and 0.5 billion JPY on October 5, 2018, February 14, 2019 and September 13, 2019, respectively. This is in addition to the 1.25 billion JPY (approximately $10,813 USD) paid on January 19, 2017 following the execution of the Sato Amendment on January 12, 2017. On October 23, 2018, the Company received the first installment from the Amended Sato Agreement of 0.25 billion JPY (approximately $2,224 USD). On March 14, 2019, the Company received the second installment payment related to the Amended Sato Agreement of 0.5 billion JPY (approximately $4,460 USD).
- Up to an aggregate of 1.75 billion JPY (adjusted from 2.75 billion JPY in the Sato Agreement) upon the achievement of various development and regulatory milestones, including (i) a 0.25 billion JPY (approximately $2,162 USD) milestone payment received during the fourth quarter of 2018 following Sato's initiation of a Phase 1 trial in Japan; and (ii) an aggregate of 1.0 billion JPY that becomes payable upon the earlier occurrence of specified fixed future dates or the achievement of milestone events.
- Up to an aggregate of 3.9 billion JPY (adjusted from 0.9 billion JPY in the Sato Agreement) upon the achievement of various commercial milestones.
- A tiered royalty ranging from a mid-single digit to a low-double digit percentage (adjusted from a mid-single digit percentage in the Sato Agreement) of net sales of licensed products in the licensed territory, subject to a reduction in the royalty payments in certain circumstances.

The term of the Amended Sato Agreement (and the period during which Sato must pay royalties under the amended license agreement) expires on the twentieth anniversary of the first commercial sale of a licensed product in the licensed field in the licensed territory (adjusted from the tenth anniversary of the first commercial sale in the license agreement). The term of the Amended Sato Agreement may be renewed with respect to a licensed product by mutual written agreement of the parties for

additional two year periods following expiration of the initial term. All other material terms of the license agreement remain unchanged by the Sato Amendment.

Sato is responsible for funding the development and commercial costs for the program that are specific to Japan. The Company is obligated to perform certain oversight, review and supporting activities for Sato, including: (i) using commercially reasonable efforts to obtain marketing approval of SB204 and SB206 in the U.S.; (ii) sharing all future scientific information the Company may obtain during the term of the Amended Sato Agreement pertaining to SB204 and SB206; (iii) performing certain additional preclinical studies if such studies are deemed necessary by the Japanese regulatory authority, up to and not to exceed a total cost of $1,000; and (iv) participating in a joint committee that oversees, reviews and approves Sato's development and commercialization activities under the Amended Sato Agreement. Additionally, the Company has granted Sato the option to use the Company's trademarks in connection with the commercialization of licensed products in the licensed territory for no additional consideration, subject to the Company's approval of such use.

The Amended Sato Agreement may be terminated by (i) Sato without cause upon 120 days' advance written notice to the Company; (ii) either party in the event of the other party's uncured material breach upon 60 days' advance written notice; (iii) force majeure; (iv) either party in the event of the other party's dissolution, liquidation, bankruptcy or insolvency; and (v) the Company immediately upon written notice if Sato challenges the validity, patentability, or enforceability of any of the Company's patents or patent applications licensed to Sato under the Amended Sato Agreement. In the event of a termination, no portion of the upfront fees received from Sato are refundable.

Note 5: Revenue Recognition

Sato Agreement

The Company assessed the Sato Agreement in accordance with Topic 606 and concluded that the contract counterparty, Sato, is a customer within the scope of Topic 606. The Company identified the following promises under the Sato Agreement: (i) the grant of the intellectual property license to Sato; (ii) the obligation to participate in a joint committee that oversees, reviews, and approves Sato's research and development activities and provides advisory support during Sato's development process; (iii) the obligation to manufacture and supply Sato with all quantities of licensed product required for development activities in Japan; and (iv) the stand-ready obligation to perform any necessary repeat preclinical studies, up to $1,000 in cost. The Company determined that these promises were not individually distinct because Sato can only benefit from these licensed intellectual property rights and services when bundled together; they do not have individual benefit or utility to Sato. As a result, all promises have been combined into a single performance obligation.

The Sato Agreement also provides that the two parties agree to negotiate in good faith the terms of a commercial supply agreement pursuant to which the Company or a third party manufacturer would be the exclusive supplier to Sato of the API for the commercial manufacture of licensed products in the licensed territory. The Company concluded this obligation to negotiate the terms of a commercial supply agreement does not create (i) a legally enforceable obligation under which the Company may have to perform and supply Sato with API for commercial manufacturing; or (ii) a material right because the incremental commercial supply fee consideration agreed upon between the parties in the Sato Agreement is representative of a stand-alone selling price for the supply of API and does not represent a discount. Therefore, this contract provision is not considered to be a promise to deliver goods or services and is not a performance obligation or part of the combined single performance obligation described above.

Amended Sato Agreement

On October 5, 2018, the Company and Sato entered into the Amended Sato Agreement. The Sato Amendment expanded the Sato Agreement to include SB206, the Company's drug candidate for the treatment of viral skin infections. The Company assessed the Amended Sato Agreement in accordance with Topic 606 and concluded the contract modification should incorporate the additional goods and services provided for in the Amendment into the existing, partially satisfied single bundled performance obligation that will continue to be delivered to Sato over the remaining development period. This contract modification accounting is concluded to be appropriate as the additional goods and services conveyed under the Sato Amendment were determined to not be distinct from the single performance obligation, and the additional consideration provided did not reflect the standalone selling price of those additional goods and services. As such, the Company recorded a cumulative adjustment as of the amendment execution date to reflect revenue that would have been recognized cumulatively for the partially completed bundled performance obligation.

The Company concluded that the following consideration would be included in the transaction price as they were (i) received prior to June 30, 2019; or (ii) payable upon specified fixed dates in the future and are not contingent upon clinical or regulatory success in Japan:

- The 1.25 billion JPY (approximately $10,813 USD) original upfront payment received on January 19, 2017 following the execution of the Sato Agreement on January 12, 2017.
- A milestone payment of 0.25 billion JPY (approximately $2,162 USD) received during the fourth quarter of 2018 following Sato's initiation of a Phase 1 trial in Japan.
- The Sato Amendment upfront payment of 1.25 billion JPY, payable in installments of 0.25 billion JPY, 0.5 billion JPY and 0.5 billion JPY on October 5, 2018, February 14, 2019 and September 13, 2019, respectively. On October 23, 2018, the Company received the first installment from the Amended Sato Agreement of 0.25 billion JPY (approximately $2,224 USD). On March 14, 2019, the Company received the second installment payment related to the Amended Sato Agreement of 0.5 billion JPY (approximately $4,460 USD).
- An aggregate of 1.0 billion JPY in non-contingent milestone payments that become payable upon the earlier occurrence of specified fixed dates in the future or the achievement of specified milestone events.

The following table presents the Company's contract assets and contract liabilities balances for the periods indicated.

	Contract Asset	Contract Liability	Net Deferred Revenue
December 31, 2018	$ 17,790	$ 24,757	$ 6,967
June 30, 2019	$ 13,330	$ 22,556	$ 9,226

	Short-term Deferred Revenue	Long-term Deferred Revenue	Net Deferred Revenue
December 31, 2018	$ 4,401	$ 2,566	$ 6,967
June 30, 2019	$ 4,401	$ 4,825	$ 9,226

The Company has recorded the Sato Agreement and Amended Sato Agreement transaction price, including the upfront payments received and the unconstrained variable consideration, as deferred revenue (comprised of (i) a contract liability; net of (ii) a contract asset). The change in the net deferred revenue balance during the three months ended June 30, 2019 was associated with the receipt of the second installment payment of 0.5 billion JPY (approximately $4,460 USD, and recognition of license and collaboration revenue associated with the Company's performance during the period (continued amortization of deferred revenue). During the three and six months ended June 30, 2019, the Company recognized $1,101 and $2,201, respectively, in license and collaboration revenue under this agreement. During the three and six months ended June 30, 2018, the Company recognized $649 and $1,298, respectively, in license and collaboration revenue under this agreement.

The Company has concluded that the above consideration is probable of not resulting in a significant revenue reversal and therefore included in the transaction price and is allocated to the single performance obligation. No other variable consideration under the Amended Sato Agreement is probable of not resulting in a significant revenue reversal as of June 30, 2019 and therefore, is currently fully constrained and excluded from the transaction price.

The Company evaluated the timing of delivery for each of the obligations and concluded that a time-based input method is most appropriate because Sato is accessing and benefiting from the intellectual property and technology (the predominant items of the combined performance obligation) ratably over the duration of Sato's estimated development period in Japan. Although the Company concluded that the intellectual property is functional rather than symbolic, the services provided under the performance obligation are provided over time. Therefore, the allocated transaction price will be recognized using a time-based input method that results in straight-line recognition over the Company's performance period.

Prior to the Sato Amendment, the Company estimated the Sato Agreement development timeline for the SB204 product candidate to be approximately 5 years, starting in February 2017 and completing in the first quarter of 2022. With the Amended Sato Agreement, the Company and Sato are now advancing both the SB204 and SB206 product candidates for the Japan territory. The parties are working collaboratively to reach agreement with respect to the Japan territory development plan, including a corresponding timeline and estimated duration for the development programs in whole. As of June 30, 2019, the

estimated timeline is 7.5 years. The Company notes that it monitors and reassesses the estimated performance period for purposes of revenue recognition during each reporting period. Therefore, if the duration of the development program timeline is affected by the establishment or subsequent adjustments to a mutually agreed upon SB204 and SB206 development plan in the Japan territory, the Company will adjust its estimated performance period for revenue recognition purposes accordingly, as needed.

In future periods, the Company will lift the variable consideration constraint from each contingent payment when there is no longer a probable likelihood of significant revenue reversal. When the constraint is lifted from a milestone payment, the Company will recognize the incremental transaction price using the same time-based input method that is being used to recognize the revenue, which results in straight-line recognition over the performance period. If the Company's performance is not yet completed at the time that the constraint is lifted, a cumulative catch-up adjustment will be recognized in the period. If no other performance is required by the Company at the time the constraint is lifted, the Company expects to recognize all revenue associated with such milestone payments at the time that the constraint is lifted.

Contract costs—Sato Agreement

The Company has incurred certain fees and costs in the process of obtaining the Amended Sato Agreement that were payable upon contract execution and, therefore, have been recognized as other assets and amortized as general and administrative expense on a straight-line basis over the same estimated performance period being used to recognize the associated revenue. These fees are associated with the following two arrangements and are described as follows:

- The Company entered into an agreement with a third party to assist the Company in exploring the licensing opportunity which led to the execution of the Sato Agreement. The Company is obligated to pay the third party a low-single-digit percentage of all upfront and milestone payments the Company receives from Sato under the Amended Sato Agreement.

- The intellectual property rights granted to Sato under the Sato Agreement include certain intellectual property rights which the Company has licensed from UNC. Under the UNC License Agreement described in Note 3—Research and Development Licenses, the Company is obligated to pay UNC a running royalty percentage in the low single digits on net sales of licensed products, including net sales that may be generated by Sato. Additionally, the Company is obligated to make payments to UNC that represent the portion of the Sato upfront and milestone payments that were estimated to be directly attributable to the UNC intellectual property rights included in the license to Sato.

Performance Obligations under the Sato Agreement

The net amount of existing performance obligations under long-term contracts unsatisfied as of June 30, 2019 was $9,226. The Company expects to recognize approximately 20% of the remaining performance obligations as revenue over the next 12 months, and the balance thereafter. The Company applied the practical expedient and does not disclose information about variable consideration related to sales-based or usage-based royalties promised in exchange for a license of intellectual property. This expedient specifically applied to the sales-based milestone payments that are present in the Amended Sato Agreement (3.9 billion JPY), as well as percentage-based royalty payments in the Sato Agreement that are contingent upon future sales.

Research and Development Services to KNOW Bio

The Company entered into a services agreement with KNOW Bio (the "KNOW Bio Services Agreement") during 2017 and provided research and development services on a fee-for-service basis. After assessing revenue according to the five-step model of ASC 606, the Company determined that contract research and development services revenue should be recognized in the period in which the services are performed. During the six months ended June 30, 2018, the Company recognized $9 in research and development services revenue for services performed under the KNOW Bio Services Agreement. There was no research and development services revenue recognized during the three and six months ended June 30, 2019 or the three months ended June 30, 2018.

Note 6: Research and Development Arrangements

Royalty and Milestone Payments Purchase Agreement with Reedy Creek Investments LLC

On April 29, 2019, the Company entered into a royalty and milestone payments purchase agreement (the "Purchase Agreement") with Reedy Creek Investments LLC ("Reedy Creek"), pursuant to which Reedy Creek provided funding to the Company in an initial amount of $25,000, which the Company will use primarily to pursue the development, regulatory approval and commercialization (including through out-license agreements and other third party arrangements) activities for SB206, a topical anti-viral gel being developed for the treatment of molluscum contagiosum, and advancing programmatically such activities with respect to SB204, a once-daily, topical monotherapy being developed for the treatment of acne vulgaris, and SB414, a topical cream-based product candidate being developed for the treatment of atopic dermatitis. Reedy Creek will also provide additional funding to the Company of $10,000 contingent upon the achievement by the Company of SB206 clinical trial success, defined as (i) the achievement, no later than March 31, 2020, of statistically significant rates of complete clearance of lesions for molluscum contagiosum in humans at week 12 in each of the two Phase 3 clinical trials or any other primary endpoint required or accepted by the FDA for the SB206 product; or (ii) equivalent achievement (as agreed upon by the parties).

Pursuant to the Purchase Agreement, the Company will pay Reedy Creek ongoing quarterly payments, calculated based on an applicable percentage per product of any upfront fees, milestone payments, royalty payments or equivalent payments received by the Company pursuant to any out-license agreement for SB204, SB206 or SB414 in the United States, Mexico or Canada, net of any upfront fees, milestone payments, royalty payments or equivalent payments paid by the Company to third parties pursuant to any agreements under which the Company has in-licensed intellectual property with respect to such products in the United States, Mexico or Canada. The applicable percentage used for determining the ongoing quarterly payments, applied to amounts received directly by the Company pursuant to any out-license agreement for each product, ranges from 10% for SB206 to 20% for SB204 and SB414. However, the agreement provides that the applicable percentage for each product will be 25% for fees or milestone payments received by the Company (but not royalty payments received by the Company) until Reedy Creek has received payments under the Purchase Agreement equal to the total funding amount provided by Reedy Creek under the Purchase Agreement. If the Company decides to commercialize any product on its own following regulatory approval, as opposed to commercializing through an out-license agreement or other third party arrangement, the Company will be obligated to pay Reedy Creek a low single digits royalty on net sales of such products.

The Company has determined that the Reedy Creek Purchase Agreement is within the scope of ASC 730-20, *Research and Development Arrangements*. The Company concluded that there has not been a substantive and genuine transfer of risk related to the Purchase Agreement as (i) Reedy Creek has the opportunity to recover its investment regardless of the outcome of the research and development programs within the scope of the agreement (prior to commercialization of any in scope assets through potential out-licensing agreements and related potential future milestone payments); and (ii) there is a presumption that the Company is obligated to pay Reedy Creek amounts equal to its investment based on the related party relationship at the time the parties entered into the Purchase Agreement. The Purchase Agreement is a broad funding arrangement, due to (i) the multi-asset, or portfolio approach including three developmental assets that are within the scope of the arrangement; and (ii) Reedy Creek's approximate 15% ownership of the outstanding shares of common stock of the Company.

As such, the Company has determined that the appropriate accounting treatment under ASC 730-20 is to record the initial proceeds of $25,000 as cash and cash equivalents, as the Company has the ability to direct the usage of funds, and a long-term liability within its classified balance sheet. The long-term liability will remain until the Company receives future milestones from other potential third parties, as defined within the Purchase Agreement, of which 25% will be contractually owed to Reedy Creek. If potential future milestones are received by the Company, and become partly due to Reedy Creek, the corresponding partial repayment to Reedy Creek will result in a ratable reduction of the total long-term obligation to repay the initial purchase price.

Development Funding and Royalties Agreement with Ligand Pharmaceuticals Incorporated

On May 4, 2019, the Company entered into a development funding and royalties agreement (the "Funding Agreement") with Ligand, pursuant to which Ligand provided funding to the Company of $12,000, which the Company will use to pursue the development and regulatory approval of SB206, a topical anti-viral gel being developed for the treatment of molluscum contagiosum.

Pursuant to the Funding Agreement, the Company will pay Ligand up to $20,000 in milestone payments upon the achievement by the Company of certain regulatory and commercial milestones associated with SB206 or any product that incorporates or uses NVN1000, the active pharmaceutical ingredient for the Company's clinical stage product candidates, for the treatment of molluscum contagiosum. In addition to the milestone payments, the Company will pay Ligand tiered royalties ranging from 7% to 10% based on aggregate annual net sales of such products in the United States, Mexico or Canada.

The Company has determined that the Ligand transaction is within the scope of ASC 730-20 as it represents an obligation to perform contractual services for the development of SB206. In addition, the Funding Agreement also states that if all development of SB206 is ceased prior to the first regulatory approval, the Company must pay to Ligand an amount equal to the purchase price less the amount spent in accordance with the development budget on development activities conducted prior to such cessation.

As such, the Company has concluded that the appropriate accounting treatment under ASC 730-20 is to record the initial proceeds of $12,000, as restricted cash, as the funds can only be used for the progression of SB206, and a liability on its condensed consolidated balance sheet. The Company will amortize the liability ratably, based on the Ligand funding as a percentage of the total direct costs incurred by the Company related to the progression of the SB206 program. The ratable Ligand funding will be presented within the consolidated statement of operations as an offset to research and development expenses associated with SB206.

For the three and six months ended June 30, 2019, the Company recorded $2,193 as contra-research and development expense related to the SB206 developmental program, funded by Ligand.

Note 7: Property and Equipment, Net

Property and equipment consisted of the following:

	June 30, 2019	December 31, 2018
Computer equipment	$ 575	$ 577
Furniture and fixtures	305	312
Laboratory equipment	7,446	7,442
Office equipment	339	400
Building related to facility lease obligation	—	10,557
Leasehold improvements	7,053	1,168
Property and equipment, gross	15,718	20,456
Less: Accumulated depreciation and amortization	(4,664)	(4,588)
Total property and equipment, net	$ 11,054	$ 15,868

Depreciation and amortization expense was $518 and $1,021 for the three and six months ended June 30, 2019, respectively, and $408 and $809 for the three and six months ended June 30, 2018, respectively.

See Note 1—Organization and Significant Accounting Policies and Note 8—Commitments and Contingencies regarding the adoption of Topic 842, *Leases*, and its impact to property and equipment, net for the six months ended June 30, 2019.

Note 8: Commitments and Contingencies

Lease Obligations

The Company leases office space and certain equipment under non-cancelable lease agreements.

Prior to January 1, 2019, the Company applied the accounting guidance in ASC 840, *Leases*, to its lease agreements. The leases were reviewed for classification as operating or capital leases. For operating leases, rent was recognized on a straight-line basis over the lease period. For capital leases, the Company recorded the leased asset with a corresponding liability and amortized the asset over the lease term. Payments were recorded as reductions to the liability with an appropriate interest charge recorded based on the then-outstanding remaining liability.

The Company considered the nature of the renovations and the Company's involvement during the construction period of previously leased office space to determine if it is considered to be the owner of the construction project during the construction

period. If the Company determined that it was the owner of the construction project, it was required to capitalize the fair value of the building as well as the construction costs incurred, including capitalized interest, on its consolidated balance sheet along with a corresponding financing liability ("build-to-suit accounting"). Upon completion of the construction of the facility under a build-to-suit lease, the Company assessed whether the circumstances qualified for sales recognition under the sale-leaseback accounting guidance. If the lease met the sale-leaseback criteria, the Company would remove the asset and related financial obligation from the balance sheet and evaluate the lease for treatment as a capital or operating lease. If upon completion of construction, the project did not meet the sale-leaseback criteria, the leased property was treated as an asset financing for financial reporting purposes. The portion of the facility financing obligation representing the principal that was to be repaid in the following 12 months was classified as a current liability in the condensed consolidated balance sheets, with the remaining portion of the obligation classified as a noncurrent liability.

Beginning January 1, 2019, the Company applies the accounting guidance in ASC 842, *Leases.* As such, the Company assesses all arrangements, that convey the right to control the use of property, plant and equipment, at inception, to determine if it is, or contains, a lease based on the unique facts and circumstances present in that arrangement. For those leases identified, the Company determines the lease classification, recognition, and measurement at the lease commencement date. For arrangements that contain a lease the Company: (i) identifies lease and non-lease components; (ii) determines the consideration in the contract; (iii) determines whether the lease is an operating or financing lease; and (iv) recognizes lease Right of Use ("ROU") assets and corresponding lease liabilities. Lease liabilities are recorded based on the present value of lease payments over the expected lease term. The corresponding ROU asset is measured from the initial lease liability, adjusted by (i) accrued or prepaid rents; (ii) remaining unamortized initial direct costs and lease incentives; and (iii) any impairments of the ROU asset. The interest rate implicit in the Company's lease contracts is typically not readily determinable and as such, the Company uses its incremental borrowing rate based on the information available at the lease commencement date, which represents an internally developed rate that would be incurred to borrow, on a collateralized basis, over a similar term, an amount equal to the lease payments in a similar economic environment. The weighted average discount rate utilized on our operating lease liabilities as of June 30, 2019 was 9.85%. The weighted average remaining lease term for our operating leases as of June 30, 2019 was 7.0 years.

Primary Facility Lease

In August 2015, the Company entered into a lease agreement for approximately 51,000 rentable square feet of facility space in Morrisville, North Carolina, commencing in April 2016 (the "Primary Facility Lease"). The initial term of the Primary Facility Lease extends through June 30, 2026. The Company has an option to extend the Primary Facility Lease by five years upon completion of the initial lease term; however, the renewal period was not included in the calculation of the lease obligation. Current contractual base rent payments are $95 per month, subject to a three percent increase annually over the term of the Primary Facility Lease.

Prior to January 1, 2019, the Company applied the accounting guidance in ASC 840. Based on that guidance, the facility was accounted for as an asset financing, with the building asset and related facility financing obligation remaining on the Company's balance sheet. The building asset was being depreciated over a 25 year period and the facility financing obligation was amortized so that the net carrying value of the building asset and the facility financing obligation were to be equivalent at the end of the initial term of the lease agreement. Monthly rental payments were allocated between principal and interest expense associated with the facility financing obligation, as well as grounds rent expense of $8 per month.

The Company had recorded an asset related to the building and construction costs within property and equipment of $10,557 as of December 31, 2018. The non-current facility lease obligation on the Company's condensed consolidated balance sheet was $7,998 as of December 31, 2018. During the three and six months ended June 30, 2018, the Company recognized interest expense related to the primary facility lease of $261 and $522, respectively, and there was $41 of accrued interest included in other accrued expenses as of December 31, 2018.

The Company adopted Topic 842 as of January 1, 2019 using the modified retrospective transition method and initially applied the transition provisions as of January 1, 2019. This transition method allowed the Company to continue to apply the legacy guidance in ASC 840 for periods prior to 2019 and recognize a cumulative-effect adjustment to the opening balance of accumulated deficit as of the date of adoption.

The Company elected the package of transition practical expedients, which, among other things, allowed the Company to keep the historical lease classifications and not have to reassess the lease classification for any existing leases as of the date of adoption. The Company also made an accounting policy election to apply the short-term lease exception, which allows the Company to exclude leases with an initial term of twelve months or less from the consolidated balance sheets.

As a result of the adoption of Topic 842, the Company derecognized $10,557 of building asset (property, plant and equipment), and $7,998 of facility financing obligation associated with previously existing build-to-suit arrangement related to its sole corporate and manufacturing facility. The Company also capitalized leasehold improvements and ROU assets of $5,885 and $1,827, respectively, and recorded lease liabilities for operating leases totaling $6,786, as of January 1, 2019. The capitalized leasehold improvement assets recorded as part of the adoption of Topic 842 were previously included within the derecognized building asset as part of the previous build-to-suit arrangement. The Company also recognized an increase of $714 to accumulated deficit related to its de-recognition of its previously recorded build-to-suit arrangement.

The Company has elected to separate lease components (fixed rent payments) with non-lease components (common-area maintenance costs) on our real estate assets. Fixed lease payments on operating leases are recognized over the expected term of the lease on a straight-line basis. Variable lease expenses that are not considered fixed are expensed as incurred. Fixed and variable lease expense on operating leases is recognized within operating expenses within our condensed consolidated statements of operations. The Company has elected the short-term lease exemption and, therefore, does not recognize a ROU asset or corresponding liability for lease arrangements with an original term of 12 months or less.

Rent expense, including both short-term and variable lease components associated with the primary facility lease, was $273 and $430 for the three and six months ended June 30, 2019, respectively, and $89 and $131 for the three and six months ended June 30, 2018, respectively.

The Company's supplemental non-cash disclosure for its ROU assets obtained in exchange for lease liabilities was $1,827 for the six months ended June 30, 2019.

At January 1, 2019, maturities of operating lease liabilities over each of the next five years and thereafter were as follows:

	Operating Leases
2019	$ 1,170
2020	1,205
2021	1,241
2022	1,278
2023	1,317
Thereafter	3,467
Total minimum lease payments	$ 9,678
Less imputed interest	(2,871)
Total lease liability	$ 6,807

Primary Facility Sublease

In July 2018, the Company and a third-party tenant entered into a sublease of approximately 6,400 square feet of office space at the Company's headquarters. The sublease has a three-year, non-cancellable term and provides for monthly rental income to the Company of approximately $12 per month through July 2021. The Company has classified the sublease as an operating lease pursuant to classification criteria in ASC 842 and is recognizing the rental income on a straight-line basis over the lease term.

Contingencies

From time to time, the Company may have certain contingent liabilities that arise in the ordinary course of business activities. The Company accrues a liability for such matters when it is probable that future expenditures will be made and such expenditures can be reasonably estimated. See *Legal Proceedings* below for further discussion of pending legal claims.

The Company has entered into, and expects to continue to enter into, contracts in the normal course of business with various third parties who support its clinical trials, preclinical research studies and other services related to its development activities. The scope of the services under these agreements can generally be modified at any time, and these agreements can generally be terminated by either party after a period of notice and receipt of written notice. There have been no material contract terminations as of June 30, 2019.

See Note 3—Research and Development Licenses regarding the Company's research and development license agreements.

See Note 6—Research and Development Arrangements regarding the Purchase Agreement with Reedy Creek and the Funding Agreement with Ligand.

Legal Proceedings

In prior filings, the Company reported that it was subject to putative stockholder class action lawsuits that were filed in November 2017 in the United States District Court for the Middle District of North Carolina against the Company and certain of its current and former directors and officers, which were consolidated under the case name *In re Novan, Inc. Securities Litigation*. The consolidated amended complaint filed by the designated lead plaintiff asserted claims for violation of Sections 11 and 15 of the Securities Act of 1933 and Sections 10(b) and 20(a) of the Exchange Act and SEC Rule 10b-5 promulgated thereunder, in connection with statements related to the Company's Phase 3 clinical trials of SB204. On June 14, 2018, the Company filed a motion to dismiss the consolidated amended complaint. On November 30, 2018, a federal magistrate judge entered an order recommending that the district court grant the Company's motion. The plaintiff filed objections to this recommendation and the Company filed a response. On January 28, 2019, the district court adopted the magistrate judge's recommendation, dismissed the action with prejudice and entered judgment in favor of the Company and against the plaintiff. The plaintiff did not appeal this dismissal and judgment. As such, the Company has concluded that this matter is closed.

Other than as described above, the Company is not currently a party to any material legal proceedings and is not aware of any claims or actions pending or threatened against the Company that the Company believes could have a material adverse effect on the Company's business, operating results, cash flows or financial statements. In the future, the Company might from time to time become involved in litigation relating to claims arising from its ordinary course of business.

Compensatory Obligations

In conjunction with the departures of three former Company officers in 2019 and 2018, the Company entered into separation and general release agreements that included separation benefits consistent with the Company's obligations under their previously existing employment agreements for "separation from service" for "good reason." The Company recognized related severance expense of $878 and $332, during the six months ended June 30, 2019 and 2018, respectively. The remaining accrued severance obligation in respect of the three former officers was $423 as of June 30, 2019, which is included in accrued compensation in the accompanying condensed consolidated balance sheet. The Company also recognized non-cash stock compensation expense of $0 and $212 during the six months ended June 30, 2019 and 2018, respectively, related to the accelerated vesting of the former officers' stock options. There was no severance expense or non-cash stock compensation expense in relation to these departures during the three months ended June 30, 2019 and 2018.

In November 2018, the Company realigned its overall employee headcount to reduce certain fixed costs. Total employee severance costs associated with this action are expected to be $306, of which $32 and $93 was expensed during the three and six months ended June 30, 2019, respectively. As of June 30, 2019, severance costs of $103 were accrued in the accompanying consolidated balance sheet.

See Note 11—Share-Based Compensation regarding the contingent award of Stock Appreciation Rights granted in August 2018.

See Note 12—Tangible Stockholder Return Plan regarding the Tangible Stockholder Return Plan adopted in August 2018.

Note 9: Stockholders' Equity

Capital Structure

In conjunction with the completion of the Company's initial public offering in September 2016, the Company further amended its amended and restated certificate of incorporation and amended and restated its bylaws. The amendment provides for 210,000,000 authorized shares of capital stock, of which 200,000,000 shares have been designated as $0.0001 par value common stock and 10,000,000 shares have been designated as $0.0001 par value preferred stock.

Common Stock

The Company's common stock has a par value of $0.0001 per share and consists of 200,000,000 authorized shares as of June 30, 2019 and December 31, 2018. There were 26,069,734 and 26,056,735 shares of voting common stock outstanding as of June 30, 2019 and December 31, 2018, respectively.

The Company had reserved shares of common stock for future issuance as follows:

	June 30, 2019	December 31, 2018
Outstanding stock options (Note 11)	1,622,800	1,671,666
Warrants to purchase common stock issued in January 2018 Offering (Note 10)	10,000,000	10,000,000
For possible future issuance under 2016 Stock Plan (Note 11)	564,410	699,376
	12,187,210	12,371,042

Preferred Stock

The Company's amended and restated certificate of incorporation provides the Company's board of directors with the authority to issue $0.0001 par value preferred stock from time to time in one or more series by adopting a resolution and filing a certificate of designations. Voting powers, designations, preferences, dividend rights, conversion rights and liquidation preferences shall be stated and expressed in such resolutions. There were 10,000,000 shares designated as preferred stock and no shares outstanding as of June 30, 2019 and December 31, 2018.

Note 10: Warrants

The Company evaluates its financial assets and liabilities subject to fair value measurements on a recurring basis to determine the appropriate level in which to classify them for each reporting period, pursuant to the fair value measurements policy described below. This determination requires significant judgments to be made.

For warrants that are issued or modified and there is a deemed possibility that the Company may have to settle them in cash, the Company records the fair value of the warrants at the initial measurement date, or date of issuance, and each balance sheet date thereafter. Changes in the estimated fair value of the warrants are recognized as a non-cash gain or loss on the consolidated statements of operations and comprehensive loss.

The Company has categorized its financial instruments, based on the priority of the inputs used to value the investments, into a three-level fair value hierarchy. The fair value hierarchy gives the highest priority to quoted prices in active markets for identical assets or liabilities (Level 1) and lowest priority to unobservable inputs (Level 3). If the inputs used to measure the investments fall within different levels of the hierarchy, the categorization is based on the lowest level input that is significant to the fair value measurement of the investment. The fair value of warrants falls within Level 3 of the hierarchy as there is currently no active trading market.

On January 9, 2018, the Company sold an aggregate of 10,000,000 shares of common stock and issued warrants to purchase up to 10,000,000 shares of common stock at a public offering price of $3.80 per share of common stock and accompanying warrant. Pursuant to the warrant agreement and form of warrant dated January 9, 2018 (the "Warrant Agreement"), the warrant exercise price is $4.66 per share and the warrants will expire four years from the date of issuance.

The Warrant Agreement includes a provision whereby the exercisability of the warrants may be limited if, upon exercise, the warrant holder or any of its affiliates would beneficially own more than 4.99% (or an amount up to 9.99% if the holder so elects) of the Company's common stock. The Warrant Agreement also provides that the aforementioned exercise limitation provision is not applicable to any warrant holder that beneficially owns 10.0% or more of the Company's outstanding common stock immediately following the closing of the January 2018 Offering and the issuance of the accompanying warrants.

If, at any time the warrants are outstanding, any fundamental transaction occurs, as described in the Warrant Agreement and generally including any consolidation or merger whereby another entity acquires more than 50% of the Company's outstanding common stock, or the sale of all or substantially all of its assets, the successor entity must assume in writing all of the obligations to the warrant holders. Additionally, in the event of a fundamental transaction, the Warrant Agreement provides that each warrant holder will have the right to require the Company, or its successor, to repurchase the warrants for an amount of cash equal to the Black-Scholes value of the remaining unexercised portion of the warrants. Further, the Warrant Agreement states that the volatility input used to derive such Black-Scholes value is the greater of the Company's historical volatility or 100%. Due to the provision that the warrant holder has the option to receive a cash settlement, equal to the Black-Scholes fair value of the remaining unexercised portion of the warrant, in the event that there is a fundamental transaction, the Company has classified the warrants as liabilities in accordance with ASC 480, *Distinguishing Liabilities from Equity*.

There were no exercises of warrants during the three and six months ended June 30, 2019 and 2018. The following table presents the Company's warrant liability measured at fair value on a recurring basis as of June 30, 2019 and December 31, 2018:

	June 30, 2019			
	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)	Total
Liabilities:				
Warrant liability	$ —	$ —	$ 11,430	$ 11,430
Total liabilities at fair value	$ —	$ —	$ 11,430	$ 11,430

	December 31, 2018			
	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)	Total
Liabilities:				
Warrant liability	$ —	$ —	$ 1,240	$ 1,240
Total liabilities at fair value	$ —	$ —	$ 1,240	$ 1,240

The fair value of the common stock warrants is estimated using a valuation model that approximates a Monte Carlo simulation model, which takes into consideration the probability of a fundamental transaction occurring during the contractual term of the warrants. This valuation model, which includes inputs classified as Level 3 in the fair value hierarchy, estimated a fair value of $1.14 and $0.12 per common stock warrant as of June 30, 2019 and December 31, 2018, respectively. The inputs to the valuation model that approximates a Monte Carlo simulation model are presented below.

	June 30, 2019	December 31, 2018
Estimated dividend yield	—	—
Expected volatility	92.51%-100%	77.74%-100%
Risk-free interest rate	1.76%	2.46%
Expected term (years)	2.53	3.02
Fair value per share of common stock underlying the warrant	$ 2.70	$ 0.83
Warrant exercise price	$ 4.66	$ 4.66

Due to the Company's limited historical stock price data, the Company estimates stock price volatility based on the actual historical volatility of a group of comparable publicly traded companies observed over a historical period equal to the expected life of the warrant.

The increase in fair value of the warrants of $9,802 and $10,190 for the three and six months ended June 30, 2019, respectively, and decrease in fair value of the warrants of $711 and $4,269 for the three and six months ended June 30, 2018, respectively, are included as components of other income and expense in the Company's condensed consolidated statements of operations and comprehensive loss. The change in the warrant liability and the corresponding unrealized loss/gain recognized during the three and six months ended June 30, 2019 and 2018, respectively, is primarily due to the fluctuations in the market price of the Company's underlying common stock from the date of issuance to June 30, 2019, in addition to fluctuations in the other valuation model inputs.

The following table summarizes the change in the fair value of the warrant liability, which is valued using significant unobservable Level 3 inputs, for the three and six months ended June 30, 2019 and 2018:

	Three Months Ended June 30,		Six Months Ended June 30,	
	2019	2018	2019	2018
Beginning Balance	$ 1,628	$ 14,248	$ 1,240	$ —
Issuance	—	—	—	17,806
Revaluations Included In Earnings	9,802	(711)	10,190	(4,269)
Exercises	—	—	—	—
Expirations	—	—	—	—
Ending Balance	$ 11,430	$ 13,537	$ 11,430	$ 13,537

Note 11: Share-Based Compensation

2016 Stock Plan

During the six months ended June 30, 2019, the Company continued to administer and grant awards under the 2016 Incentive Award Plan (the "2016 Plan"), the Company's only active equity incentive plan. Certain of the Company's outstanding and exercisable stock options remain subject to the terms of the Company's 2008 Stock Plan (the "2008 Plan"), which is the predecessor to the 2016 Plan and became inactive upon adoption of the 2016 Plan effective September 20, 2016.

On August 16, 2018, the board of directors approved an amendment to the 2016 Plan, subject to stockholder approval, to increase the number of shares reserved under the 2016 Plan by 1,000,000 and to increase the award limit on the maximum aggregate number of shares of the Company's common stock that may be granted to any one person during any calendar year from 250,000 to 1,000,000 shares of the Company's common stock. All other material terms of the 2016 Plan otherwise remain unchanged.

Stock Appreciation Rights

On August 8, 2018, the Company entered into an employment agreement with G. Kelly Martin (the "Employment Agreement"). The Employment Agreement provided for 1,000,000 SARs granted on a contingent basis that shall be considered irrevocably forfeited and voided in full if the Company fails to obtain stockholder approval for an amendment to the 2016 Plan, described above. If such approval is not obtained, the Company will pay Mr. Martin the cash equivalent of the value of the SARs.

The SARs entitle Mr. Martin to a payment (in cash, shares of common stock or a combination of both) equal to the fair market value of one share of the Company's common stock on the date of exercise less the exercise price of $3.80 per share. The SARs will vest in full on February 1, 2020. The SARs will be deemed automatically exercised and settled as of February 1, 2020, provided Mr. Martin remains continuously employed with the Company through such date unless vesting is otherwise expressly accelerated pursuant to the SAR Agreement.

Due to the cash settlement feature of the SAR grant, subject to stockholder approval, these share-based payment awards should be classified as liabilities and the amount of compensation cost recognized must be based on the fair value of those liabilities. Therefore, the obligation is recorded as a liability on the Company's condensed consolidated balance sheet at the estimated fair value on the date of issuance and is re-valued each subsequent reporting period with adjustments to the fair value recognized as share-based compensation expense in the condensed consolidated statements of operations.

During the three and six months ended June 30, 2019, the Company recorded employee share-based compensation expense related to the SARs of $409 and $416, respectively. There was no share-based compensation expense related to SARs during the three and six months ended June 30, 2018. In addition, the corresponding obligation is recorded within other long-term liabilities on the Company's condensed consolidated balance sheet as of June 30, 2019.

See Note 14—Subsequent Events regarding the Company's 2019 Annual Meeting of Stockholders held on July 31, 2019 and the proposal to amend the 2016 Plan.

Inducement Grants

In May 2018, the Company awarded nonstatutory stock options to purchase an aggregate of 100,500 shares of common stock to newly-hired employees, not previously employees or directors of the Company, as inducements material to the individuals' entering into employment with the Company within the meaning of Nasdaq Listing Rule 5635(c)(4) (the "Inducement Grants"). The Inducement Grants have a grant date of May 31, 2018 and an exercise price of $3.15 per share. The Inducement Grants were awarded outside of the Company's 2016 Plan, pursuant to Nasdaq Listing Rule 5635(c)(4), but have terms and conditions generally consistent with the Company's 2016 Plan and vest over three years, with one-third of the award vesting on each annual anniversary of the employee's employment commencement date, subject to the employee's continued service as an employee through the vesting period.

Stock Compensation Expense

During the three and six months ended June 30, 2019, the Company recorded employee share-based compensation expense for equity-based awards of $1,540 and $1,754, respectively. During the three and six months ended June 30, 2018, the Company recorded employee share-based compensation expense for equity-based awards of and $546 and $1,433, respectively. Total share-based compensation expense for equity-based awards included in the condensed consolidated statements of operations and comprehensive loss is as follows:

	Three Months Ended June 30,		Six Months Ended June 30,	
	2019	2018	2019	2018
Research and development	$ 520	$ 283	$ 581	$ 703
General and administrative	1,020	263	1,173	730
	$ 1,540	$ 546	$ 1,754	$ 1,433

Stock option activity for the six months ended June 30, 2019 is as follows:

	Shares Subject to Outstanding Options	Weighted-Average Exercise Price Per Share	Weighted-Average Remaining Contractual Term (in years)	Aggregate Intrinsic Value
Options outstanding as of December 31, 2018	1,671,666	$ 5.42		
Options granted	345,500	2.10		
Options forfeited	(381,367)	7.29		
Options exercised	(12,999)	0.76		
Options outstanding as of June 30, 2019	1,622,800	$ 4.31	8.16	$ 246

As of June 30, 2019, there were a total of 1,622,800 stock options outstanding, including 100,500 inducement grants awarded in May 2018. In addition, there were 564,410 shares available for future issuance under the 2016 Plan as of June 30, 2019.

Note 12: Tangible Stockholder Return Plan

Performance Plan

On August 2, 2018, the Company's board of directors approved and established the Tangible Stockholder Return Plan, which is a performance-based long-term incentive plan (the "Performance Plan"). The Performance Plan was effective immediately upon approval and expires on March 1, 2022. The Performance Plan covers all employees, including the Company's executive officers, consultants and other persons deemed eligible by the Company's compensation committee. The core underlying metric of the Performance Plan is the achievement of two share price goals for the Company's common stock, which if achieved, would represent measurable increases in stockholder value.

The Performance Plan is tiered, with two separate tranches, each of which has a distinct share price target (measured as the average publicly traded share price of the Company's common stock on the Nasdaq stock exchange for a 30 consecutive trading day period) that will, if achieved, trigger a distinct fixed bonus pool. The share price target for the first tranche and related bonus pool are $11.17 per share and $25,000, respectively. The share price target for the second tranche and related bonus pool are $25.45 per share and $50,000, respectively. The compensation committee has discretion to distribute the bonus pool related to each tranche among eligible participants by establishing individual minimum bonus amounts before, as well as by distributing the remainder of the applicable pool after, the achievement of each tranche specific share price target. Otherwise, if the Company does not achieve one or both related share price targets, as defined, no portion of the bonus pools will be paid.

The Performance Plan provides for the distinct fixed bonus pools to be paid in the form of cash. However, the compensation committee has discretion to pay any bonus due under the Performance Plan in the form of cash, shares of the Company's common stock or a combination thereof, provided that the Company's stockholders have approved the reservation of shares of the Company's common stock for such payment.

The Performance Plan permits the compensation committee to make bonus awards subject to varying payment terms, including awards that vest and are payable immediately upon achieving an applicable share price target as well as awards that pay over an extended period (either with or without ongoing employment requirements). The Performance Plan contemplates that no bonus award payments will be delayed beyond 24 months for named executive officers or more than 12 months for all other participants.

For purposes of determining whether a share price target has been met, the share price targets will be adjusted in the event of any stock splits, cash dividends, stock dividends, combinations, reorganizations, reclassifications or similar events. In the event of a change in control, as defined in the Performance Plan, during the term of the Performance Plan, a performance bonus pool will be generated based on pro-rata progress toward achievement of the applicable share price target through the date of the change in control.

The Company has concluded that the Performance Plan is within the scope of ASC 718, *Compensation—Stock Compensation* as the underlying plan obligations are based on the potential attainment of certain market share price targets of the Company's common stock. Any awards under the Performance Plan would be payable, at the discretion of the Company's compensation committee following the achievement of the applicable share price target, in cash, shares of the Company's common stock, or a combination thereof, provided that, prior to any payment in common stock, the Company's stockholders have approved the reservation of shares of the Company's common stock for such payment.

ASC 718 requires that a liability-based award should be classified as a liability on the Company's condensed consolidated balance sheets and the amount of compensation cost recognized should be based on the fair value of the liability. When a liability-based award includes both a service and market condition, the market condition is taken into account when determining the appropriate method to estimate fair value and the compensation cost is amortized over the estimated service period. Therefore, the liability associated with the Performance Plan obligation is recorded within other long-term liabilities on the Company's condensed consolidated balance sheets at the estimated fair value on the date of issuance and is re-valued each subsequent reporting period end. The Company recognizes share-based compensation expense within operating expenses in the condensed consolidated statements of operations, including adjustments to the fair value of the liability-based award, on a straight-line basis over the requisite service period.

The fair value of obligations under the Performance Plan are estimated using a Monte Carlo simulation approach. The Company's common stock price is simulated under the Geometric Brownian Motion framework under each simulation path. The other assumptions for the Monte Carlo simulation include the risk-free interest rate, estimated volatility and the expected term. Expected stock price volatility is based on the actual historical volatility of a group of comparable publicly traded companies observed over a historical period equal to the expected remaining life of the plan. The fair value of the underlying common stock is the published closing market price on the Nasdaq Global Market as of each reporting date. The risk-free interest rate is based on the U.S. Treasury yield curve in effect on the date of valuation equal to the remaining expected life of the plan. The dividend yield percentage is zero because the Company does not currently pay dividends, nor does it intend to do so during the expected term of the plan. The expected life of bonus awards under the Performance Plan is assumed to be equivalent to the remaining contractual term based on the estimated service period including the service inception date of the plan participants and the contractual end of the Performance Plan.

During the three and six months ended June 30, 2019, the Company recorded employee share-based compensation expense related to the Performance Plan of $885 and $924, respectively.

Note 13: Related Party Transactions

Members of the Company's board of directors held 1,002,776 and 782,083 shares of the Company's common stock as of June 30, 2019 and December 31, 2018, respectively.

In June 2017, G. Kelly Martin was appointed as the Company's Interim Chief Executive Officer before being named as the Company's Chief Executive Officer in April 2018. Mr. Martin continues to serve as a member of the Company's board of directors and previously served as chief executive officer of Malin Corporation plc until October 1, 2017. Malin Corporation plc is the parent company of Malin Life Sciences Holdings Limited ("Malin"), which beneficially owns approximately 10% of the Company's outstanding common stock.

Two of the Company's directors during 2018 were also affiliated with Malin. Sean Murphy, who resigned from the Company's board in September 2018, was an executive officer and a director of Malin, and an executive vice president of Malin Corporation plc. In addition, Robert A. Ingram, the Company's executive chairman of the board, was also a director of Malin Corporation plc until July 2018.

Cilatus BioPharma

During the three and six months ended June 30, 2019, the Company incurred costs of $78 and $172, respectively, in relation to a development and manufacturing consulting agreement with Cilatus BioPharma AG ("Cilatus Agreement"), which is majority-owned by Malin Corporation plc. During the three and six months ended June 30, 2018, the Company incurred costs of $172 and $370, respectively, under the Cilatus Agreement. These costs are expensed as incurred and are classified as research and development expenses in the accompanying condensed consolidated statements of operations and comprehensive loss. Estimated fees remaining under the current statements of work are approximately $163, and are expected to be incurred throughout the remainder of 2019.

Health Decisions

On October 25, 2018, the Company announced the formation of a dedicated women's health business unit as well as a foundational collaboration with Health Decisions, Inc. ("Health Decisions"). Health Decisions is a full-service contract research organization specializing in clinical studies of therapeutics for women's health indications. The Company's women's health business unit is led by Paula Brown Stafford, who also is a shareholder and serves on the board of directors of Health Decisions.

Reedy Creek

Reedy Creek beneficially owns approximately 15% of the Company's outstanding common stock and approximately 3.9 million warrants, all of which was acquired during the Company's public offering of common stock and accompanying warrants in January 2018. Accordingly, Reedy Creek is a related party of the Company. The purchase agreement with Reedy Creek, described in Note 6—Research and Development Arrangements, was evaluated and approved pursuant to the Company's existing related party transactions policy.

Note 14: Subsequent Events

Stock Appreciation Rights

As described in Note 11—Share-Based Compensation, on August 8, 2018, the Company entered into the Employment Agreement with G. Kelly Martin. The Employment Agreement provided for 1,000,000 SARs granted on a contingent basis that would have been irrevocably forfeited and voided in full if the Company had failed to obtain stockholder approval for an amendment to the 2016 Plan ("the 2016 Plan Amendment"). If such approval had not been obtained, the Company would have been required to pay Mr. Martin the cash equivalent of the value of the SARs.

On July 31, 2019, at the Company's 2019 Annual Meeting of Stockholders, stockholders approved the 2016 Plan Amendment, which (i) increased the number of shares of the Company's common stock reserved for issuance under the 2016 Plan by 1,000,000 shares; and (ii) increased the limit on the number of awards that may be granted to any one person in any year. As such, with stockholder approval of the 2016 Plan Amendment, the SARs detailed within the Employment Agreement have been awarded to Mr. Martin and are no longer considered to be granted on a contingent basis.

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

You should read the following discussion and analysis of our financial condition and results of operations in conjunction with our condensed consolidated financial statements and notes thereto included in this Quarterly Report on Form 10-Q and our audited financial statements and notes thereto for the year ended December 31, 2018 included in our Annual Report on Form 10-K filed with the Securities and Exchange Commission, or SEC, on March 27, 2019.

In addition to historical information, this discussion and analysis contains forward-looking statements within the meaning of Section 21E of the Securities Exchange Act of 1934, as amended, or the Exchange Act. All statements other than statements of historical facts contained in this Quarterly Report on Form 10-Q are forward-looking statements. These statements are often identified by the use of words such as "believe," "contemplate," "continue," "due," "goal," "objective," "plan," "seek," "target," "expect," "believe," "anticipate," "intend," "may," "will," "would," "could," "should," "potential," "predict," "project," or "estimate," and similar expressions or variations. These statements are based on the beliefs and assumptions of our management based on information currently available to management. Forward-looking statements involve known and unknown risks, uncertainties and other factors that may cause our actual results, performance or achievements to be materially different from any future results, performance or achievements expressed or implied by the forward-looking statements. Except as may be required by law, we undertake no obligation to update any forward-looking statements to reflect events or circumstances after the date of such statements.

These forward-looking statements are subject to numerous risks, including, without limitation, the following:

- *We will need substantial additional funding and as of June 30, 2019, we had an accumulated deficit of $198.2 million. If we are unable to raise capital when needed, we would be forced to delay, reduce, terminate or eliminate our product development programs, or eventual commercialization efforts.*
- *We have entered into and rely on, and may enter into and rely on other, strategic relationships for the further development and commercialization of our product candidates and if we are unable to enter into such relationships on favorable terms or at all, or if such relationships are unsuccessful, if disputes arise between us and our strategic partners or if we fail to trigger contingent payments under such strategic relationships, we may be unable to realize the potential economic benefit of those product candidates.*
- *Clinical drug development involves a lengthy and expensive process with an uncertain outcome, and results of earlier studies and trials may not be predictive of future trial results.*
- *Delay or termination of planned clinical trials for our product candidates could result in unplanned expenses or significantly adversely impact our commercial prospects with respect to, and ability to generate revenues from, such product candidates.*
- *We may not be able to achieve the objectives described in the section entitled "Overview—Key Product Candidate Development Updates" below. The results of any further development activities may not be sufficient to support a new drug application, or NDA, submission for any of our product candidates, or regulatory approval of our product candidates.*
- *The regulatory approval processes of the Food and Drug Administration, or FDA, are lengthy, time-consuming and inherently unpredictable, and if we are ultimately unable to obtain regulatory approval for our product candidates, our business will be substantially harmed.*
- *We specialize solely in developing nitric oxide-based therapeutics to treat a range of diseases with significant unmet needs, and if we do not successfully achieve regulatory approval for any of our product candidates or successfully commercialize them, we may not be able to continue as a business.*
- *The issuance of shares upon exercise of our outstanding warrants and options may cause substantial dilution to our existing stockholders and reduce the trading price of our common stock.*
- *As a result of our operating losses and negative cash flows from operations, the report of our independent registered public accounting firm on our December 31, 2018 financial statements included an explanatory paragraph indicating that there is substantial doubt about our ability to continue as a going concern.*
- *We rely on third parties to conduct some of our preclinical studies and all of our clinical trials. If these third parties do not successfully carry out their contractual duties or meet expected deadlines, we may be unable to obtain regulatory approval for or commercialize any of our product candidates.*

- *We currently manufacture clinical trial materials internally and we intend to utilize third parties, including Orion Corporation, or Orion, to manufacture components of our clinical trial materials and, potentially, commercial supplies of any approved product candidates. If we do not have sufficient quantities of clinical trial materials at acceptable quality levels and within established timelines, it could adversely impact our development and potential future commercialization of any of our product candidates or result in our breaching our obligations to others.*
- *Unexpected delays in our ability to manufacture our NVN1000 active pharmaceutical ingredient, or the associated drug product in a deliverable form, in our facility or at a third party manufacturer for support of our development and/or commercialization activities could adversely affect our development and commercialization timelines and result in increased costs of our development programs.*
- *We intend to rely on third parties to manufacture raw materials and drug product components utilized in clinical trial materials for us and parties with which we contract. Failure to transfer technology and processes to a third party effectively or failure of those third parties to obtain approval of and maintain compliance with the FDA or comparable regulatory authorities, to provide us with sufficient quantities of raw materials and drug product components or to provide such raw materials or drug product components at acceptable quality levels or prices could adversely impact our development and potential future commercialization of any of our product candidates or result in our breaching our obligations to others.*
- *Our product candidates may pose safety issues, cause adverse events, have side effects or have other properties that could delay or prevent their regulatory approval, limit the commercial profile of an approved label or result in significant negative consequences following marketing approval, if any.*
- *Our product candidates, if approved, will face significant competition, and our failure to effectively compete may prevent us from achieving significant market penetration.*
- *If we are unable to obtain and maintain patent protection for our product candidates, or if the scope of the patent protection obtained is not sufficiently broad, our competitors could develop and commercialize technology and products similar or identical to ours, and our ability to successfully commercialize our technology and product candidates may be impaired.*
- *Changes to our leadership team or operational resources could prove disruptive to our operations and have adverse consequences for our business and operating results.*
- *We recently broadened the focus of our product development strategy, and there can be no guarantee that these areas of our platform will be successful or the most profitable.*

For a further discussion of risks that could cause or contribute to differences between actual results and those implied by forward-looking statements, see the "Risk Factors" section of the Annual Report on Form 10-K filed with the SEC on March 27, 2019.

Novan® is a registered trademark of our company in the United States. This Quarterly Report on Form 10-Q also includes trademarks, trade names and service marks that are the property of other organizations. Solely for convenience, our trademarks and trade names referred to in this Quarterly Report on Form 10-Q appear without any "™" or "®" symbol, but those references are not intended to indicate, in any way, that we will not assert, to the fullest extent under applicable law, our rights or the rights of any applicable licensor, to these trademarks and trade names.

Overview

We are a clinical development-stage biotechnology company focused on leveraging nitric oxide's naturally occurring anti-microbial and immunomodulatory mechanisms of action to treat a range of diseases with significant unmet needs. Nitric oxide plays a vital role in the natural immune system response against microbial pathogens and is a critical regulator of inflammation. Our ability to harness nitric oxide and its multiple mechanisms of action has enabled us to create a platform with the potential to generate differentiated product candidates.

The two key components of our nitric oxide platform are our proprietary Nitricil technology, which drives the creation of new chemical entities, or NCEs, and our formulation science, both of which we use to tune our product candidates for specific indications. Our ability to deploy nitric oxide in a solid form, on demand and in localized formulations allows us the potential to improve patient outcomes in a variety of diseases.

We are advancing strategic development programs in the field of dermatology, while also further expanding the platform into women's health and gastroenterological, or GI, therapeutic areas. We have clinical-stage dermatology drug candidates with multi-factorial (SB204), anti-viral (SB206), anti-fungal (SB208) and anti-inflammatory (SB414) mechanisms of action. We are also conducting preclinical work on NCEs and formulations for oncovirus-mediated diseases in the women's health field and for inflammatory diseases in the GI field. Further advancement of these development activities is dependent upon our ability to access additional capital. Additional capital may potentially include (i) non-dilutive sources, such as partnerships, collaborations, licensing, grants or other strategic relationships; or (ii) equity or debt financings, which could cause dilution. We are actively pursuing these capital sourcing pathways through ongoing business development discussions around our late-stage assets and the broader dermatology platform.

As of June 30, 2019, we had a total cash, cash equivalents and restricted cash balance of $32.8 million and positive working capital of $14.1 million. As described below in "Business Updates", in late April 2019 and early May 2019 we entered into (i) a royalty and milestone payments purchase agreement with a stockholder providing $25.0 million of immediate funding, with an additional $10.0 million contingent upon achieving successful top-line results of the SB206 Phase 3 clinical trials no later than March 31, 2020; and (ii) a development funding and royalties agreement with a corporate partner providing $12.0 million of immediate funding. We believe that our existing cash, cash equivalents and restricted cash balance, including the $25.0 million and $12.0 million received through research and development arrangements, and expected contractual payments to be received in connection with previous licensing agreements will (i) provide us with adequate liquidity to fund our planned operating needs into the first quarter of 2020, including through expected top-line results of the Phase 3 clinical program for molluscum contagiosum, or molluscum, targeted in the first quarter of 2020, or before; and (ii) into the second quarter of 2020, if paired with the potential $10.0 million funding contingent upon achieving successful top-line results of the SB206 Phase 3 clinical trials no later than March 31, 2020.

We expect that we will continue to incur substantial expenses as we continue clinical trials and preclinical studies for, and research and development of, our product candidates and maintain, expand and protect our intellectual property portfolio. We will need additional funding to continue our operating activities and make further advancements in our drug development programs.

Our near-term programmatic focus remains on our molluscum (SB206) and atopic dermatitis (SB414) programs. We conducted and completed our SB206 Phase 2 trial for the treatment of molluscum in December 2018 and in early March 2019, completed an end-of Phase 2 meeting with the FDA and received written minutes. During the second quarter of 2019, we commenced the Phase 3 pivotal development program for the treatment of molluscum, and top line efficacy and safety results are targeted no later than early in the first quarter of 2020. We have completed two complementary Phase 1b clinical trials with SB414 in patients with psoriasis and atopic dermatitis. During the second quarter of 2019, we initiated non-clinical studies with SB414 for atopic dermatitis to support a Phase 2 program launch, with clinical startup procedures targeted to initiate in the fourth quarter of 2019.

Key Product Candidate Development Updates

SB206, a Topical Anti-viral Treatment for Viral Skin Infections

We are developing SB206 as a topical anti-viral gel for the treatment of viral skin infections, with a current focus on molluscum contagiosum. Molluscum is a contagious skin infection caused by the *molluscipoxvirus*. Molluscum affects approximately six million people in the U.S. annually. The greatest incidence is in children aged one to 14 years. The average time to resolution is 13 months, however, 13% of children experience lesions that may not resolve in 24 months. There is no FDA-approved treatment for molluscum. More than half of patients diagnosed with the infection are untreated. The majority of patients that receive treatment are treated with painful procedures and the remaining are often prescribed products indicated for the treatment of external genital warts.

We believe that observational learnings from an in-licensed topical nitric oxide technology study showing clinically meaningful complete clearance rates of baseline molluscum lesions, combined with our SB206 program knowledge, provided a logical pathway for SB206 development in the molluscum indication. We submitted an investigational new drug application, or IND, to the FDA in December 2017 and initiated a Phase 2 clinical trial utilizing SB206 for the treatment of molluscum in the first quarter of 2018. The Phase 2 multi-center, randomized, double-blind, vehicle-controlled, ascending dose clinical trial evaluated the efficacy, safety and tolerability of SB206 in 256 patients, ages 2 and above, with molluscum. Patients were treated with one of three concentrations of SB206 or vehicle for up to 12 weeks. The primary endpoint was the proportion of patients achieving complete clearance of all molluscum lesions at Week 12. We announced top-line results from this Phase 2 clinical trial in the fourth quarter of 2018. SB206 demonstrated statistically significant results in the clearance of all molluscum lesions at Week

12, with signs of efficacy evident as early as Week 2 with the 12% once-daily dose. The safety and tolerability profiles were favorable overall with no serious adverse events reported, including the most effective dose, SB206 12% once-daily.

With the full results from this Phase 2 trial made available, we held an end-of-Phase 2 (Type B) meeting with the FDA in early March 2019. Based on this meeting and the written minutes received, we commenced the Phase 3 development program for molluscum including two pivotal clinical trials in the second quarter of 2019 with SB206 12% once-daily as the active treatment arm. The Phase 3 program consists of two multi-center, randomized, double-blind, vehicle-controlled studies to evaluate the efficacy and safety of SB206 12% once-daily in approximately 680 patients (2:1 active:vehicle randomization), ages 6 months and above, with molluscum. Patients will be treated once-daily with SB206 12% or Vehicle Gel once daily for a minimum of 4 weeks and up to 12 weeks to all treatable lesions (baseline and new). There will be visits at Screening/Baseline, Week 2, Week 4, Week 8, Week 12 and safety follow-up at Week 24. The primary endpoint is the proportion of patients achieving complete clearance of all molluscum lesions at Week 12. Both Phase 3 trials began dosing patients in June 2019. We target top line efficacy and safety results no later than early in the first quarter of 2020.

SB414, a Topical Cream for the Treatment of Inflammatory Skin Diseases

In 2018, we completed two complementary Phase 1b clinical trials with SB414 in patients with atopic dermatitis and psoriasis. The design of these complementary trials was to evaluate the safety, tolerability and pharmacokinetics of SB414. The trials were also designed to assess overall and specific target engagement through a reduction of key inflammatory biomarkers, also known as pharmacodynamic assessment.

Atopic Dermatitis

We initiated a Phase 1b trial with SB414 in adults with mild-to-moderate atopic dermatitis in December 2017. In the Phase 1b trial, 48 adults with mild-to-moderate atopic dermatitis with up to 30% body surface area at baseline, were randomized to receive one of 2% SB414 cream, 6% SB414 cream, or vehicle, twice daily for two weeks. In the complementary Phase 1b trial for mild-to-moderate chronic plaque psoriasis, 36 adults received SB414 6% cream or vehicle twice daily for four weeks.

We received and analyzed the preliminary top line results from the Phase 1b clinical trials during the second and third quarters of 2018. In the atopic dermatitis trial, biomarkers from the Th2, Th17 and Th22 inflammatory pathways known to be highly relevant and indicative of atopic dermatitis, including Interleukin-13, or IL-13, IL-4R, IL-5, IL-17A and IL-22, were downregulated after two weeks of treatment with SB414 2%. The changes in Th2 and Th22 biomarkers and clinical efficacy assessed as the percent change in Eczema Area Severity Index scores were highly correlated in the SB414 2% group. Additionally, the proportion of patients achieving a greater than or equal to 3-point improvement on the pruritus (itch) numeric rating scale after two weeks of treatment was greater for patients treated with SB414 2% compared to patients treated with vehicle.

The 2% or 6% doses of SB414 in the trial did not result in any serious adverse events, and SB414 2% was more tolerable with no patients discontinuing treatment in the trial due to application site reactions. SB414 at the 6% dose was not consistently effective in reducing biomarkers across both the atopic dermatitis and psoriasis trials. This lack of consistent biomarker movement could potentially be explained by the increased irritation score experienced by patients treated with SB414 6%. Additionally, SB414 6% showed detectable systemic exposure in a subset of patients, which cleared in nearly all affected patients within 12 hours, in both the atopic dermatitis and psoriasis trials. Given the successful downregulation of key biomarkers, favorable tolerability and lack of systemic exposure with SB414 2%, we initiated non-clinical studies in the second quarter of 2019 to support the Phase 2 program launch, with clinical startup procedures targeted to initiate in the fourth quarter of 2019. We expect that we will need to obtain additional financing or strategic partnering in order to complete the Phase 2 clinical program.

Psoriasis

We initiated clinical development of SB414, our first use of our nitric oxide platform in the field of immunology by dosing the first patient in October 2017 in a Phase 1b clinical trial to evaluate SB414 in a cream for the treatment of psoriasis. Earlier in 2017, we presented mechanistic evidence for SB414, demonstrating a statistically significant reduction in composite psoriasis scores and an inhibition of IL-17A and IL-17F in an animal model.

The purpose of the Phase 1b trial was to evaluate safety and to assess target engagement through a reduction of key pro-inflammatory biomarkers like interleukin-17, or IL-17, before progressing to Phase 2 clinical trials. According to a recent peer-reviewed article in the British Journal of Dermatology, IL-17 is known to be or is likely to be related to the mechanism and severity of a number of inflammatory skin disorders, including psoriasis, acne, atopic dermatitis, rosacea and alopecia areata.

In the Phase 1b trial for mild-to-moderate chronic plaque psoriasis, 36 adults received SB414 6% cream or vehicle twice daily for four weeks. We received and analyzed the preliminary top line results from this Phase 1b clinical trial during the second and third quarters of 2018. SB414 at the 6% dose did not result in any serious adverse events, but SB414 at the 6% dose was not consistently effective in reducing biomarkers across the trial. This lack of consistent biomarker movement could potentially be explained by the increased irritation score experienced by patients treated with SB414 6%. Additionally, SB414 6% showed detectable systemic exposure in a subset of patients, which cleared in nearly all affected patients within 12 hours. Based on the results of the Phase 1b trial in psoriasis, we will potentially explore the use of lower doses of SB414 in psoriasis, subject to obtaining additional financing or strategic partnering.

SB204, for the Treatment of Acne Vulgaris

In the second quarter of 2018, we conducted a Type C meeting to further discuss the path forward for our SB204 candidate and possible Phase 3 programs for the treatment of acne vulgaris with the FDA, and the potential for proceeding with a more narrowly defined patient segmentation. In that meeting, our focus was centered specifically on the severe patient population. In the third quarter of 2018, the FDA provided feedback in their minutes on two paths forward for the acne indication, confirming the need for one additional pivotal trial for moderate-to-severe acne patients prior to a NDA submission or, as an alternative, additional preliminary trials for a severe-only patient population.

Following receipt of FDA feedback via written minutes, we have determined that the most pragmatic development pathway for us will be to conduct one additional pivotal Phase 3 trial in moderate-to-severe acne patients. We have completed our clinical development plan for this additional trial and further advancement of this program is subject to obtaining additional financing or strategic partnering.

Business Updates

Royalty and Milestone Payments Purchase Agreement with Reedy Creek Investments LLC

On April 29, 2019, we entered into a royalty and milestone payments purchase agreement, or the Purchase Agreement, with Reedy Creek Investments LLC, or Reedy Creek, pursuant to which Reedy Creek provided us funding in an initial amount of $25.0 million, which we will use primarily to pursue the development, regulatory approval and commercialization (including through out-license agreements and other third party arrangements) activities for SB206, for the treatment of molluscum, and advancing programmatically other activities with respect to SB414, for atopic dermatitis, and SB204, for acne. Reedy Creek will also provide $10.0 million of additional funding contingent upon our achievement of SB206 clinical trial success, defined as (i) the achievement, no later than March 31, 2020, of statistically significant rates of complete clearance of lesions for molluscum contagiosum in humans at week 12 in each of the two Phase 3 clinical trials or any other primary endpoint required or accepted by the FDA for the SB206 product; or (ii) equivalent achievement (as agreed upon by the parties). Pursuant to the Purchase Agreement, we will pay Reedy Creek ongoing quarterly payments, calculated based on an applicable percentage per product of any upfront fees, milestone payments, royalty payments or equivalent payments received by us pursuant to any out-license agreement for SB204, SB206 and SB414 in the United States, Mexico or Canada, net of any upfront fees, milestone payments, royalty payments or equivalent payments paid by us to third parties pursuant to any agreements under which we have in-licensed intellectual property with respect to such products.

The applicable percentage used for determining the ongoing quarterly payments, applied to amounts received directly by us pursuant to any out-license agreement for each product, ranges from 10% for SB206 to 20% for SB414 and SB204. However, the agreement provides that the applicable percentage for each product will be 25% for fees or milestone payments received by us (but not royalty payments received by us) until Reedy Creek has received payments under the Purchase Agreement equal to the total funding amount provided by Reedy Creek under the Purchase Agreement. If we decide to commercialize SB204, SB206 or SB414 on our own following regulatory approval, as opposed to commercializing through an out-license agreement or other third party arrangement, we will be obligated to pay Reedy Creek a low single digits royalty on net sales of such products.

Development Funding and Royalties Agreement with Ligand Pharmaceuticals Incorporated

On May 4, 2019, we entered into a development funding and royalties agreement, or the Funding Agreement, with Ligand Pharmaceuticals Incorporated, or Ligand, pursuant to which Ligand provided us funding of $12.0 million, which we will use to pursue the development and regulatory approval of SB206, for the treatment of molluscum.

Pursuant to the Funding Agreement, we will pay Ligand up to $20.0 million in milestone payments upon the achievement by us of certain regulatory and commercial milestones associated with SB206 or any product that incorporates or uses NVN1000, the active pharmaceutical ingredient for our clinical stage product candidates, for the treatment of molluscum. In addition to the

milestone payments, we will pay Ligand tiered royalties ranging from 7% to 10% based on aggregate annual net sales of such products in the United States, Mexico or Canada.

Drug Substance and Drug Product Agreements

On October 15, 2018, we established a strategic alliance with Orion, a Finnish full-scale pharmaceutical company with broad experience in manufacturing. The alliance enables Orion to manufacture our topical nitric oxide-releasing product candidates on our behalf and on the behalf of our global strategic partners. We have executed a master contract manufacturing agreement to enable technology transfer and manufacturing of clinical trial materials for future clinical trials with our topical product candidates. We are engaged in the transfer of technology for the manufacture of both SB204 and SB206, and intend for Orion to be able to manufacture the drug product, or the finished dosage form of the gel, in accordance with our established manufacturing processes, in compliance with applicable regulatory guidelines, as appropriate for clinical trials and alongside our current internal manufacturing capabilities. The expansion of this agreement enables the manufacture of multiple assets for clinical trial materials and, potentially, commercial quantities. Importantly, this alliance is being aligned to support major global markets in which we and our partners pursue regulatory approvals for our product candidates and complements our present internal capability.

In June 2019, we executed a master contract manufacturing agreement with a full-scale active pharmaceutical ingredient (API) manufacturer. The agreement establishes an operating and business relationship for this manufacturer to become the primary external supplier of our proprietary berdazimer sodium drug substance. Also incorporated in the agreement is the process and analytical method transfer necessary to advance the production of our berdazimer sodium drug substance for future clinical trials and importantly, upon approval of any of our drug product candidates, for commercial purposes on a global basis.

Our relationships with the aforementioned third party manufacturers are integral to our operating strategy which includes an increased utilization of and reliance upon third party vendors and strategic partners for the performance of activities, processes and services that (i) do not result in the generation of significant new intellectual property; and (ii) can leverage existing robust infrastructure, systems, and facilities as well as associated subject matter expertise. Our strategic objective is to reduce our own internal resources, facilities, and infrastructure of capabilities that have historically performed such activities, processes and services. While we will incur certain discrete costs as we transition to this new operating strategy, we believe it will ultimately provide operating efficiencies and allow us to direct a greater portion of our capital towards the generation of new technologies and intellectual property.

Addition of Gastrointestinal Disease as a Therapeutic Focus

In January 2019, we announced the addition of GI diseases as a therapeutic focus area as part of our overall science and business strategy. This decision is based on the connection between the multi-factorial pathologies of GI diseases and the demonstrable anti-microbial and anti-inflammatory properties of Novan's nitric oxide technology. Nitric oxide produced in the GI tract regulates many of its functions including the secretion of mucous for protection against physical, chemical, and microbial injury, perfusion of blood through the GI tissue, mitigation of white blood cell adherence to GI tissue to protect from injury and the healing and repair of ulcers. We believe that our initial expansion into GI will require minimal investment due to our ability to leverage current technology, experience and assets.

Corporate Updates

Nasdaq compliance

In January 2019, we received a non-compliance notification from the Nasdaq Stock Market LLC, or the Nasdaq, notifying us that for the previous 30 consecutive business days, the market value of our listed securities was below the minimum $50.0 million requirement, or the MVLS Requirement, for continued listing on The Nasdaq Global Market. Nasdaq also noted that we did not meet the alternative requirements for satisfying the continued listing criteria. We were provided a period of 180 calendar days, or until July 15, 2019, to regain compliance with the MVLS Requirement. On June 6, 2019 we received notification from Nasdaq that we had regained compliance with the MVLS Requirement.

Stock Appreciation Rights

As described in Note 11—Share-Based Compensation, on August 8, 2018, we entered into an employment agreement with G. Kelly Martin, or the Employment Agreement. The Employment Agreement provided for 1,000,000 stock appreciation rights, or SARs, granted on a contingent basis that would have been considered irrevocably forfeited and voided in full if we failed to obtain stockholder approval for an amendment to the 2016 Incentive Award Plan, or the 2016 Plan. If such approval had not been obtained, we would have been required to pay Mr. Martin the cash equivalent of the value of the SARs.

On July 31, 2019, at our 2019 Annual Meeting of Stockholders, our stockholders approved a proposal to amend the 2016 Plan, to (i) increase the number of shares of our common stock reserved for issuance under the 2016 Plan by 1,000,000 shares; and (ii) increase the limit on the number of awards that may be granted to any one person in any year. As such, with stockholder approval of the amendment to the 2016 Plan, the SARs detailed within the Employment Agreement have been awarded to Mr. Martin and are no longer considered granted on a contingent basis.

Financial Overview

Since our inception in 2006, we have devoted substantially all of our efforts to developing our nitric oxide platform technology and resulting product candidates, including conducting preclinical and clinical trials and providing general and administrative support for these operations. We conduct these activities in a single operating segment. We have not generated any revenue from product sales and, to date, have funded our operations through a variety of sources described in further detail within the "Liquidity and Capital Resources" section below. From inception through June 30, 2019, we have raised total equity and debt proceeds of $184.0 million to fund our operations. In addition, to date we have also generated additional liquidity and capital through other sources including (i) governmental research contracts and grants totaling $11.8 million; (ii) our licensing and supply arrangements with Sato Pharmaceutical Co., Ltd., or Sato, totaling $19.7 million, described below; and (iii) $37.0 million in proceeds from two funding transactions during the second quarter of 2019, also described below.

The approximately $19.7 million we have received from Sato since January 2017 under our amended license agreement includes a $10.8 million upfront payment received following the execution of the agreement in January 2017, a $2.2 million payment related to the initiation of a Phase 1 trial in Japan in the third quarter of 2018, and $6.7 million of installment payments received following the October 2018 amendment to our amended license agreement with Sato.

As noted above, in April 2019 and May 2019, respectively, we entered into the Purchase Agreement with Reedy Creek, providing $25.0 million of immediate funding, with an additional $10.0 million contingent upon achieving successful top-line results of the SB206 Phase 3 clinical trials no later than March 31, 2020, and the Funding Agreement with Ligand, providing $12.0 million of immediate funding. To date, we have focused our funding activities on equity, debt and strategic relationships. However, other historical forms of funding have included payments received from licensing and supply arrangements, and government research contracts.

We have never generated revenue from product sales and have incurred net losses in each year since inception. As of June 30, 2019, we had an accumulated deficit of $198.2 million. We incurred net losses of $18.1 million and $25.1 million during the three and six months ended June 30, 2019, respectively, and $7.6 million and $12.8 million during the three and six months ended June 30, 2018, respectively. We expect to continue to incur substantial losses in the future as we conduct our planned operating activities. We do not expect to generate revenue from product sales unless and until we obtain regulatory approval from the FDA for our clinical-stage product candidates. If we obtain regulatory approval for any of our product candidates, we and/or our commercial partners would expect to incur significant expenses related to product sales, marketing, manufacturing and distribution.

We expect that we will continue to incur substantial expenses as we continue clinical trials and preclinical studies for, and research and development of, our product candidates and maintain, expand and protect our intellectual property portfolio. We will need substantial additional funding to support our planned and future operating activities. Adequate future funding may not be available to us on acceptable terms, or at all. The current market value of our common stock may negatively impact funding options and the acceptability of funding terms. Additionally, we expect future advancement of our product candidates to occur after the formation of additional partnering, collaborations, licensing, grants or other strategic relationships. Our failure to enter into such additional relationships, the termination or failure of our current strategic relationships, including a failure to receive any contingent payments under such strategic relationships, or our failure to obtain sufficient additional funds on acceptable terms as and when needed could cause us to alter or reduce our planned operating activities, including but not limited to delaying, reducing, terminating or eliminating planned product candidate development activities, to conserve our cash and cash equivalents or to dissolve and liquidate our assets or seek protection under bankruptcy laws. Such actions could delay development timelines and have a material adverse effect on our business, results of operations, financial condition and market valuation. As further discussed in our condensed consolidated financial statements and related footnotes included in this Quarterly Report on Form 10-Q, these matters raise substantial doubt about our ability to continue as a going concern.

Please refer to "Management's Discussion and Analysis of Financial Condition and Results of Operations—Liquidity and Capital Resources" for further discussion of our current liquidity and our future funding needs.

Components of our Results of Operations

Revenue

License and collaboration revenue consists of the amortization of certain fixed and variable consideration under the Sato license agreement that was entered into during the first quarter of 2017, as amended in October 2018, or the Amended Sato Agreement, that (i) has been received to date in the form of upfront and milestone payments; or (ii) are future, non-contingent milestone payments that become payable upon the earlier occurrence of specified fixed dates in the future or the achievement of specified milestone events. This consideration is being recognized on a straight-line basis over the estimated performance period of approximately 7.5 years, from February 2017 through the third quarter of 2024. The material terms of the Amended Sato Agreement and related revenue recognition are described within Note 4—Licensing Arrangements, and Note 5—Revenue Recognition to our condensed consolidated financial statements included in this Quarterly Report on Form 10-Q.

Research and Development Expenses

Since our inception, we have focused our resources on our research and development activities, including conducting preclinical studies and clinical trials, manufacturing development efforts and activities related to regulatory filings for our product candidates. Research and development expenses, including those paid to third parties for which there is no alternative use, are expensed as they are incurred. Research and development expenses include:

- external research and development expenses incurred under agreements with contract research organizations, investigative sites and consultants to conduct our clinical trials and preclinical studies;
- costs to acquire, develop and manufacture supplies for clinical trials and preclinical studies at our facilities;
- costs to establish drug substance and drug product manufacturing capabilities, and to develop and manufacture such drug substance and drug product, with external contract manufacturing organizations;
- legal and other professional fees related to compliance with FDA requirements;
- licensing fees and milestone payments incurred under license agreements;
- salaries and related costs, including share-based compensation, for personnel in our research and development functions; and
- facilities, depreciation and other allocated expenses, which include direct and allocated expenses for rent, maintenance of facilities, utilities, equipment and other supplies.

From inception through June 30, 2019, we have incurred approximately $147.9 million in research and development expenses to develop, expand or otherwise improve our nitric oxide platform and resulting product candidates, as well as costs incurred to generate research and development services revenue. This amount is net of $2.2 million of contra-research and development expense recorded for the three and six months ended June 30, 2019 representing amortization of the liability related to the $12.0 million of funding received from Ligand to pursue the development and regulatory approval of SB206. For additional information about the Funding Agreement with Ligand, please see Note 6—Research and Development Arrangements of the accompanying condensed consolidated financial statements.

The table below sets forth our external research and development expenses incurred for current product candidates and unallocated internal research and development expenses for the three and six months ended June 30, 2019 and 2018. All research and development salaries and related personnel costs, manufacturing capability and campaign costs, and certain facility and infrastructure expenses are included in unallocated internal research and development expenses.

	Three Months Ended June 30,		Six Months Ended June 30,	
	2019	2018	2019	2018
	(in thousands)		(in thousands)	
External:				
SB204	$ 98	$ 311	$ 175	$ 911
SB206	1,879 (1)	958	2,528 (1)	2,041
SB208	—	(21)	7	(6)
SB414	296	826	335	1,611
Unallocated internal research and development expenses	3,916	4,102	7,971	7,954
Total research and development expenses	$ 6,189	$ 6,176	$ 11,016	$ 12,511

(1) Amount shown net of $2.2 million of contra-research and development expense recorded for the three and six months ended June 30, 2019 related to the Funding Agreement with Ligand described in Note 6—Research and Development Arrangements.

We expect that for the foreseeable future, the substantial majority of our research and development efforts will be focused on our current clinical programs and our future pipeline development. During the three and six months ended June 30, 2019, our major clinical development activities were primarily associated with our SB206 molluscum program, where we completed our Phase 2 clinical program activities, held an end-of-Phase 2 meeting with the FDA, and commenced the Phase 3 development program for molluscum including two pivotal clinical trials.

We expect to incur substantial research and development expenses in the future as we develop our clinical product candidates and for other existing or future product candidates. In particular, with our existing capital resources, we expect to continue to incur substantial external development service provider fees and other research and development costs during the remainder of 2019 as we: (i) conduct SB206 molluscum Phase 3 program activities; (ii) conduct certain preclinical studies and prepare to initiate a Phase 2 clinical trial in the SB414 atopic dermatitis program; (iii) continue to progress drug product manufacturing capability transfer activities to Orion; (iv) conduct expected API manufacturing capability transfer activities to our external third party CMO; and (v) conduct other platform technology research and development, including developing NCEs, formulations and delivery devices in the dermatology, GI and women's health fields.

We may decide to revise our plans or the related timing, depending on information we learn through our research and development activities, our ability to access additional capital, our ability to enter into strategic arrangements and our financial priorities.

The successful development of our product candidates is highly uncertain. At this time, we cannot reasonably estimate the nature, timing or costs required to complete the remaining development of our current product candidates or any future product candidates. This is due to the numerous risks and uncertainties associated with the development of product candidates. See the "Risk Factors" section in our Annual Report on Form 10-K filed with the SEC on March 27, 2019, for a discussion of the risks and uncertainties associated with our research and development projects.

General and Administrative Expenses

Our general and administrative expenses consist primarily of salaries and related costs, including share-based compensation expenses for personnel in our executive, finance, corporate development and other administrative functions. Other general and administrative expenses include allocated depreciation and facility-related costs, legal costs of pursuing patent protection of our intellectual property, insurance coverage and professional services fees for auditing, tax, general legal, litigation defense and other corporate and administrative services.

We expect to continue to incur substantial general and administrative expenses during the remainder of 2019 in support of our product development operating activities and as necessary to operate in a public company environment. Significant general and administrative expenses associated with operations in a public company environment include legal, accounting, regulatory and tax-related services associated with maintaining compliance with exchange listing and SEC requirements, directors' and officers' liability insurance premiums and investor relations activities. However, we do expect litigation defense fees to decrease during 2019 as we concluded that the putative stockholder class action lawsuits, as described in the section entitled Note 8—Commitments and Contingencies—Legal Proceedings to the unaudited interim financial statements in this Quarterly Report on Form 10-Q, are substantially complete.

Other Income (Expense), net

Other income (expense), net consists primarily of (i) fair value adjustments to our warrant liability; (ii) interest income earned on cash and cash equivalents; and (iii) other miscellaneous income and expenses. We expect continued fluctuations in the fair value of the warrant liability, based primarily on fluctuations in the market value of our common stock.

Results of Operations

Comparison of Three Months Ended June 30, 2019 and 2018

The following table sets forth our results of operations for the periods indicated:

	Three Months Ended June 30,			
	2019	2018	$ Change	% Change
	(in thousands, except percentages)			
License and collaboration revenue	$ 1,101	$ 649	$ 452	70 %
Operating expenses:				
Research and development	6,189	6,176	13	— %
General and administrative	3,311	2,620	691	26 %
Total operating expenses	9,500	8,796	704	8 %
Operating loss	(8,399)	(8,147)	(252)	3 %
Other (expense) income, net:				
Interest income	68	115	(47)	(41)%
Interest expense	(1)	(261)	260	(100)%
Change in fair value of warrant liability	(9,802)	711	(10,513)	*
Other income, net	36	4	32	*
Total other (expense) income, net	(9,699)	569	(10,268)	(1,805)%
Net loss and comprehensive loss	$ (18,098)	$ (7,578)	$ (10,520)	139 %

** Not Meaningful*

Revenue

License and collaboration revenue of $1.1 million and $0.6 million for the three months ended June 30, 2019 and 2018, respectively, was associated with our performance during the period and the related amortization of the non-refundable upfront and expected milestone payments under the Amended Sato Agreement.

Research and development expenses

Research and development expenses were consistent at $6.2 million for the three months ended June 30, 2019, compared to $6.2 million for the three months ended June 30, 2018. A net $0.9 million increase in the SB206 program was offset by (i) a $0.5 million decrease in our SB414 program due to the completion of two Phase 1b trials in the atopic dermatitis and psoriasis indications; (ii) a $0.2 million decrease in our SB204 program due to the completion of the long-term safety trial; and (iii) a $0.2 million decrease in unallocated internal research and development expenses.

In the SB206 program, we experienced a $3.1 million increase in gross costs incurred due to the commencement of two Phase 3 trials and other Phase 3 development activities for the molluscum indication in the second quarter of 2019. This increase was partially offset by $2.2 million of contra-research and development expense representing the amortization of the liability related to the $12.0 million of funding received from Ligand to pursue the development and regulatory approval of SB206 for the treatment of molluscum.

The $0.2 million decrease in unallocated internal research and development expenses was primarily related to a net decrease in personnel-related costs comprised of (i) a $0.4 million decrease in recurring salary and benefit expenses due to reductions in research and development personnel between the comparative periods, partially offset by (ii) a net $0.2 million increase in non-cash performance-based compensation expense. The net increase in non-cash performance-based compensation expense is comprised of (i) a $0.4 million increase associated with the change in the fair value of the liability related to our Tangible Stockholder Return Plan, or the Performance Plan, which was established in the third quarter of 2018, partially offset by (ii) a $0.2 million decrease in stock option related compensation expense. The Performance Plan liability valuation increased during the second quarter of 2019 due to appreciation in our common stock's market price, which is a key input to the Performance Plan's valuation model. The stock option related compensation expense decrease is associated with the forfeiture of stock options previously held by former officers and employees who departed the Company prior to the second quarter of 2019.

General and administrative expenses

General and administrative expenses were $3.3 million for the three months ended June 30, 2019, compared to $2.6 million for the three months ended June 30, 2018. The increase of approximately $0.7 million, or 26%, is primarily associated with non-cash performance-based compensation expense increases comprised of (i) approximately $0.4 million associated with our Performance Plan; and (ii) approximately $0.3 million associated with the SARs granted in the third quarter of 2018. The Performance Plan liability and SARs liability valuations both increased during the second quarter of 2019 due to appreciation in our common stock's market price, which is a key input to the valuation models for both the Performance Plan and the SARs.

Other (expense) income, net

Other (expense) income, net was $9.7 million expense for the three months ended June 30, 2019, compared to $0.6 million income for the three months ended June 30, 2018. The net expense increase of approximately $10.3 million was primarily due to the change in fair value of the warrant liability of $10.5 million, partially offset by a $0.3 million decrease in interest expense associated with our Morrisville, North Carolina facility lease. The warrant liability valuation increased during the second quarter of 2019 due to appreciation in our common stock's market price, which is a key input to the warrant liability valuation model. The decrease in interest expense is due to the adoption of Topic 842 on January 1, 2019, whereby we no longer report a portion of our lease costs as interest expense as of the adoption date.

Comparison of Six Months Ended June 30, 2019 and 2018

The following table sets forth our results of operations for the periods indicated:

	Six Months Ended June 30,			
	2019	2018	$ Change	% Change
	(in thousands, except percentages)			
License and collaboration revenue	$ 2,201	$ 1,298	$ 903	70 %
Research and development services revenue	—	9	(9)	(100)%
Total revenue	2,201	1,307	894	68 %
Operating expenses:				
Research and development	11,016	12,511	(1,495)	(12)%
General and administrative	6,305	5,500	805	15 %
Total operating expenses	17,321	18,011	(690)	(4)%
Operating loss	(15,120)	(16,704)	1,584	(9)%
Other income (expense), net:				
Interest income	96	159	(63)	(40)%
Interest expense	(1)	(523)	522	(100)%
Change in fair value of warrant liability	(10,190)	4,269	(14,459)	*
Other income, net	92	4	88	*
Total other (expense) income, net	(10,003)	3,909	(13,912)	(356)%
Net loss	$ (25,123)	$ (12,795)	$ (12,328)	96 %

** Not Meaningful*

Revenue

License and collaboration revenue of $2.2 million and $1.3 million for the six months ended June 30, 2019 and 2018, respectively, was associated with our performance during the period and the related amortization of the non-refundable upfront and expected milestone payments under the Amended Sato Agreement.

Research and development expenses

Research and development expenses were $11.0 million for the six months ended June 30, 2019, compared to $12.5 million for the six months ended June 30, 2018. The net decrease of $1.5 million, or 12%, was primarily related to (i) decreases due to the completion of certain clinical trials in our SB414 and SB204 development programs during the comparative period, which resulted in a decrease of $2.0 million, partially offset by (ii) a $0.5 million net increase in the SB206 program.

In the SB206 program, we experienced a $2.7 million increase in gross spend costs incurred due to the commencement of two Phase 3 trials and other Phase 3 development activities for the molluscum indication in the first half of 2019. This increase was partially offset by $2.2 million of contra-research and development expense representing the amortization of the liability related to the $12.0 million of funding received from Ligand to pursue the development and regulatory approval of SB206 for the treatment of molluscum.

Total unallocated research and development expenses was relatively consistent at $8.0 million for the six months ended June 30, 2019, compared to $8.0 million for the six months ended June 30, 2018. We had a $0.4 million increase in facility and manufacturing costs, which was offset by a $0.4 million decrease in research and development personnel costs. The increase of $0.4 million in facility and manufacturing costs is primarily associated with (i) drug substance manufacturing campaigns and associated capability and maintenance costs conducted at our Morrisville, North Carolina facility; and (ii) allocated rental expense following the January 1, 2019 adoption of FASB Accounting Standards Update No. 2016-02, *Leases (Topic 842)*, which was reported as interest expense in previous reporting periods prior to adoption of Topic 842.

The $0.4 million net decrease in personnel costs is primarily related to (i) a $0.6 million decrease in recurring salaries and benefits due to reductions in research and development personnel between the comparative periods and (ii) a net $0.2 million decrease in non-cash performance-based compensation expense, partially offset by (iii) a $0.4 million discrete severance expense charge in the first quarter of 2019 associated with the departure of our former chief scientific officer. The decrease in non-cash performance-based compensation expense is comprised of (i) a $0.4 million increase associated with the change in the fair value of the liability related to our Performance Plan established in the third quarter of 2018, partially offset by (ii) a $0.6 million decrease in stock option related compensation expense. The Performance Plan liability valuation increased during the first six months of 2019 due to appreciation in our common stock's market price, which is a key input to the Plan's valuation model. The decrease in non-cash stock option related compensation expense is associated with (i) the forfeiture of stock options previously held by former officers and employees who departed the Company prior to or during the first six months of 2019; and (ii) expense associated with the annual grant of stock option awards to all employees during the first six months of 2018, which did not recur in the first six months of 2019 after the establishment of the Performance Plan in the third quarter of 2018.

General and administrative expenses

General and administrative expenses were $6.3 million for the six months ended June 30, 2019, compared to $5.5 million for the six months ended June 30, 2018. The increase of approximately $0.8 million, or 15%, was primarily due to a $0.7 million increase in general and administrative personnel and related costs.

The $0.7 million increase in general and administrative personnel and related costs is primarily due to (i) a $0.5 million increase associated with the change in the value of our Performance Plan liability, and (ii) a $0.2 million net increase in severance charges and other one-time compensatory payments. The $0.2 million net increase in severance charges and other one-time compensatory payments is comprised of (i) a $0.5 million discrete charge in the first quarter of 2019 primarily related to severance and one-time payments associated with the departure of our former chief business officer in January 2019, which was partially offset by (ii) a $0.3 million discrete severance charge in the first quarter of 2018 associated with the departure of our former chief commercial officer in January 2018.

Other (expense) income, net

Other (expense) income, net was $10.0 million expense for the six months ended June 30, 2019, compared to $3.9 million income for the six months ended June 30, 2018. The other expense increase of approximately $13.9 million was primarily due to the change in fair value of the warrant liability of $14.5 million, partially offset by a decrease in interest expense of $0.5 million associated with our Morrisville, North Carolina facility lease. The warrant liability valuation increased during the first six months of 2019 primarily due to appreciation in our common stock's market price, which is a key input to the warrant liability valuation model. The decrease in interest expense is due to the adoption of Topic 842 on January 1, 2019, whereby we no longer report a portion of our lease costs as interest expense as of the adoption date.

Liquidity and Capital Resources

As of June 30, 2019, we had a total cash, cash equivalents and restricted cash balance of $32.8 million and positive working capital of $14.1 million.

Since our inception through June 30, 2019, we have financed our operations primarily with $184.0 million in net proceeds from the issuance and sale of equity securities and convertible debt securities, including $35.2 million in net proceeds from the sale of common stock and accompanying warrants in the January 2018 Offering and $44.6 million in net proceeds from the sale of common stock in our 2016 initial public offering. In addition, to date we have also generated additional liquidity and capital through other sources including (i) governmental research contracts and grants totaling $11.8 million; (ii) our Sato licensing and

supply arrangements totaling $19.7 million, described below; and (iii) $37.0 million in proceeds from two funding transactions during the second quarter of 2019, also described below.

In the first quarter of 2017, we received an upfront payment of approximately $10.8 million following the execution of the Sato Agreement for the exclusive right to develop, use and sell SB204 in certain topical dosage forms in Japan for the treatment of acne vulgaris. In addition, we received a milestone payment of approximately $2.2 million in the fourth quarter of 2018, related to the initiation of a Phase 1 trial in Japan in the third quarter of 2018. Under the terms of the Sato Amendment which expanded the Sato Agreement to include SB206, we also received a payment of $2.2 million (or 0.25 billion JPY) in October 2018 and a payment of $4.5 million (or 0.5 billion JPY) in March 2019, representing the first and second installments of an upfront payment of 1.25 billion JPY. The remaining installment of 0.5 billion JPY is payable on September 13, 2019.

As described below, in late April 2019 and early May 2019, respectively, we entered into (i) the Purchase Agreement with Reedy Creek, providing $25.0 million of immediate funding, with an additional $10.0 million contingent upon achieving successful top-line results of the SB206 Phase 3 clinical trials no later than March 31, 2020; and (ii) the Funding Agreement with Ligand, providing $12.0 million of immediate funding. We believe that our existing cash and cash equivalents, expected contractual payments to be received in connection with previous licensing agreements, and the addition of the $25.0 million and $12.0 million received through these funding transactions will (i) provide us with adequate liquidity to fund our planned operating needs into the first quarter of 2020, including through expected top-line results of the Phase 3 molluscum clinical program targeted in the first quarter of 2020, or before; and (ii) into the second quarter of 2020, if paired with the potential $10.0 million funding contingent upon achieving successful top-line results of the SB206 Phase 3 clinical trials no later than March 31, 2020. Although we secured additional capital in April 2019 and May 2019, as described in the section below, we have concluded that the prevailing conditions and ongoing liquidity risks we face raise substantial doubt about our ability to continue as a going concern. We need substantial additional funding to continue our operating activities and make further advancements in our drug development programs beyond those planned in 2019 and certain activities in the first half of 2020.

Our cash and cash equivalents are held in a variety of interest-bearing instruments, including money market accounts. Cash in excess of immediate requirements is invested with a view toward liquidity and capital preservation, and we seek to minimize the potential effects of concentration and degrees of risk.

Royalty and Milestone Payments Purchase Agreement with Reedy Creek Investments LLC

On April 29, 2019, we entered into the Purchase Agreement with Reedy Creek, pursuant to which Reedy Creek provided us funding in an initial amount of $25.0 million, which we will use primarily to pursue the development, regulatory approval and commercialization (including through out-license agreements and other third party arrangements) activities for SB206, for the treatment of molluscum, and advancing programmatically other activities with respect to SB414, for atopic dermatitis, and SB204, for acne. Reedy Creek will also provide $10 million of additional funding contingent upon achieving successful top-line results of the SB206 Phase 3 clinical trials no later than March 31, 2020. Pursuant to the Purchase Agreement, we will pay Reedy Creek ongoing quarterly payments, calculated based on an applicable percentage per product of any upfront fees, milestone payments, royalty payments or equivalent payments received by us pursuant to any out-license agreement for the products in the United States, Mexico or Canada, net of any upfront fees, milestone payments, royalty payments or equivalent payments paid by us to third parties pursuant to any agreements under which we have in-licensed intellectual property with respect to the products.

The applicable percentage used for determining the ongoing quarterly payments, applied to amounts received directly by us pursuant to any out-license agreement for each product, ranges from 10% for SB206 to 20% for SB414 and SB204. However, the agreement provides that the applicable percentage for each product will be 25% for fees or milestone payments received by us (but not royalty payments received by us) until Reedy Creek has received payments under the Purchase Agreement equal to the total funding amount provided by Reedy Creek under the Purchase Agreement. If we decide to commercialize any product on its own following regulatory approval, as opposed to commercializing through an out-license agreement or other third party arrangement, we will be obligated to pay Reedy Creek a low single digits royalty on net sales of the products.

Development Funding and Royalties Agreement with Ligand Pharmaceuticals Incorporated

On May 4, 2019, we entered into the Funding Agreement with Ligand, pursuant to which Ligand provided us funding of $12.0 million, which we will use to pursue the development and regulatory approval of SB206, for the treatment of molluscum.

Pursuant to the Funding Agreement, we will pay Ligand up to $20.0 million in milestone payments upon the achievement by us of certain regulatory and commercial milestones associated with SB206 or any product that incorporates or uses NVN1000, the active pharmaceutical ingredient for our clinical stage product candidates, for the treatment of molluscum. In addition to the

milestone payments, we will pay Ligand tiered royalties ranging from 7% to 10% based on aggregate annual net sales of the products in the United States, Mexico or Canada.

Expansion of Partnership with Sato in Japanese Territory

On October 5, 2018, we and Sato entered into the second amendment to the initial license agreement dated January 12, 2017, or the Sato Amendment. The initial license agreement had focused on the development and commercialization of SB204 for the treatment of acne vulgaris in Japan. The Sato Amendment also provides Sato with the exclusive rights to develop and commercialize SB206 and related dosage forms for the treatment of viral skin infections, including but not limited to molluscum contagiosum and external genital warts, in Japan. Under the terms of the Sato Amendment, we will receive an upfront payment from Sato totaling 1.25 billion JPY (approximately $11.1 million USD) to be paid in three installments over a 12 months period. We received the first installment of 0.25 billion JPY (approximately $2.2 million USD) in October 2018 and the second installment of 0.5 billion JPY (approximately $4.5 million USD) in March 2019. The third installment of 0.5 billion JPY becomes payable in September 2019. The Sato Amendment also provides for an aggregate of 1.0 billion JPY in additional non-contingent milestone payments that become payable upon the earlier occurrence of specified fixed dates in the future or the achievement of specified milestone events.

Primary Facility Lease Financing

Our approximately 51,000 square foot leased facility in Morrisville, North Carolina serves as our corporate headquarters and sole research, development and manufacturing facility. We entered into the ten-year, non-cancellable lease agreement in 2016, currently have approximately seven years remaining under the lease term and currently have approximately $9.1 million in remaining minimum lease payments.

In July 2018, the Company and a third-party tenant entered into a sublease of approximately 6,400 square feet of office space, or approximately 12% of total facility square footage, at our Morrisville, North Carolina headquarters. The sublease has a three-year, non-cancellable term and provides for monthly rental income to the Company of approximately $12,000 per month through July 2021. The remaining rental income from this sublease is expected to offset approximately 3.5% of the total remaining minimum lease payments per our underlying lease agreement.

As part of our broader strategic plan to shift our operating cost structure characteristics from fixed to variable, we are actively pursuing efforts to further reduce or offset our remaining fixed lease obligation. We have engaged a commercial real estate broker and are currently marketing our Morrisville, North Carolina headquarters facility for sublease or assignment.

Cash Flows

The following table sets forth our cash flows for the periods indicated:

	Six Months Ended June 30,	
	2019	2018
	(in thousands)	
Net cash provided by (used in):		
Operating activities	$ (926)	$ (16,517)
Investing activities	(33)	(363)
Financing activities	25,010	35,340
Net increase in cash, cash equivalents and restricted cash	$ 24,051	$ 18,460

Net Cash Used in Operating Activities

During the six months ended June 30, 2019, net cash used in operating activities was $0.9 million and consisted primarily of a net loss of $25.1 million, with adjustments for non-cash amounts related primarily to an increase in fair value of warrant liability of $10.2 million, depreciation expense of $1.0 million, share-based compensation expense for both equity-based and liability-based awards of $1.8 million and a $11.2 million favorable change in other operating assets and liabilities. The favorable change in assets and liabilities was due to a $12.0 million increase related to the advanced payment for the research and development service obligation associated with the Funding Agreement with Ligand, offset by a $2.2 million decrease in research and development service obligation liabilities related to the amortization of the liability associated with Ligand, a $2.3 million increase in deferred revenue following the receipt of an additional upfront installment payment under the Amended Sato Agreement during the first quarter of 2019 and an unfavorable change in other operating assets of $0.9 million, primarily due to the timing of payments related to our operating activities.

During the six months ended June 30, 2018, net cash used in operating activities was $16.5 million and consisted primarily of a net loss of $12.8 million, with adjustments for non-cash amounts related primarily to depreciation expense of $0.8 million, share-based compensation expense of $1.4 million, decrease in fair value of warrant liability of $4.3 million and a $1.8 million net decrease in other operating assets and liabilities. The net decrease in assets and liabilities was primarily due to a $0.8 million decrease in accrued compensation following the payment of annual employee bonuses in the first quarter of 2018, a $0.5 million decrease in other accrued expenses following the payment of various accrued expenses during the period, including $0.2 million in travel costs paid to Malin Life Sciences Holdings Limited, or Malin, in the first quarter of 2018 related to certain strategic and tactical initiatives and activities performed by Malin employees that did not recur in the first quarter of 2019, and a $1.3 million decrease in deferred revenue associated with the continued recognition of licensing revenues from the Sato Agreement during 2018. These decreases were partially offset by a favorable change in prepaid expenses and other current assets and accounts payable of $0.9 million.

Net Cash Used in Investing Activities

During the six months ended June 30, 2019, net cash used in investing activities was minimal and consisted of purchases of laboratory and manufacturing equipment.

During the six months ended June 30, 2018, net cash used in investing activities was $0.4 million, which primarily related to purchases of laboratory equipment and leasehold improvements at our facility in Morrisville, North Carolina.

Net Cash Provided by Financing Activities

During the six months ended June 30, 2019, net cash provided by financing activities was $25.0 million and consisted of funding received pursuant to the Purchase Agreement with Reedy Creek.

During the six months ended June 30, 2018, net cash provided by financing activities was $35.3 million, consisting primarily of net proceeds from our offering of common stock and warrants in January 2018, after deducting underwriting discounts and offering expenses.

Capital Requirements

As of June 30, 2019, we had a total cash, cash equivalents and restricted cash balance of $32.8 million and positive working capital of $14.1 million. As described above, in late April 2019 and early May 2019, respectively, we entered into (i) the Purchase Agreement with Reedy Creek, providing $25.0 million of immediate funding, with an additional $10.0 million contingent upon achieving successful top-line results of the SB206 Phase 3 clinical trials no later than March 31, 2020; and (ii) the Funding Agreement with Ligand, providing $12.0 million of immediate funding. We believe that our existing cash and cash equivalents, expected contractual payments to be received in connection with previous licensing agreements, and the addition of the $25.0 million and $12.0 million received through these funding transactions will (i) provide us with adequate liquidity to fund our planned operating needs into the first quarter of 2020, including through expected top-line results of the Phase 3 molluscum clinical program targeted in the first quarter of 2020, or before; and (ii) into the second quarter of 2020, if paired with the potential $10.0 million funding contingent upon achieving successful top-line results of the SB206 Phase 3 clinical trials no later than March 31, 2020. Although we secured additional capital in April 2019 and May 2019, we have concluded that the prevailing conditions and ongoing liquidity risks we face raise substantial doubt about our ability to continue as a going concern. We need substantial additional funding to continue our operating activities and make further advancements in our drug development programs beyond those planned in 2019 and certain activities in the first half of 2020.

To date, we have not generated any revenue from product sales. We do not know when, or if, we will generate any revenue from product sales. We do not expect to generate revenue from product sales unless, and until, we obtain regulatory approval of one of our current or future product candidates and achieve successful commercialization by a strategic partner or by ourselves. We anticipate that we will continue to generate losses for the foreseeable future, and we expect the losses to increase as we continue the development of, and seek regulatory approvals for, our product candidates and begin any commercialization activities of any approved products. We are subject to all of the risks inherent in the development of new pharmaceutical products, and we may encounter unforeseen expenses, difficulties, complications, delays and other unknown factors that may adversely affect our business.

Our ability to continue to operate our business, including our ability to advance our development programs, is dependent upon our ability to access additional capital. Additional capital may potentially include (i) non-dilutive sources, such as

partnerships, collaborations, licensing, grants or other strategic relationships; or (ii) equity or debt financings, which could cause dilution. We may revise our activities or their timing depending on the availability of additional funding, partnership opportunities and our financial priorities. We completed two non-dilutive funding transactions in April 2019 and May 2019 and continue to explore other potential non-dilutive business development activities around the developmental and commercial rights to the clinical-stage assets in our platform, including various geographic and indication-specific opportunities.

As we continue to attempt to raise additional capital, there can be no assurance that we will be able to obtain it on terms acceptable to us, on a timely basis, or at all. A failure to obtain sufficient funds on acceptable terms when needed could cause us to alter or reduce our planned operating activities to conserve our cash and cash equivalents, including but not limited to delaying planned activities directly related to or in support of product candidate development. Our anticipated expenditure levels may change if we adjust our current operating plan. Such actions could delay development timelines and have a material adverse effect on our results of operations, financial condition and market valuation. As of June 30, 2019, we had an accumulated deficit of $198.2 million and there is substantial doubt about our ability to continue as a going concern.

We have based our projections of operating capital requirements on assumptions that may prove to be incorrect and we may use all of our available capital resources sooner than we expect. Because of the numerous risks and uncertainties associated with research, development and commercialization of pharmaceutical products, we are unable to estimate the exact amount or timing of our operating capital requirements. Our future funding requirements will depend on many factors, including, but not limited to:

- the initiation, progress, timing, costs, results, and evaluation of results of trials for our clinical-stage product candidates, including trials conducted by us or potential future partners;
- the progress, timing, costs and results of development and preclinical study activities relating to other potential applications of our nitric oxide platform;
- the number and characteristics of product candidates that we pursue;
- our ability to enter into strategic relationships to support the continued development of certain product candidates and the success of those arrangements;
- our success in optimizing the size and capability of our current manufacturing facility and related processes to meet our strategic objectives;
- our success in the technical transfer of methods and processes related to our drug substance and drug product manufacturing with our current and/or potential future contract manufacturing partners;
- the outcome, timing and costs of seeking regulatory approvals;
- the occurrence and timing of potential development and regulatory milestones achieved by Sato, our licensee for SB204 and SB206 in Japan;
- the terms and timing of any future collaborations, licensing, consulting, financing or other arrangements that we may enter into;
- whether we are able to obtain the contingent $10.0 million payout under the Purchase Agreement with Reedy Creek contingent upon achieving successful top-line results of the SB206 Phase 3 clinical trials no later than March 31, 2020;
- the amount and timing of any payments we may be required to make, or that we may receive, in connection with the licensing, filing, prosecution, defense and enforcement of any patents or other intellectual property rights;
- the costs of preparing, filing and prosecuting patent applications, maintaining and protecting our intellectual property rights;
- defending against intellectual property related claims;
- the costs associated with any potential future securities litigation, and the outcome of that litigation;
- the extent to which we in-license or acquire other products and technologies; and
- subject to receipt of marketing approval, revenue received from commercial sales or out licensing of our product candidates.

Contractual Obligations and Contingent Liabilities

Except for compensatory obligations described in Note 8—Commitments and Contingencies to the accompanying condensed consolidated financial statements included in this Quarterly Report on Form 10-Q, there were no material changes during the six months ended June 30, 2019 in our commitments under contractual obligations, as disclosed in "Management's Discussion and Analysis of Financial Condition and Results of Operations" contained in our Annual Report on Form 10-K filed with the SEC on March 27, 2019.

Off-Balance Sheet Arrangements

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

Jumpstart Our Business Startups Act of 2012 (JOBS Act)

In April 2012, the JOBS Act was signed into law. The JOBS Act contains provisions that, among other things, reduce certain reporting requirements for an "emerging growth company." As an "emerging growth company," we are electing not to take advantage of the extended transition period afforded by the JOBS Act for the implementation of new or revised accounting standards, and, as a result, we will comply with new or revised accounting standards on the relevant dates on which adoption of such standards is required for non-emerging growth public companies. Section 107 of the JOBS Act provides that our decision not to take advantage of the extended transition period is irrevocable. We have chosen to rely on the other exemptions and reduced reporting requirements provided by the JOBS Act. Subject to certain conditions set forth in the JOBS Act, as an "emerging growth company" we are not required to, among other things, (i) provide an auditor's attestation report on our system of internal controls over financial reporting pursuant to Section 404 of the Sarbanes-Oxley Act, (ii) provide all of the compensation disclosure that may be required of non-emerging growth public companies under the Dodd-Frank Act, (iii) comply with any requirement that may be adopted by the Public Company Accounting Oversight Board regarding mandatory audit firm rotation or a supplement to the auditor's report providing additional information about the audit and the financial statements (auditor discussion and analysis) and (iv) disclose certain executive compensation-related items, such as the correlation between executive compensation and performance and comparisons of the chief executive officer's compensation to median employee compensation. We may remain an emerging growth company until the last day of 2021. However, if certain events occur prior to such date, including if we become a "large accelerated filer," our annual gross revenue equals or exceeds $1.07 billion or we issue more than $1.0 billion of non-convertible debt in any three-year period, we will cease to be an emerging growth company prior to such date.

Critical Accounting Policies and Use of Estimates

Our management's discussion and analysis of financial condition and results of operations is based on our financial statements, which have been prepared in accordance with U.S. GAAP. The preparation of these financial statements requires us to make estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities at the date of the financial statements, as well as the reported revenue and expenses during the reporting periods. These items are monitored and analyzed by us for changes in facts and circumstances, and material changes in these estimates could occur in the future. We base our estimates on historical experience and on various other factors that we believe are reasonable under the circumstances, the results of which form the basis for making judgments about the carrying value of assets and liabilities that are not readily apparent from other sources. Changes in estimates are reflected in reported results for the period in which they become known. Actual results may differ materially from these estimates under different assumptions or conditions. Our significant accounting policies are more fully described in Note 1—Organization and Significant Accounting Policies to the condensed consolidated financial statements included in this Quarterly Report on Form 10-Q and in Note 1—Organization and Significant Accounting Policies to our audited consolidated financial statements contained in our Annual Report on Form 10-K filed with the SEC on March 27, 2019. During the six months ended June 30, 2019, there were no material changes to our critical accounting policies, except as presented below:

Leases

Effective January 1, 2019, we adopted ASU No. 2016-02, *Leases (Topic 842)* using the modified retrospective transition method and established our lease accounting policy pursuant to this new standard. We initially applied the transition provisions at January 1, 2019, which allowed us to continue to apply the legacy guidance in ASC 840 for periods prior to 2019. Our policy, and related significant judgments and estimates used to recognize right-of-use assets and lease liabilities under our policy, is described in Note 1—Organization and Significant Accounting Policies and Note 8—Commitments and Contingencies to the condensed financial statements included elsewhere in this Quarterly Report on Form 10-Q.

Recent Accounting Pronouncements

Recently issued accounting pronouncements that we have adopted or are currently evaluating are described in detail within Note 1—Organization and Significant Accounting Policies to the accompanying unaudited condensed consolidated financial statements included in Item 1 of this Quarterly Report on Form 10-Q.

Item 3. Quantitative and Qualitative Disclosures About Market Risk

Not applicable.

Item 4. Controls and Procedures

(a) *Evaluation of Disclosure Controls and Procedures*

The term "disclosure controls and procedures," as defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934, as amended, or the Exchange Act, refers to controls and procedures that are designed to ensure that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is recorded, processed, summarized and reported, within the time periods specified in the SEC's rules and forms. Disclosure controls and procedures include, without limitation, controls and procedures designed to ensure that such information is accumulated and communicated to a company's management, including its principal executive and principal financial officers, as appropriate to allow timely decisions regarding required disclosure.

In designing and evaluating our disclosure controls and procedures, management recognizes that disclosure controls and procedures, no matter how well conceived and operated, cannot provide absolute assurance that the objectives of the disclosure controls and procedures are met. Additionally, in designing disclosure controls and procedures, our management necessarily was required to apply its judgment in evaluating the cost-benefit relationship of possible disclosure controls and procedures. Our disclosure controls and procedures are designed to provide reasonable assurance of achieving their objectives. The design of any system of controls also is based in part upon certain assumptions about the likelihood of future events, and there can be no assurance that any design will succeed in achieving its stated goals under all potential future conditions; over time, controls may become inadequate because of changes in conditions, or the degree of compliance with policies or procedures may deteriorate. Because of the inherent limitations in a control system, misstatements due to error or fraud may occur and not be detected.

Our management, with the participation of our principal executive and financial officers, has evaluated the effectiveness of our disclosure controls and procedures as of June 30, 2019, the end of the period covered by this Quarterly Report on Form 10-Q. Our management recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving their objectives, and management necessarily applies its judgment in evaluating the cost benefit relationship of possible controls and procedures. Based upon such evaluation, our principal executive and financial officers have concluded that our disclosure controls and procedures were effective as of such date at the reasonable assurance level.

(b) *Changes in Internal Controls Over Financial Reporting*

There have not been any changes in our internal controls over financial reporting during our fiscal quarter ended June 30, 2019 that materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

PART II—OTHER INFORMATION

Item 1. Legal Proceedings

We are not currently a party to any material legal proceedings and are not aware of any claims or actions pending or threatened against us that we believe could have a material adverse effect on our business, operating results, cash flows or financial statements. In the future, we may from time to time become involved in litigation relating to claims arising from our ordinary course of business.

Item 1A. Risk Factors.

There have been no material changes to the risk factors disclosed in the Annual Report on Form 10-K filed with the SEC on March 27, 2019 or the Quarterly Report on Form 10-Q filed with the SEC on May 15, 2019, except as follows.

If we fail to meet the requirements for continued listing on the Nasdaq Global Market, our common stock could be delisted from trading, which would decrease the liquidity of our common stock and our ability to raise additional capital.

Although our common stock is currently listed on The Nasdaq Global Market, an active trading market for our shares may not be sustained. We are required to meet specified requirements to maintain our listing on The Nasdaq Global Market, including, among other things, a minimum $50.0 million market value of listed securities and a minimum bid price of $1.00 per share. On January 14, 2019, we received a notice from the staff of the Nasdaq Stock Market LLC, or the Staff, notifying us that for the previous 30 consecutive business days, the market value of our listed securities was below the minimum $50.0 million requirement, or the MVLS Requirement, for continued inclusion on The Nasdaq Global Market. The Staff also noted that we did not meet the alternative requirements for satisfying continued listing criteria. We were provided a period of 180 calendar days, or until July 15, 2019, to regain compliance with the MVLS Requirement.

On June 6, 2019 we were notified by the Staff that we had regained compliance with the MVLS Requirement. However, we cannot guarantee that we will remain in compliance with the MVLS requirement or that we will be able to comply with the continued listing standards of The Nasdaq Global Market, and therefore our common stock may be subject to delisting in the future.

If our common stock is delisted and there is no longer an active trading market for our shares, it may, among other things:

- cause you difficulty in selling your shares without depressing the market price for the shares or sell your shares at all;
- substantially impair our ability to raise additional funds;
- result in a loss of institutional investor interest and fewer financing opportunities for us; and/or
- result in potential breaches of representations or covenants of agreements pursuant to which we made representations or covenants relating to our compliance with applicable listing requirements. Claims related to any such breaches, with or without merit, could result in costly litigation, significant liabilities and diversion of our management's time and attention and could have a material adverse effect on our financial condition, business and results of operations.

A delisting would also reduce the value of our equity compensation plans, which could negatively impact our ability to retain key employees.

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

Unregistered Sales of Equity Securities

None.

Issuer Purchases of Equity Securities

None.

Item 3. Defaults Upon Senior Securities.

Not applicable.

Item 4. Mine Safety Disclosures.

Not applicable.

Item 5. Other Information.

Pursuant to Rule 14a-8 under the Exchange Act, stockholders may present proper proposals for inclusion in the proxy statement for consideration at our next annual meeting of stockholders. We currently plan to hold our 2020 Annual Meeting of Stockholders in early June 2020 consistent with historical practice, tentatively scheduled on or about June 3, 2020. Our 2019 Annual Meeting of Stockholders was held on July 31, 2019. Because the date of the 2020 Annual Meeting of Stockholders will be more than 30 days from the one-year anniversary of the 2019 Annual Meeting of Stockholders, we are informing stockholders of this change in accordance with Rule 14a-5(f) under the Exchange Act, and are informing stockholders of the new dates described below for submitting stockholder proposals and director nominations. In accordance with Rule 14a-8 under the Exchange Act, proposals of stockholders for the 2020 Annual Meeting of Stockholders will not be included in the proxy statement for the 2020 Annual Meeting of Stockholders unless the proposal is proper for inclusion in the proxy statement and is received by us at our principal executive offices not later than December 26, 2019. While our board will consider stockholder proposals, we reserve the right to omit from the proxy statement stockholder proposals that we are not required to include under the Exchange Act, including Rule 14a-8.

Under our bylaws, in order to nominate a director or bring any other business before the stockholders at the 2020 Annual Meeting of Stockholders that will not be included in our proxy statement, you must notify us in writing, and such notice must be received by us no earlier than February 4, 2020, and no later than March 5, 2020. For proposals not made in accordance with Rule 14a-8, you must comply with specific procedures set forth in our bylaws and the nomination or proposal must contain the specific information required by our bylaws. You may write to our Corporate Secretary at Novan, Inc., Attn: Corporate Secretary, 4105 Hopson Road, Morrisville, NC 27560, to deliver the notices discussed above and to request a copy of the relevant bylaw provisions regarding the requirements for making stockholder proposals and nominating director candidates pursuant to the bylaws.

Item 6. Exhibits

The following exhibits are being filed herewith or are being incorporated by reference and are numbered in accordance with Item 601 of Regulation S-K:

EXHIBIT NO.		DESCRIPTION	Filed Herewith	INCORPORATED BY REFERENCE			
				FORM	File No.	Exhibit	Filing Date
10.1	†	Royalty and Milestone Payments Purchase Agreement, dated April 29, 2019, by and between Novan, Inc. and Reedy Creek Investments LLC.	X				
10.2	†	Development Funding and Royalties Agreement, dated May 4 2019, by and between Novan, Inc. and Ligand Pharmaceutical Incorporated.	X				
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.	X				
31.2		Certification of Principal 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.	X				
32.1		Certification of Chief Executive Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.	X				
32.2		Certification of Principal Financial Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.	X				
101.INS		XBRL Instance Document.	X				
101.SCH		XBRL Taxonomy Extension Schema Document.	X				
101.CAL		XBRL Taxonomy Extension Calculation Linkbase Document.	X				
101.DEF		XBRL Taxonomy Extension Definition Document.	X				
101.LAB		XBRL Taxonomy Extension Label Linkbase Document.	X				
101.PRE		XBRL Taxonomy Extension Presentation Linkbase Document.	X				

† Portions of this exhibit (indicated therein by asterisks) have been omitted for confidential treatment.

SIGNATURES

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

Novan, Inc.

By: /s/ G. Kelly Martin

G. Kelly Martin
Chief Executive Officer
(Principal Executive Officer)

/s/ John M. Gay

John M. Gay
Vice President, Finance and Corporate Controller (Principal Financial Officer)

/s/ Andrew J. Novak

Andrew J. Novak
Vice President, Accounting and Business Operations
(Principal Accounting Officer)

Date: August 13, 2019

Exhibit 10.1

THE SYMBOL "[***]" DENOTES PLACES WHERE CERTAIN IDENTIFIED INFORMATION HAS BEEN EXCLUDED FROM THE EXHIBIT BECAUSE IT IS BOTH (i) NOT MATERIAL AND (ii) WOULD LIKELY CAUSE COMPETITIVE HARM TO THE COMPANY IF PUBLICLY DISCLOSED

Execution Version
Confidential

ROYALTY AND MILESTONE PAYMENTS PURCHASE AGREEMENT

This Royalty and Milestone Payments Purchase Agreement (this "**Agreement**") is entered into as of April 29, 2019 (the "**Effective Date**") by and between Novan, Inc., a Delaware corporation ("**Novan**"), and Reedy Creek Investments LLC, a North Carolina limited liability company ("**Reedy Creek**"). Novan and Reedy Creek are also referred to individually as a "**Party**" and together as the "**Parties**".

BACKGROUND

WHEREAS, Novan is in the business of developing and commercializing pharmaceutical products for, among other things, the treatment of dermatological conditions and other indications in humans and wishes to obtain funding in respect of such development and commercialization efforts;

WHEREAS, Novan wishes to sell, assign, convey and transfer to Reedy Creek the Assigned Rights (as defined below) in consideration for the payment by Reedy Creek of the Purchase Price (as defined below); and

WHEREAS, Reedy Creek wishes to purchase from Novan the Assigned Rights, all on the terms and conditions set forth below.

NOW, THEREFORE, in consideration of the premises and mutual covenants herein below, and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Parties agree as follows:

1. DEFINITIONS

The following capitalized terms shall have the meanings set forth below when used in this Agreement.

"**Affiliate**" means with respect to each Party, any Person that directly or indirectly is controlled by, controls or is under common control with a Party. For the purposes of this definition only, the term "control" (including, with correlative meanings, the terms "controlled by" and "under common control with") as used with respect to a Person means (a) in the case of a corporate entity,

direct or indirect ownership of voting securities entitled to cast at least fifty percent (50%) of the votes in the election of directors or (b) in the case of a non-corporate entity, direct or indirect ownership of at least fifty percent (50%) of the equity interests with the power to direct the management and policies of such entity; provided that, if local laws restrict foreign ownership, control shall be established by direct or indirect ownership of the maximum ownership percentage that may, under such local laws, be owned by foreign interests, but only if such lower percentage provides such Person with the power to direct the management and policies of such entity.

"**Akron License Agreement**" means that certain License Agreement between Novan and The University of Akron Research Foundation with an effective date of May 23, 2012, as may be amended from time to time.

"**Applicable Laws**" means all applicable laws, statutes, rules, regulations, ordinances and other pronouncements having the effect of law of any federal, national, multinational, state, provincial, county, city or other political subdivision, domestic or foreign, that relate to a Party's activities under this Agreement, including any rules, regulations, guidelines or other requirements of any applicable Regulatory Authority.

"**Assigned Rights**" means the SB204 Rights, SB206 Rights and SB414 Rights.

"**Assigned Rights Period**" means, with respect to each Product, the longer of: (a) the period beginning with the Effective Date and ending on the [***] of the Effective Date and (b) the period beginning with the Effective Date and ending on the [***] of the First Commercial Sale of such Product.

"**Calendar Quarter**" means each three (3)-month period commencing on January 1, April 1, July 1 or October 1.

"**Calendar Year**" means each twelve (12)-month period commencing on January 1 and ending on December 31.

"**Change of Control**" means, with respect to a Party, the occurrence of any of the following: (a) any "person" or "group" (as such terms are defined in Section 13(d) and Section 14(d) of the Securities Exchange Act of 1934, as amended, or any successor provisions (the "**Exchange Act**")) that is or becomes the "beneficial owner" (as determined in accordance with Rule 13d-3 under the Exchange Act), directly or indirectly, of shares of voting stock (or other equity interest) of such Party representing fifty percent (50%) or more of the total voting power of all outstanding classes of voting stock (or other equity interest) of such Party; (b) the sale or transfer of all or substantially all of the assets of such Party; or (c) any merger, consolidation, share exchange, business combination or similar transaction in which such Party is not the surviving entity or in which the holders of the outstanding shares of stock of such Party immediately prior to such transaction hold, immediately after such transaction, less than fifty percent (50%) of the total voting power of the outstanding securities entitled to vote generally in the election of directors of the surviving or resulting entity in such transaction.

"**Clinical Trial Success**" means (i) the achievement, no later than March 31, 2020, of statistically significant rates of complete clearance of lesions for molluscum contagiosum in humans at week 12 in each of the two Phase III Clinical Trials or any other primary endpoint required or accepted by the FDA for the SB206 Product, or (ii) equivalent achievement (as agreed upon by the Parties).

"**Commercialize**" or "**Commercialization**" means, with respect to a Product, marketing, promotion, sale (and offer for sale or contract to sell), distribution, importation or other commercial exploitation of such Product following receipt Regulatory Approval. Commercialization shall include commercial activities conducted in preparation for First Commercial Sale.

"**Commercially Reasonable Efforts**" means, with respect to Novan's obligation under this Agreement to develop, obtain Regulatory Approval or Commercialize a Product, the level of effort, expertise, and resources required to carry out such obligation that would be typically exerted by a similarly situated biotechnology or pharmaceutical company of comparable size and capabilities as Novan in pursuing the development and commercialization of a similar product with similar product characteristics at a similar stage in its development or product life, including without limitation with respect to commercial potential, the proprietary position of such Product, the regulatory status and approval process and other relevant technical, scientific, medical or legal factors.

"**Confidential Information**" of a Party means (a) the terms and conditions of this Agreement; and (b) any information or material, including all trade secrets, whether in tangible form or not, disclosed by such Party to the other Party prior to the Effective Date or during the Term; provided, however, that the foregoing information in subsection (b) shall not be deemed Confidential Information, to the extent the receiving Party can establish by competent proof that such information:

(i) was already known to the receiving Party, other than under an obligation of confidentiality owed to the disclosing Party, at the time of disclosure;

(ii) was generally available to the public or otherwise part of the public domain at the time of its disclosure hereunder to the receiving Party;

(iii) becomes generally available to the public or otherwise part of the public domain after its disclosure and other than through any act or omission of the receiving Party in breach of this Agreement;

(iv) was independently developed by the receiving Party without use of or reference to any Confidential Information disclosed by the disclosing Party; or

(v) was subsequently disclosed to the receiving Party by a person other than the disclosing Party that was not under any legal obligation to the disclosing Party with respect to such information.

"**Contract Party**" means, as applicable, a Licensee, or any Third Party with which Novan or its Affiliates engages for the development, Commercialization, marketing, Regulatory Approval, or sale of a Product.

"**Development Payments**" means any payments received by Novan from Third Parties, including Licensees, as consideration for Novan's or its Affiliates' performance of research and development services or activities or the provision of goods or materials regarding the Products or otherwise, including without limitation any related reimbursement or cost-sharing arrangements or activities. Development Payments shall not include any payments received by Novan in connection with Commercialization.

"**FDA**" means the United States Food and Drug Administration or any successor agency thereto.

"**First Commercial Sale**" means for each Product, the first commercial sale to a Third Party in any country in the Territory as part of a nationwide introduction by Novan or its sublicensees following receipt of Regulatory Approval. Sales for clinical trial purposes or for compassionate use or on a named patient basis shall not be considered to constitute a First Commercial Sale.

"**In-License Agreement**" means, with respect to each Product, (a) the following license agreements or other written agreements entered into by Novan and a Third Party whereby Novan is granted rights under Intellectual Property of such Third Party with respect to such Product: the UNC License Agreement, Akron License Agreement and KIPAX Agreement; and (b) any such license agreement or written agreement entered into by Novan and a Third Party and approved by Reedy Creek under Section 3.7.

"**Included Payments**" means, as applicable, the aggregate payments due or payable to Reedy Creek hereunder for Assigned Rights and Sales Royalties.

"**Intellectual Property**" means any and all right, title and interest in, arising from, or relating to inventions, ideas, Know-How, works of authorship and confidential information, including copyrights, patents and patent applications, trade secrets, any registrations or applications relating to any of the foregoing, and any other rights of a similar nature or character whether now existing or hereafter created, developed, arising or otherwise coming into being.

"**KIPAX Agreement**" means that certain Patent Purchase Agreement between Novan and KIPAX AB dated July 27, 2015, as may be amended from time to time.

"**Know-How**" means all non-public information, results and data of any type, in any tangible or intangible form, whether or not patentable, including without limitation practices, methods, processes, protocols, techniques, specifications, algorithms, formulae, knowledge, skill, experience, databases, studies and procedures.

"**License Agreement(s)**" means, collectively, the In-License Agreements and Out-License Agreements.

"**Licensee**" means the Third Party counterparty to Novan in any Out-License Agreement.

"**Material Adverse Change**" means any material impairment of or material adverse change in (i) the expected value to the Products, the Out-License Agreements, or Product Intellectual Property, (ii) the expected value of the Included Payments, including (A) a material adverse change in the validity or enforceability of any of the In-License Agreements or Out-License Agreements, (B) a material adverse change in the ability of Novan to satisfy and perform any of its obligations under any In-License Agreement or Out-License Agreement, or (C) a material adverse change in the rights or remedies of Novan under any of the In-License Agreement or Out-License Agreement, or (iii) any material adverse change in the business, operations, assets or financial condition of Novan, taken as a whole, that could reasonably be expected to have a material adverse effect on the ability of Novan to perform any of its obligations under this Agreement, or (iv) any material adverse change in the validity, enforceability or transferability of any Product Intellectual Property (including any Third Party's Intellectual Property subject to an In-License Agreement), the status of any challenge to or any litigation involving any Product Intellectual Property (including any Third Party's Intellectual Property under an In-License Agreement), or the restriction, cessation, suspension or termination of Novan's license to any Third Party's Intellectual Property granted under an In-License Agreement.

"**Net Sales**" means, with respect to a Product, the total invoiced sales price received for such Product sold by Novan or its Affiliates less (a) [***], (b) [***], (c) [***], (d) [***], (e) [***], and (f) [***]. Notwithstanding the foregoing, Net Sales shall not include, and shall be deemed zero with respect to, (1) the distribution of reasonable quantities of promotional samples of such Product, or (2) Product provided for clinical trials or research purposes, or charitable or compassionate use purposes.

"**Out-License Agreement**" means, with respect to any Product, any license agreement or other written agreement entered into by Novan and a Third Party whereby Novan grants any rights under any Intellectual Property related to such Product or to any Regulatory Approvals for such Product, in each case for the development and/or Commercialization of such Product by such Third Party in the Territory.

"**Person**" means any individual, firm, corporation, partnership, limited liability company, trust, business trust, joint venture, governmental authority, association or other entity.

"**Phase III Clinical Trial**" means a clinical trial of a Product designed to support approval of an application for Regulatory Approval in the Territory.

"**Product**" means, individually, the SB204 Product, the SB206 Product or the SB414 Product.

"**Product Field of Use**" means, individually, the SB204 Product Field of Use, the SB206 Product Field of Use or the SB414 Product Field of Use.

"**Product Intellectual Property**" means all of the Intellectual Property necessary for the development, manufacture, use, sale, offer for sale and/or importation of the Products in the Territory.

"**Products**" means, collectively, the SB204 Product, the SB206 Product and the SB414 Product.

"**Purchase Price**" has the meaning set forth in Section 2.2.

"**Regulatory Approval**" means, with respect to a particular country or regulatory jurisdiction, all necessary authorizations and approvals by the Regulatory Authorities required to manufacture, use, import, market, distribute and promote a Product in such country or regulatory jurisdiction.

"**Regulatory Authority**" means any national or supranational governmental authority or other governmental body that has responsibility in a given country or jurisdiction over the development, manufacture and/or commercialization of a Product, including FDA.

"**Sales Royalties**" means, collectively, the SB204 Sales Royalty, SB206 Sales Royalty and SB414 Sales Royalty.

"**Sales Royalty Term**" means, on a Product-by-Product, country-by-country basis, the period beginning with the First Commercial Sale of such Product in such country until the last to occur of: (a) [***], (b) [***] and (c) the [***] of the First Commercial Sale of such Product.

"**SB204 Applicable Percentage**" means, with respect to each of the SB204 Net Milestones and SB204 Net Royalties, twenty percent (20%). Notwithstanding the foregoing, until Novan has made payments to Reedy Creek under this Agreement the sum of which equals the Purchase Price, the SB204 Applicable Percentage shall mean, with respect to SB204 Net Milestones, twenty-five percent (25%).

"**SB204 Net Milestones**" means the aggregate, gross amount of upfront fees, milestone payments and equivalent fees or payments received by Novan pursuant to any Out-License Agreement based on the occurrence of events specified in such Out-License Agreement, including the achievement of any milestones, with respect to the SB204 Product in the Territory in the SB204 Field of Use, less any upfront fees, milestone payments and equivalent fees or payments payable by Novan pursuant to any In-License Agreement with respect to the SB204 Product in the Territory in the SB204 Field of Use. SB204 Net Milestones shall not include any Development Payments received by Novan with respect to the SB204 Product.

"**SB204 Net Royalties**" means the aggregate, gross amount of royalty payments and any collections, recoveries, payments, supplements or other compensation made in lieu thereof and any other remuneration of any kind received by or for Novan pursuant to any Out-License Agreement for sales or other transfers of the SB204 Product in the Territory for use in the SB204 Product Field of Use in the Territory, less any royalty payments and any collections, recoveries, payments, supplements or other compensation made in lieu thereof and any other remuneration of any kind

payable by Novan pursuant to any In-License Agreement with respect to such sales or transfers. For clarity, SB204 Net Royalties shall not include any milestone payments received by or for Novan pursuant to any Out-License Agreements for sales or other transfers of the SB204 Product in the Territory in the SB204 Product Field of Use, provided however, such milestone payments shall be included as part of the SB204 Net Milestones. SB204 Net Royalties shall not include any Development Payments received by Novan with respect to the SB204 Product.

"**SB204 Product**" means Novan's pharmaceutical product known as SB204 being developed for the treatment of acne vulgaris in humans, as such product exists as of the Effective Date or as such product may be modified (i) during the development process up to and including the first Regulatory Approval by the FDA and (ii) for the treatment of acne vulgaris in humans from time to time thereafter.

"**SB204 Product Field of Use**" means the treatment of any distinct illness, sickness, interruption, cessation or disorder of a particular bodily function, system, tissue type or organ, or sign or symptom of any such items or conditions, regardless of the severity, frequency or route of any treatment, dosage strength or patient class, for which Regulatory Approval is being sought or has been obtained, including treatment of acne vulgaris in humans.

"**SB204 Rights**" means the right to receive cash in an amount equal to the sum of (a) the product of the SB204 Applicable Percentage multiplied by the SB204 Net Milestones and (b) the product of the SB204 Applicable Percentage multiplied by the SB204 Net Royalties, in each case during the Assigned Rights Period and pursuant to the terms and conditions of this Agreement.

"**SB204 Sales Royalty**" has the meaning set forth in Section 2.3(b).

"**SB206 Applicable Percentage**" means, with respect to each of the SB206 Net Milestones and SB206 Net Royalties, ten percent (10%). Notwithstanding the foregoing, until Novan has made payments to Reedy Creek under this Agreement the sum of which equals the Purchase Price, the SB206 Applicable Percentage shall mean, with respect to SB206 Net Milestones, twenty-five percent (25%).

"**SB206 Net Milestones**" means the aggregate, gross amount of upfront fees, milestone payments and equivalent fees or payments received by Novan pursuant to any Out-License Agreement based on the occurrence of events specified in such Out-License Agreement, including the achievement of any milestones, with respect to the SB206 Product in the Territory in the SB206 Field of Use, less any upfront fees, milestone payments and equivalent fees or payments payable by Novan pursuant to any In-License Agreement with respect to the SB206 Product in the Territory in the SB206 Field of Use. SB206 Net Milestones shall not include any Development Payments received by Novan with respect to the SB206 Product.

"**SB206 Net Royalties**" means the aggregate, gross amount of royalty payments and any collections, recoveries, payments, supplements or other compensation made in lieu thereof and any other remuneration of any kind received by or for Novan pursuant to any Out-License Agreement for sales or other transfers of the SB206 Product in the Territory for use in the SB206 Product Field

of Use in the Territory, less any royalty payments and any collections, recoveries, payments, supplements or other compensation made in lieu thereof and any other remuneration of any kind payable by Novan pursuant to any In-License Agreement with respect to such sales or transfers. For clarity, SB206 Net Royalties shall not include any milestone payments received by or for Novan pursuant to any Out-License Agreements for sales or other transfers of the SB206 Product in the Territory in the SB206 Product Field of Use, provided however, such milestone payments shall be included as part of the SB206 Net Milestones. SB206 Net Royalties shall not include any Development Payments received by Novan with respect to the SB206 Product.

"**SB206 Product**" means Novan's pharmaceutical product known as SB206 being developed for the treatment of molluscum contagiosum in humans, as such product exists as of the Effective Date or as such product may be modified (i) during the development process up to and including the first Regulatory Approval by the FDA and (ii) for the treatment of molluscum contagiosum in humans from time to time thereafter.

"**SB206 Product Field of Use**" means the treatment of any distinct illness, sickness, interruption, cessation or disorder of a particular bodily function, system, tissue type or organ, or sign or symptom of any such items or conditions, regardless of the severity, frequency or route of any treatment, dosage strength or patient class, for which Regulatory Approval is being sought or has been obtained, including treatment of molluscum contagiosum in humans.

"**SB206 Rights**" means the right to receive cash in an amount equal to the sum of (a) the product of the SB206 Applicable Percentage multiplied by the SB206 Net Milestones and (b) the product of the SB204 Applicable Percentage multiplied by the SB206 Net Royalties, in each case during the Assigned Rights Period and pursuant to the terms and conditions of this Agreement.

"**SB206 Sales Royalty**" has the meaning set forth in Section 2.3(b).

"**SB414 Applicable Percentage**" means, with respect to each of the SB414 Net Milestones and SB414 Net Royalties, twenty percent (20%). Notwithstanding the foregoing, until Novan has made payments to Reedy Creek under this Agreement the sum of which equals the Purchase Price, the SB414 Applicable Percentage shall mean, with respect to SB414 Net Milestones, twenty-five percent (25%).

"**SB414 Net Milestones**" means the aggregate, gross amount of upfront fees, milestone payments and equivalent fees or payments received by Novan pursuant to any Out-License Agreement based on the occurrence of events specified in such Out-License Agreement, including the achievement of any milestones, with respect to the SB414 Product in the Territory in the SB414 Field of Use, less any upfront fees, milestone payments and equivalent fees or payments payable by Novan pursuant to any In-License Agreement with respect to the SB414 Product in the Territory in the SB414 Field of Use. SB414 Net Milestones shall not include any Development Payments received by Novan with respect to the SB414 Product.

"**SB414 Net Royalties**" means the aggregate, gross amount of royalty payments and any collections, recoveries, payments, supplements or other compensation made in lieu thereof and any

other remuneration of any kind received by or for Novan pursuant to any Out-License Agreement for sales or other transfers of the SB414 Product in the Territory for use in the SB414 Product Field of Use in the Territory, less any royalty payments and any collections, recoveries, payments, supplements or other compensation made in lieu thereof and any other remuneration of any kind payable by Novan pursuant to any In-License Agreement with respect to such sales or transfers. For clarity, SB414 Net Royalties shall not include any milestone payments received by or for Novan pursuant to any Out-License Agreements for sales or other transfers of the SB414 Product in the Territory in the SB414 Product Field of Use, provided however, such milestone payments shall be included as part of the SB414 Net Milestones. SB414 Net Royalties shall not include any Development Payments received by Novan with respect to the SB414 Product.

"**SB414 Product**" means Novan's pharmaceutical product known as SB414 being developed for the treatment of atopic dermatitis in humans, as such product exists as of the Effective Date or as such product may be modified (i) during the development process up to and including the first Regulatory Approval and (ii) for the treatment of atopic dermatitis in humans from time to time thereafter.

"**SB414 Product Field of Use**" means the treatment of any distinct illness, sickness, interruption, cessation or disorder of a particular bodily function, system, tissue type or organ, or sign or symptom of any such items or conditions, regardless of the severity, frequency or route of any treatment, dosage strength or patient class, for which Regulatory Approval is being sought or has been obtained, including treatment of atopic dermatitis in humans.

"**SB414 Rights**" means the right to receive cash in an amount equal to the sum of (a) the product of the SB414 Applicable Percentage multiplied by the SB414 Net Milestones and (b) the product of the SB414 Applicable Percentage multiplied by the SB414 Net Royalties, in each case during the Assigned Rights Period and pursuant to the terms and conditions of this Agreement.

"**SB414 Sales Royalty**" has the meaning set forth in Section 2.3(b).

"**SEC**" means the United States Securities and Exchange Commission or any successor agency thereto.

"**Term**" has the meaning set forth in Section 6.1.

"**Territory**" means the United States of America, Canada, Mexico and each of their territories and possessions.

"**Third Party**" means any Person other than Novan and Reedy Creek and their respective Affiliates.

"**Transfer**" means any sale (or any transaction having the effect of a sale), assignment, conveyance of rights, deed of trust, Encumbrance, exclusive license, seizure or other transfer of any sort and to any degree, voluntary or involuntary, including by operation of law.

"**UNC License Agreement**" means that certain Amended, Restated and Consolidated License Agreement between Novan and The University of North Carolina at Chapel Hill with an effective date of June 27, 2012 and as amended on November 30, 2012, April 12, 2016 and November 1, 2018, and as may be further amended from time to time.

2. PURCHASE OF ASSIGNED RIGHTS; PAYMENTS BY NOVAN

2.1 Purchase of Assigned Rights. Subject to the terms and conditions of this Agreement, Novan hereby sells, assigns, transfers and conveys to Reedy Creek, and Reedy Creek hereby purchases from Novan, all of Novan's right, title and interest in and to the Assigned Rights, free and clear of all liens, mortgages, pledges, leases, options, assignments and security interests ("**Encumbrances**").

2.2 Purchase Price. In consideration of the Assigned Rights, Reedy Creek shall pay to Novan the following payments (collectively, the "**Purchase Price**"): (a) on the Effective Date, Twenty-Five Million United States Dollars ($25,000,000); and (b) contingent on Clinical Trial Success, Ten Million United States Dollars ($10,000,000) to be paid within [***] of the notice of Clinical Trial Success given pursuant to Section 3.2. The Parties acknowledge if Clinical Trial Success is not achieved, the "Purchase Price" shall be automatically adjusted to reflect, as full consideration, the initial payment of $25,000,000 under Section 2.2(a). Payment of the Purchase Price shall be made by wire transfer of immediately available funds to an account designated by Novan. For clarity, Novan shall use the Purchase Price primarily for the purposes of the development and Commercialization of the Products under this Agreement.

2.3 Payments by Novan.

(a) In consideration of the Purchase Price paid by Reedy Creek, Reedy Creek shall be entitled to receive, and Novan shall pay, with respect to each Calendar Quarter during the Assigned Rights Period, the aggregate amount of the following (as applicable):

(i) the product of the SB204 Applicable Percentage and the SB204 Net Milestones received by Novan during such Calendar Quarter;

(ii) the product of the SB204 Applicable Percentage and the SB204 Net Royalties received by Novan during such Calendar Quarter;

(iii) the product of the SB206 Applicable Percentage and the SB206 Net Milestones received by Novan during such Calendar Quarter;

(iv) the product of the SB206 Applicable Percentage and the SB206 Net Royalties received by Novan during such Calendar Quarter;

(v) the product of the SB414 Applicable Percentage and the SB414 Net Milestones received by Novan during such Calendar Quarter; and

(vi) the product of the SB414 Applicable Percentage and the SB414 Net Royalties received by Novan during such Calendar Quarter.

(b) In the event Novan elects to Commercialize any Product solely using its internal capabilities or through its Affiliates (and without entering any Out-License Agreement), or in the event a successor to Novan following a Change of Control of Novan elects to commercialize any Product using its internal capabilities or through its Affiliates (and without entering any Out-License Agreement), Novan or such successor of Novan shall notify Reedy Creek of this election and the provisions of Section 2.3(a) shall no longer apply with respect to such Product, and upon such notice, the provisions of this Section 2.3(b) shall apply. In consideration for the Purchase Price by Reedy Creek, effective only upon delivery of the foregoing notice from Novan with respect to a Product, Novan hereby sells to Reedy Creek all of its right, title and interest in and to royalties on Net Sales of such Product in the Territory in the applicable Product Field of Use, with respect to each Calendar Quarter during the Sales Royalty Term, calculated as follows:

(i) if the applicable Product is the SB204 Product, a royalty equal to [***] of Net Sales of the SB204 Product in the SB204 Field of Use ("**SB204 Sales Royalty**"),

(ii) if the applicable Product is the SB206 Product, a royalty equal to [***] of Net Sales of the SB206 Product in the SB206 Field of Use ("**SB206 Sales Royalty**"), and

(iii) if the applicable Product is the SB414 Product, a royalty equal to [***] of Net Sales of the SB414 Product in the SB414 Field of Use ("**SB414 Sales Royalty**").

(c) All of the foregoing payments in this Section 2.3 shall be made by wire transfer of immediately available funds within [***] following the end of each Calendar Quarter during the Assigned Rights Period or Sales Royalty Term, as applicable, to an account designated by Reedy Creek. For the avoidance of doubt, Reedy Creek shall be entitled to receive the payments set forth in this Section 2.3 notwithstanding the absence of payment by Reedy Creek under Section 2.2(b) due to failure by Novan to achieve Clinical Trial Success. Amounts payable under Section 2.3 shall not be subject to any setoff or other deduction by reason of any amounts otherwise payable under this Agreement or any other agreement.

(d) In the event that Novan Commercializes a Product both internally under Section 2.3(b) and under Out-License Agreements under Section 2.3(a), the Included

Payment shall be calculated as the aggregate sums calculated and due under Sections 2.3(a) and (b).

(e) In the event that any Contract Party offsets all or any part of the Included Payments against any right, payment or claim of such Contract Party against Novan or its Affiliates and such offset actually reduces the amount of any payment on the Included Payments (any such reduction, a "**Payment Shortfall**"), Novan will pay Reedy Creek the amount of the Payment Shortfall within [***] of written notice thereof from Reedy Creek. After Novan makes the payment to Reedy Creek contemplated in the preceding sentence, Novan shall be entitled to retain any amount subsequently recovered from such Contract Party in respect of such offset.

2.4 Taxes. All payments under this Agreement shall be made without any deduction or withholding for or on account of any tax, except as set forth in this Section 2.4. The Parties agree to cooperate with one another and use reasonable efforts to minimize obligations for any and all income or other taxes required by Applicable Laws to be withheld or deducted from any of the royalty and other payments made by or on behalf of a Party hereunder ("**Withholding Taxes**"). The applicable paying Party under this Agreement (the "**Paying Party**") shall, if required by Applicable Laws, deduct from any amounts that it is required to pay to the recipient Party hereunder (the "**Recipient Party**") an amount equal to such Withholding Taxes, provided that the Paying Party shall give the Recipient Party reasonable notice prior to paying any such Withholding Taxes. Such Withholding Taxes shall be paid to the proper taxing authority for the Recipient Party's account and, if available, evidence of such payment shall be obtained and sent to recipient within one (1) month of such payment. The Paying Party shall, at the Recipient Party's cost and expense, do all such lawful acts and things and sign all such lawful deeds and documents as the Recipient Party may reasonably request to enable the Paying Party to avail itself of any applicable legal provision or any double taxation treaties with the goal of paying the sums due to the Recipient Party hereunder without deducting any Withholding Taxes.

2.5 Interest. Payment required under this Agreement shall, if overdue, bear interest until payment at a per annum rate one percent (1%) above the prime rate quoted in the Money Rates section of The Wall Street Journal, Eastern Edition for the date on which payment was due, calculated daily on the basis of a 365-day year; provided, however, that in no event shall such rate exceed the applicable maximum legal annual interest rate.

2.6 Acquisition of Assigned Rights Only. Reedy Creek is acquiring no rights other than those expressly assigned herein. For the avoidance of doubt, Reedy Creek is acquiring no rights under any Intellectual Property of Novan, including any Product Intellectual Property.

2.7 Currency. All payments made hereunder shall be in United States Dollars.

2.8 No Assumed Obligations. Reedy Creek is not assuming any liability or obligation of Novan or any of its Affiliates, whether presently in existence or arising or asserted hereafter, whether under any In-License Agreement or otherwise. All such liabilities and obligations shall

be retained, paid, performed and discharged by and remain the sole obligations and liabilities of Novan or its Affiliates.

3. ADDITIONAL COVENANTS OF NOVAN

3.1 Development and Commercialization of the Products. During the Term, Novan shall use Commercially Reasonable Efforts to develop, obtain Regulatory Approval for and Commercialize the Products. Novan may elect to fulfill the foregoing obligations using its internal capabilities, through its Affiliates or by entering into Out-License Agreements. Promptly after entering into any Out-License Agreement, Novan shall provide to Reedy Creek notice and a copy of such Out-License Agreement. Novan may also utilize the services of Third Parties, including without limitation Third Party contract research organizations, contract manufacturing organizations, suppliers, partners and other service providers to develop, obtain Regulatory Approval and Commercialize the Products. Additionally, each Calendar Quarter until the First Commercial Sale of a Product and, thereafter, twice per Calendar Year with respect to such Product (or as more frequently reasonably requested by Reedy Creek), Novan will deliver to Reedy Creek a report summarizing its development and Commercialization activities during the prior relevant period. Each such report shall include (i) a summary of services provided by all Third Party contract research organizations, contract manufacturing organizations, suppliers, partners and other service providers; (ii) reports, summaries or other documents provided by or on behalf of Novan relating to the development of or clinical trial performance of a Product (including Phase III Clinical Trial results related to the determination of Clinical Trial Success); (iii) identification of any material Product Intellectual Property developed, created, reduced to practice or acquired by or on behalf of Novan; and (iv) copies of Novan's business plans, financial plans, marketing plans and projections, as well as any filings or submissions to any Regulatory Authority. If an Affiliate and/or Contract Party meets or fulfills any or all of the obligations of Novan under this Agreement, and/or observes any of the terms or conditions hereof, then Novan will be deemed to have met or fulfilled such obligations or observed such terms or conditions, as the case may be.

3.2 Clinical Trial Success. Novan shall promptly notify Reedy Creek upon achieving of Clinical Trial Success. Any notice from Novan claiming that Clinical Trial Success has been achieved shall be accompanied by a publicly released press release of top line results of the Phase III Clinical Trials, and any other documentation or information reasonably requested by Reedy Creek to confirm such achievement. Any dispute regarding the achievement of Clinical Trial Success will be subject to the dispute resolution procedure in Section 9.1.

3.3 Maintenance of Product Intellectual Property. During the Term, Novan shall (a) maintain and not abandon the Product Intellectual Property in the Territory owned by Novan, including with respect to any Product Intellectual Property comprising issued patents in the Territory, and (b) maintain and not abandon the Product Intellectual Property in the Territory controlled but not owned by Novan under any In-License Agreement to the extent Novan has the right and obligation to do so under such In-License Agreement.

3.4 Performance under License Agreements. During the Term, Novan shall duly perform and observe all of its respective obligations under each License Agreement in all material

respects and maintain in full force and effect the License Agreements. Upon the occurrence of a material breach of any License Agreement by any counterparty thereto, which is not cured as provided therein, Novan shall use Commercially Reasonable Efforts to seek to enforce all of its rights and remedies thereunder. Novan shall not, without the prior written consent of Reedy Creek, which consent shall not be unreasonably withheld, forgive, release or compromise any amount owed to Novan under a License Agreement in a manner which could reasonably be expected to materially adversely affect the Included Payments. Novan shall provide Reedy Creek with written notice as promptly as practicable (and in any event within [***]) upon receiving written notice from a Contract Party terminating or providing notice of termination of any License Agreement, alleging any breach of or default under any License Agreement, or asserting the existence of any facts, circumstances or events which alone or together with other facts, circumstances or events could reasonably be expected (with or without the giving of notice or passage of time or both) to give rise to a breach of or default under or right to terminate such License Agreement. In each such case, Novan's written notice shall include a summary describing in reasonable detail the relevant breach, default or termination event, including a copy of any written notice received from such Contract Party and, describing the corrective action Novan proposes to take. Novan shall thereafter use its Commercially Reasonable Efforts to cure such breach.

3.5 Litigation. Novan promptly shall notify Reedy Creek in writing of the commencement of any litigation in respect of the Product Intellectual Property, the License Agreements, or any Third Party's Intellectual Property licensed under an In-License Agreement of which Novan has knowledge, and such notification shall contain full particulars of the event described therein. Novan shall keep Reedy Creek reasonably informed as to the status of any such litigation.

3.6 No Transfer without Consent. During the Term, other than in connection with a Change of Control, Novan shall not Transfer or consent to the Transfer of any portion of its (i) Product Intellectual Property, or (ii) rights in, under, or to any of the License Agreements (including any right to receive all or any portion of any royalty, milestone, or other payment thereunder), without the prior written consent of Reedy Creek. Notwithstanding the foregoing, Novan shall be permitted, and nothing in this Agreement shall restrict Novan's ability, to enter into any Out-License Agreement, lending arrangements that are secured by any Product Intellectual Property or other assets of Novan, or product revenue monetization arrangements similar to this Agreement, provided that in each case the Assigned Rights remain free and clear of any Encumbrances.

3.7 New In-License Agreement. In the event that Novan elects to license additional Third Party Intellectual Property or elects to amend an approved In-License Agreement in connection with royalty or milestone payments, structure, or timeline, Novan may present such draft agreement with a Third Party (or, if provision is prohibited, a summary of relevant commercial terms) to Reedy Creek for review and approval. Any approved proposed In-License Agreement shall upon its execution (a copy of which will be provided to Reedy Creek) constitute an "In-License Agreement". In addition, Novan may at any time present an executed agreement to Reedy Creek for review and approval. Reedy Creek shall consider in good faith, and on a commercially reasonable basis, all requests for approval from Novan to add any license or other written instrument

granting rights to Novan under Third Party Intellectual Property or to amend any approved In-License Agreement, and not unreasonably withhold or delay any such approvals. Any license or other written instrument entered into by Novan and a Third Party whereby Novan is granted rights under Third Party Intellectual Property that is not so approved may not form part of the calculation of Included Payments.

3.8 Maintenance of Books and Records. During the Term, Novan shall keep and maintain, or cause to be kept and maintained, at all times books and records of account consistent with good business practices and customary industry standards adequate to correctly reflect all payments paid and/or payable with respect to the Assigned Rights and Sales Royalties, as applicable.

3.9 Quarterly Reports. Without limiting the reporting required under Section 3.1, together with payment of any Included Payment, Novan shall prepare and deliver to Reedy Creek a written statement sufficient to compute Novan's calculation of all underlying royalties, milestones, and sales of a Product during such Calendar Quarter, including without limitation an itemized listing of all fees paid to Third Parties pursuant to an In-License Agreement.

3.10 Financial Reports. If at any time Novan is no longer required to publicly disclose audited financial reports with the SEC, on a quarterly basis, Novan will promptly provide to Reedy Creek copies of its regularly prepared financial statements, which shall include a balance sheet as of the last date of the applicable quarter and a statement of income and operating expenses with respect to such quarter.

3.11 Inspection Rights. Reedy Creek shall have the right, no more than [***] during each Calendar Year during the Term (as defined below) and for [***] thereafter, to have an independent certified public accountant reasonably acceptable to Novan ("**Audit Representative**") and at Reedy Creek's own expense audit the relevant books and records of account of Novan in connection with the development of the Products, clinical trials, Clinical Trial Success, Commercialization of a Product, any other sales or other transactions used to calculate the Included Payments, and payment of any amounts under this Agreement during normal business hours, and upon reasonable prior notice, to determine whether appropriate accounting has been performed and payments have been accurately and timely made to Reedy Creek hereunder, for a period covering not more than [***]. The Audit Representative will execute with Novan a written confidentiality agreement reasonably acceptable to Novan and will disclose to Reedy Creek only such information as is reasonably necessary to provide Reedy Creek with information regarding any actual or potential discrepancies between amounts reported and actually paid and amounts payable under this Agreement. The Audit Representative will send a copy of the report to Novan at the same time it is sent to Reedy Creek. The report sent to both Parties will include the methodology and calculations used to determine the results.

3.12 Audit Costs. In the event any audit of the books and records of Novan reveals that the amounts paid to Reedy Creek hereunder for the period of such audit have been understated by more than ten percent (10%) of the amounts determined to be due for the period subject to such

audit or Ten Thousand United States Dollars ($10,000), whichever is greater, then the costs incurred by Reedy Creek in respect of such audit shall be borne by Novan; and in all other cases, such audit costs shall be borne by Reedy Creek.

3.13 Security Interest. The Parties acknowledge and agree that Parties intend for the sale, assignment, transfer and conveyance of the Assigned Rights and Sales Royalties to constitute a sale of the Assigned Rights and Sales Royalties from Novan to Reedy Creek and not a borrowing, loan or equity investment. Accordingly, Novan shall treat the sale, transfer, assignment and conveyance of the Assigned Rights and Sales Royalties as a sale of an "account" or a "payment intangible" (as applicable) (as each of the foregoing terms is defined by the Uniform Commercial Code in the applicable jurisdiction ("UCC")) in accordance with the UCC, and Novan hereby authorizes Reedy Creek to file financing statements naming Novan as the debtor and Reedy Creek as the secured party with respect to the Assigned Rights and Sales Royalties. Without limiting the foregoing, in the event the sale, assignment, transfer and conveyance of the Assigned Rights or Sales Royalties is hereafter held not to be a sale, Novan hereby grants to Reedy Creek, as security for the obligations of Novan hereunder, a first priority security interest in and to all of Novan's right, title and interest in and to the Assigned Rights, Sales Royalties and any "proceeds" (as such term is defined by the UCC) thereof, and Novan hereby authorizes Reedy Creek to file such financing statements as may be necessary to perfect such security interest. Prior to filing any financing statement, Reedy Creek shall provide a copy of such financing statement to Novan to review and provide comments on such financing statement, and shall in good faith take such comments into account. For the avoidance of doubt, nothing in this Agreement shall be deemed to grant a security interest to Reedy Creek in any assets or other property of Novan, including without limitation the Product Intellectual Property.

3.14 Insurance. During the Term, Novan shall maintain insurance policies with reputable insurance companies that provide coverage in accordance with standards customary for comparable companies, with coverages and in amounts sufficient for the development and Commercialization activities and to comply with any License Agreement and otherwise that is customary for companies of comparable size and condition similarly situated in the same industry as such Persons, including clinical trial, product liability insurance and directors and officers insurance.

4. REPRESENTATIONS AND WARRANTIES OF NOVAN

Novan represents and warrants to Reedy Creek as follows as of the Effective Date.

4.1 Organization. Novan is a duly organized and validly existing corporation in good standing under the laws of the jurisdiction of its incorporation.

4.2 Authorization. Novan has the full right, power and authority to enter into this Agreement and to consummate or cause to be consummated all of the transactions contemplated hereby and to fulfill or cause to be fulfilled all of the obligations of Novan hereunder. The execution and delivery of this Agreement by Novan and the due consummation by Novan of the transactions contemplated hereby have been duly authorized by all necessary action of Novan. This Agreement

constitutes a legal, valid and binding agreement of Novan enforceable against Novan in accordance with its terms.

4.3 Consents and Approvals. No consent or approval from any Third Party is required to be made or obtained by Novan in connection with Novan's execution, delivery and performance of this Agreement, or the consummation of the transactions contemplated hereby.

4.4 Governmental Authorization. The execution and delivery by Novan of this Agreement and the performance of its obligations hereunder, does not require any notice to, action or consent by, or in respect of, or filing with, any Government Authority, except for the filing of financing statements under the UCC.

4.5 No Conflict or Violation. Neither the execution, delivery or performance of this Agreement, nor the consummation of the transactions contemplated hereby will result in a breach by Novan of, or a default by Novan under, any term or provision of any contract, agreement, lease, commitment, license, permit or authorization to which Novan is a party.

4.6 No Litigation. There is no pending, or to the knowledge of Novan or its Affiliates, threatened action, suit, arbitration proceeding, claim, dispute, investigation, governmental or regulatory inquiry against Novan or its Affiliates, which, if adversely determined, would question the validity of, or could reasonably be expected to have a Material Adverse Change on Novan, the Products, the Included Payments, or the transactions contemplated hereby.

4.7 Compliance with Laws. To the knowledge of Novan, Novan (a) is not in violation of, has violated or is under investigation with respect to, and (b) has not been threatened to be charged with or been given notice of any violation of, any law, rule, ordinance or regulation of, or any judgment, order, writ, decree, permit or license entered by any Regulatory Authority applicable to Novan or the Products which would reasonably be expected to have a material adverse effect on Novan, the Products or the transactions contemplated hereby.

4.8 Product Intellectual Property. To the knowledge of Novan, Novan owns all right, title and interest in, or holds a valid license (enforceable against Novan and to Novan's knowledge the Contract Party thereto) to, the Product Intellectual Property that are required to develop and Commercialize the Products, in each case free and clear of any Encumbrances. There is no pending or, to the knowledge of Novan, threatened action, suit, proceeding, investigation or claim by any Person to which Novan is a party that claims that the Product Intellectual Property or the development, manufacture, use, sale, offer for sale and/or importation of any Product infringes on any Intellectual Property of any other Person or constitutes misappropriation of any other Person's trade secrets or other Intellectual Property. To the knowledge of Novan, no Third Party has infringed or misappropriated or is now infringing or misappropriating the Product Intellectual Property. Other than the In-License Agreements, to Novan's knowledge, no license of rights to Intellectual Property are necessary to be licensed in order for Novan to develop or Commercialize the Products.

4.9 Ownership of Assigned Rights. Novan, immediately prior to the sale of the Assigned Rights, has the power and authority to sell all of the Assigned Rights. Neither Novan nor any of its Affiliates has assigned or sold any right, title, interest or claim in or to the Assigned Rights, other than by Novan to Reedy Creek pursuant to this Agreement. The Assigned Rights are free and clear of any and all Encumbrances. The assignment and transfer of the Included Payments from Novan to Reedy Creek shall not impair in any manner the obligation of a Contract Party to pay royalties or other fees under the applicable agreements with respect to the Product Intellectual Property or Products.

4.10 License Agreements. With respect to each License Agreement, as applicable:

(a) Such License Agreement is in full force and effect and has not been impaired, waived, altered or modified in any respect.

(b) No Contract Party under such License Agreement has been released, in whole or in part, from any of its obligations under such License Agreement in a manner that could reasonably be expected to result in a Material Adverse Change.

(c) There has been no correspondence or any other communication sent by or on behalf of Novan to, or received by or on behalf of Novan from, any Contract Party, the subject matter of which has resulted in or would reasonably be expected to result in a Material Adverse Change, and no breach or dispute has occurred with respect to any payment or other obligations, the subject matter of which has resulted in or would reasonably be expected to result in a Material Adverse Change.

(d) Novan has not received (i) any notice of any Contract Party's intention to terminate such License Agreement in whole or in part or (ii), any notice requesting any amendment, alteration or modification of such License Agreement or any sublicense or assignment thereunder that has not either been withdrawn in writing or reflected in such License Agreement.

(e) No payment required to be made under the terms of any License Agreement has been subject to any claim pursuant to any right of rescission, set-off, counterclaim or defense and no Contract Party to an Out-License Agreement has the right to rescind, set-off, counterclaim or withhold any payment required to be made under such Out-License Agreement.

(f) Novan has provided true and correct copies of all In-License Agreements to Reedy Creek, including all amendments thereto.

(g) The License Agreement is the legal, valid and binding obligation of Novan and the Contract Party thereto, enforceable against Novan and, to the knowledge of Novan, such Contract Party in accordance with its terms.

4.11 Adverse Data. Novan has disclosed to Reedy Creek all material adverse data relating to the Product and their efficacy and safety in animals and humans and the development and regulatory status known to Novan as of the Effective Date of this Agreement.

4.12 Sufficiency of Assets; Financial Condition. No insolvency proceeding of any character, including, without limitation, bankruptcy, receivership, reorganization, composition or arrangement with creditors, voluntary or involuntary, has been commenced by or against Novan or any of its assets or properties, nor has any such proceeding been threatened. Novan does not contemplate and has not taken any action in contemplation of the institution of any such proceeding. The Purchase Price, together with the available capital of Novan, constitutes sufficient capital for Novan to: (i) pursue the development, Commercialization (through Out-License Agreements and other Third Party arrangements) and Regulatory Approval activities for the SB206 Product in the manner reasonably anticipated under this Agreement for products of similar market potential, and profit potential, with the objective of launching the SB206 Product in the Territory, and (ii) advance programmatically such activities with respect to the SB204 Product and the SB414 Product.

4.13 Debarment. Novan has not utilized and will not utilize, in developing or commercializing the Products, any Person that at such time, to Novan's knowledge, is debarred by FDA or any other Regulatory Authority.

5. REPRESENTATIONS AND WARRANTIES OF REEDY CREEK

Reedy Creek represents and warrants to Novan as follows as of the Effective Date.

5.1 Organization. Reedy Creek is a duly organized and validly existing limited liability company in good standing under the laws of the jurisdiction of its organization.

5.2 Authorization. Reedy Creek has the full right, power and authority to enter into this Agreement and to consummate or cause to be consummated all of the transactions contemplated hereby and to fulfill or cause to be fulfilled all of the obligations of Reedy Creek hereunder. The execution and delivery of this Agreement by Reedy Creek and the due consummation by Reedy Creek of the transactions contemplated hereby have been duly authorized by all necessary action of Reedy Creek. This Agreement constitutes a legal, valid and binding agreement of Reedy Creek enforceable against Reedy Creek in accordance with its terms.

5.3 Consents and Approvals. No consent or approval from any Third Party is required to be made or obtained by Reedy Creek in connection with Reedy Creek's execution, delivery and performance of this Agreement, or the consummation of the transactions contemplated hereby.

5.4 No Conflict or Violation. Neither the execution, delivery or performance of this Agreement, nor the consummation of the transactions contemplated hereby will result in a breach by Reedy Creek of, or a default by Reedy Creek under, any term or provision of any contract, agreement, lease, commitment, license, permit or authorization to which Reedy Creek is a party.

5.5 No Litigation. There is no pending, or to the knowledge of Reedy Creek, threatened action, suit, arbitration proceeding, claim, investigation, governmental or regulatory inquiry against Reedy Creek which, if adversely determined, would question the validity of, or could reasonably be expected to have a material adverse effect on the transactions contemplated hereby.

6. TERM AND TERMINATION

6.1 Term; Termination. This Agreement shall commence on the Effective Date and will continue for as long as payments are due and payable under this Agreement (the "**Term**").

6.2 Termination by Reedy Creek. If Reedy Creek believes that Novan is in material breach of this Agreement, then Reedy Creek may deliver notice identifying with specificity such alleged breach to Novan. Novan will have sixty (60) days to cure such breach. If Novan fails to cure such breach within such cure period, Reedy Creek may, subject to the remainder of this Section 6.2, terminate this Agreement by providing Novan a written notice at the end of such cure period. Notwithstanding the foregoing, if Novan fails to cure such breach within such cure period, but within such cure period Novan is using good faith efforts to cure such breach, then Reedy Creek may not terminate this Agreement for so long as Novan is using good faith efforts to cure such breach. Notwithstanding the foregoing, if Novan disputes in good faith the existence or materiality of such breach and provides notice to Reedy Creek of such dispute within such cure period, Reedy Creek will not have the right to terminate this Agreement in accordance with this Section 6.2 unless and until it has been determined in accordance with Article 9 that this Agreement was materially breached by Novan and Novan failed to cure such breach within the applicable cure period. It is understood and acknowledged that during the pendency of such a dispute, all of the terms and conditions of this Agreement will remain in effect and the Parties will continue to perform all of their respective obligations hereunder.

6.3 Effect of Termination. Expiration or termination of this Agreement for any reason will not release any Party from any obligations that, at the time of such expiration or termination, have already accrued to the other Party. The termination of this Agreement, including termination due to the expiration of the Term, shall not terminate the obligation of Novan, or its Affiliates, or assignees, to pay any Included Payment accrued prior to termination. Upon termination of this Agreement, Reedy Creek shall have the right to retain any Included Payment already paid by Novan under this Agreement. If this Agreement is early terminated by Reedy Creek pursuant to Section 6.2 for a material breach of Section 3.1 and the acts or omissions constituting such breach occurred no more than one year prior to Reedy Creek's notice to Novan of such breach, then, in addition to all other rights and remedies available to it, within thirty (30) days after written notice from Reedy Creek to Novan following the effective date of such termination, Novan shall pay to Reedy Creek an amount equal to the Purchase Price paid by Reedy Creek as of the effective date of termination less any payments made by Novan under this Agreement as of the effective date of termination. In addition, the rights and obligations of the Parties set forth in this Section 6.3 and Articles 1 (to the extent necessary to enforce other surviving rights and obligations of the Parties) and 7-10 shall survive termination or expiration of this Agreement.

7. CONFIDENTIAL INFORMATION

7.1 Confidential Information. During the Term and for a period of [***] thereafter, each Party shall (a) keep Confidential Information of the other Party confidential to the same extent such Party maintains its own information of similar nature (but at a minimum each Party shall use commercially reasonable efforts to maintain such Confidential Information in confidence), (b) not publish or otherwise disclose such Confidential Information to a Third Party, and (c) not use or exploit such Confidential Information for any purpose except for the performance of such Party's obligations or exercise of such Party's rights under this Agreement. Each Party may only disclose Confidential Information of the other Party to those officers, employees, or agents of such Party with a need to know, and only after such officers, employees, or agents have been advised of the confidential nature of such information and are bound by an obligation of confidentiality of similar scope to the terms of this Agreement. If either Party becomes aware or has knowledge of any unauthorized use or disclosure of the other Party's Confidential Information, it shall promptly notify the other Party of such unauthorized use or disclosure.

7.2 Permitted Disclosures. Except with respect to required disclosures under Section 7.3, neither Party shall not make any public announcement of the existence or the terms of this Agreement, without the prior express written consent and approval of the other Party. Each Party may disclose the terms of this Agreement to any of its or its Affiliates' actual or prospective insurers, investors, lenders, business partners or acquirers performing a due diligence review of such Party or its Affiliates, and the agents or advisors of the foregoing, provided such permitted recipients are bound by written or professional obligations of confidentiality for such purpose.

7.3 Required Disclosures. Notwithstanding any other provision of this Agreement, disclosure of Confidential Information shall not be prohibited to the extent such disclosure: (a) is in response to a valid order of a court or Regulatory Authority or (b) is otherwise required by law, regulation, or the rules of any relevant agency, including the SEC, or body related to a regulated stock exchange; provided, however, that the receiving Party shall, except where not permitted or reasonably feasible under the applicable circumstances of such order or legal requirement, first have given reasonable notice to the other Party in order to allow such Party to object and/or seek a protective order prior to disclosure. With respect to any required filings with the SEC that include disclosure of the terms of this Agreement, each filing Party shall request (to the extent legally permitted) confidential treatment of the terms hereof for which confidential treatment is customarily sought, to the extent such confidential treatment is reasonably available to such Party under the circumstances. In the event of any such filing, the filing Party will provide the other Party with a copy of the Agreement marked to show provisions for which the filing Party intends to seek confidential treatment and shall reasonably consider the other Party's timely comments thereon.

8. INDEMNIFICATION; DISCLAIMER; LIMITATION ON LIABILITY

8.1 Indemnification by Novan. Novan shall defend, indemnify and hold harmless Reedy Creek and its Affiliates and its and their respective directors, officers, managers, employees, and agents (collectively, the "**Reedy Creek Indemnitees**") from and against any and all claims, liabilities, losses, costs, actions, suits, damages and expenses, including reasonable attorneys' fees

(collectively, "**Damages**") to the extent arising from any claim, action or proceeding made or brought against any Reedy Creek Indemnitees in connection with: (a) any breach of this Agreement by Novan; (b) the gross negligence or willful misconduct of Novan, its Affiliates and/or Contract Parties in connection with the performance by or on behalf of Novan of Novan's obligations or exercise of its rights under this Agreement; (c) the development, manufacture, use, handling, storage, commercialization, transfer, importation, exportation or labeling of the Products by Novan, its Affiliates or Licensees in the Territory; (d) any infringement or misappropriation of any Intellectual Property of any Third Party by Novan, its Affiliates and/or Licensees in connection with the performance by or on behalf of Novan of Novan's obligations or exercise of Novan's rights under this Agreement; or (e) any violation of any Applicable Laws by Novan, its Affiliates or Licensees; except in any such case to the extent such Damages are attributable to any breach of this Agreement by Reedy Creek, the gross negligence or willful misconduct of Reedy Creek or a Reedy Creek Indemnitee or any violation of any Applicable Laws by Reedy Creek or a Reedy Creek Indemnitee.

8.2 Indemnification Procedure. In the event that Reedy Creek receives notice of any Third Party claim, action or proceeding for which a Reedy Creek Indemnitee claims indemnity hereunder, Reedy Creek, on behalf of such Reedy Creek Indemnitee, shall promptly notify Novan of such matter. Novan shall then promptly assume responsibility for and shall have full control of such matter using counsel reasonably satisfactory to Reedy Creek, including settlement negotiations and any legal proceedings, and Reedy Creek shall, and shall cause the applicable Reedy Creek Indemnitee to, fully cooperate at Novan's expense in Novan's handling and defense thereof. Reedy Creek may participate, at its own expense, in the defense of such claim or litigation provided that Novan shall direct and control the defense of such claim or litigation. Novan shall not, in the defense of such claim or litigation resulting therefrom, consent to entry of any judgment except with the written consent of the Reedy Creek Indemnitee, which shall not be unreasonably withheld, or enter into any settlement except with the written consent of the Reedy Creek Indemnitee, which shall not be unreasonably withheld, which: (a) does not include as an unconditional term thereof the giving by the plaintiff to the Reedy Creek Indemnitee of a release from all liability in respect of such claim or litigation; or (b) contains any admission of liability.

8.3 Disclaimer. Except as provided under Article 4 and Article 5, each Party expressly disclaims any and all warranties of any kind, express or implied, including without limitation the warranties of design, merchantability, fitness for a particular purpose, noninfringement of Intellectual Property of Third Parties, or arising from a course of dealing, usage or trade practices, in all cases with respect thereto. Without limiting the foregoing, Reedy Creek acknowledges and agrees that Reedy Creek has made its own investigation of the Products and the Product Intellectual Property and is not relying on any implied warranties or upon any representation or warranty as to the future value or amount or potential value or amount of the Assigned Rights or Sales Royalties, as applicable.

8.4 Limitation on Liability. IN NO EVENT SHALL A PARTY BE LIABLE TO THE OTHER PARTY IN CONNECTION WITH THIS AGREEMENT FOR ANY SPECIAL, CONSEQUENTIAL, INDIRECT, INCIDENTAL, EXEMPLARY OR PUNITIVE DAMAGES

OF ANY KIND, INCLUDING LOST PROFITS AND LOST REVENUE, REGARDLESS OF THE FORM OF ACTION, WHETHER IN CONTRACT, TORT, NEGLIGENCE, STRICT PRODUCT LIABILITY, OR OTHERWISE, EVEN IF INFORMED OF OR AWARE OF THE POSSIBILITY OF ANY SUCH DAMAGES IN ADVANCE; PROVIDED, HOWEVER, THAT THE FOREGOING LIMITATION WILL NOT LIMIT (A) NOVAN'S OBLIGATION TO INDEMNIFY REEDY CREEK TO THE EXTENT REQUIRED BY SECTION 8.1, OR (B) A PARTY'S LIABILITY FOR BREACH OF ARTICLE 7.

9. DISPUTE RESOLUTION

9.1 Resolution by Executive Officers. In the event of any dispute, disagreement or controversy between the Parties arising from or relating to any alleged performance or non-performance of this Agreement or the interpretation or application of this Agreement ("**Dispute**"), the Chief Executive Officer or Manager of each Party (collectively, the "**Executive Officers**"), as applicable, shall attempt to reach a solution satisfactory to both Parties. If the Executive Officers do not reach such solution within a period of [***] or such longer period as the Parties may mutually agree upon, then, upon notice by either Party to the other, such Dispute shall be referred to non-binding mediation with a neutral mediator. If, such Dispute remains unresolved [***] following notice by a Party requesting non-binding mediation, such Dispute shall be adjudicated in accordance with Section 9.2.

9.2 Venue. In the event any Dispute is not resolved pursuant to process set forth in Section 9.1, such Dispute shall be finally resolved exclusively in any state or federal court located in Wake County, North Carolina.

9.3 Emergency Relief. Nothing in this Article 9 shall prevent either Party from immediately seeking injunctive relief from any court of competent jurisdiction.

10. MISCELLANEOUS

10.1 Construction and Interpretation. All terms defined in the singular form shall include the plural and vice versa. Unless otherwise stated, all sections referred to herein are sections of this Agreement. Each of the exhibits referred to in this Agreement and attached hereto, and all attachments and amendments thereto, are and shall be incorporated herein and made a part hereof. The headings of the articles and sections in this Agreement are inserted for convenience only and are not intended to interpret, define or limit the scope or content hereof or any provision hereof. The words "include," "includes" and "including" shall be deemed to be followed by the phrase "but not limited to" unless expressly stated otherwise.

10.2 Choice of Law. This Agreement shall be governed by and construed in accordance with the laws of the State of North Carolina without giving effect to the choice of law provisions thereof.

10.3 Severability. If any provision of this Agreement is held by any competent authority to be invalid or unenforceable in whole or in part, this Agreement shall continue to be valid as to the other provisions hereof and the remainder of the affected provision; provided that if the absence of such provision causes a material adverse change in either the risks or benefits of this Agreement to either Party, the Parties shall negotiate in good faith a commercially reasonable substitute or replacement for the invalid or unenforceable provision.

10.4 Assignment. This Agreement is not assignable by either Party to any Third Party without the prior written consent of the other Party (which consent shall not unreasonably be withheld), provided, however, that each Party may assign this Agreement, without such consent, to an Affiliate of such Party, or in the event of a Change of Control of such Party. The terms and conditions of this Agreement will be binding on and inure to the benefit of the successors and permitted assigns of the Parties. Any attempted assignment in violation of this Section 10.4 shall be null and void.

10.5 Waiver. Any term or provision of this Agreement may be waived at any time by the Party entitled to the benefit thereof only by a written instrument executed by such Party. No delay on the part of Novan or Reedy Creek in exercising any right, power or privilege hereunder will operate as a waiver thereof, nor will any waiver on the part of either Novan or Reedy Creek of any right, power or privilege hereunder operate as a waiver of any other right, power or privilege hereunder nor will any single or partial exercise of any right, power or privilege hereunder preclude any other or further exercise thereof or the exercise of any other right, power or privilege hereunder.

10.6 Relationship of Parties. The Parties are independent contractors, and no agency, franchise, joint venture, employment or other similar relationship is intended or created by this Agreement. No Party hereto shall have any express or implied right or authority to assume or create any obligations on behalf of or in the name of any other Party or to bind any other Party to any contract, agreement or undertaking with any Third Party.

10.7 Compliance with Applicable Laws. Each Party shall comply with all Applicable Laws in the performance of its obligations under this Agreement.

10.8 Force Majeure. Either Party may suspend performance of any of its obligations (other than an obligation to make payment) under this Agreement, in whole or in part, without liability to the other Party by promptly notifying the other Party of the nature and estimated duration of the suspension period in the event of: act of God, war, riot, fire, explosion, terrorist action, accident, lack of adequate fuel, power, compliance with governmental requests, laws, regulations, orders or actions, breakage or failure of machinery or apparatus, national defense requirements or any other event, whether or not of the classes enumerated herein, beyond the reasonable control of the Party, or in the event of labor trouble, strike, lockout or injunction, which event renders the performance of the obligation commercially impracticable.

10.9 Entire Agreement. The Parties agree that this Agreement constitutes the entire agreement between the Parties relating to the subject matter hereof, and all prior agreements or arrangements, written or oral, between the Parties relating to the subject matter hereof are hereby

superseded and merged with this Agreement, including the Summary of Principal Terms dated March 29, 2019.

10.10 Amendment. This Agreement may not be amended, supplemented or otherwise modified except in writing signed by both Parties.

10.11 Counterparts. This Agreement may be executed in two counterparts and by facsimile or PDF signature, each of which shall be deemed an original and which together shall constitute one instrument.

10.12 Notices. All notices required hereunder shall be in writing and shall be made by certified letter, postage prepaid, return receipt requested or next business day delivery service directed to the other Party as provided below:

If to Novan:

Novan, Inc.
4105 Hopson Road
Morrisville, NC 27560
Attn: Chief Executive Officer

With copy (which shall not constitute notice) to:

Smith, Anderson, Blount,
Dorsett, Mitchell & Jernigan, LLP
Wells Fargo Capitol Center
150 Fayetteville Street, Suite 2300
Raleigh, NC 27601
Attn: Gerald F. Roach, Esq.

If to Reedy Creek:

Reedy Creek Investments LLC
100 Matrix Drive, Box 8000
Cary, NC 27513
Attn: Donald R. Parker

With copy (which shall not constitute notice) to:

SAS Institute Inc.
Attn: David B. Keim, Assistant General Counsel
SAS Campus Drive, A7368
Cary, NC 27513
[***]

[***]
[***]

Notice given by certified mail shall be deemed given three (3) days after its deposit in the mail. Notice given by next business day delivery shall be deemed given one (1) business day after its deposit with a next business day delivery courier. Each Party agrees to provide a copy of any such notice by telefax, which copy shall not constitute notice given. Either Party from time to time may change its address or telefax number by giving the other Party notice as provided herein. Notice deposited after the last regularly scheduled pick-up time on a business day will be deemed to have been deposited on the next business day.

10.13 Further Assurances. The Parties will execute and deliver, or cause to be executed or delivered, such further documents and do or cause to be done such further acts and things as may be required to carry out the intent and purpose of this Agreement.

10.14 Use of Names. Neither Party will, without prior written consent of the other Party, use the name or any trademark or trade name owned by the other Party, or owned by an Affiliate of the other Party, in any publication, publicity, advertising, or otherwise, except as expressly permitted by Article 7.

10.15 Third-Party Beneficiary. This Agreement is solely for the benefit of the Parties and their respective successors and permitted assigns, and no other person or entity has any right, benefit, priority or interest under or because of the existence of this Agreement.

10.16 Advice of Counsel. Novan and Reedy Creek have each consulted counsel of their choice regarding this Agreement, and each acknowledges and agrees that this Agreement shall not be deemed to have been drafted by one Party or another and shall be construed accordingly.

[Signatures Appear on Following Page]

IN WITNESS WHEREOF, the Parties have executed this Agreement as of the Effective Date.

NOVAN, INC.

By:	/s/ George Kelly Martin
Print Name:	George Kelly Martin
Title:	CEO

REEDY CREEK INVESTMENTS LLC

By:	/s/ Donald R. Parker
Print Name:	Donald R. Parker
Title:	Manager

Exhibit 10.2

THE SYMBOL "[***]" DENOTES PLACES WHERE CERTAIN IDENTIFIED INFORMATION HAS BEEN EXCLUDED FROM THE EXHIBIT BECAUSE IT IS BOTH (i) NOT MATERIAL AND (ii) WOULD LIKELY CAUSE COMPETITIVE HARM TO THE COMPANY IF PUBLICLY DISCLOSED

Execution Version

DEVELOPMENT FUNDING AND ROYALTIES AGREEMENT

THIS DEVELOPMENT FUNDING AND ROYALTIES AGREEMENT (this "**Agreement**") is made and entered into effective as of May 4, 2019 (the "**Effective Date**") by and between **LIGAND PHARMACEUTICALS INCORPORATED**, a Delaware corporation having a place of business at 3911 Sorrento Valley Boulevard, Suite 110, San Diego, California 92121, U.S.A. ("**Ligand**"), and **NOVAN, INC.**, a Delaware corporation having a place of business at 4105 Hopson Road, Morrisville, North Carolina 27560, U.S.A., and its Affiliates ("**Novan**"). Novan and Ligand may be referred to herein individually as a "**Party**" or collectively as the "**Parties**."

RECITALS

WHEREAS, Ligand is engaged in the development and commercialization of pharmaceutical products;

WHEREAS, Novan owns or otherwise controls certain intellectual property rights and regulatory filings relating to the product designated as SB206, which is the subject of clinical development for molluscum contagiosum;

WHEREAS, Ligand desires to contribute to the funding of the development of the product designated as SB206 in exchange for the right to receive future payments based on the development and commercialization of such product; and

WHEREAS, Novan would like to obtain such funding from Ligand for such development activities, and sell to Ligand the right to receive such future payments, as set forth in this Agreement below.

NOW, THEREFORE, in consideration of the foregoing and of the mutual covenants herein contained, the Parties hereby agree as follows.

ARTICLE 1

DEFINITIONS

The terms in this Agreement with initial letters capitalized, whether used in the singular or the plural, will have the meaning set forth below or, if not listed below, the meaning designated in places throughout this Agreement.

1.1 "**Affiliate**" of a Person means any other Person that (directly or indirectly) is controlled by, controls or is under common control with such initial Person. For the purposes of this definition, the term "control" (and, with correlative meanings, the terms "controlled by" and "under common control with") as used with respect to a Person means: (a) direct or indirect ownership of more than fifty percent (50%) of the voting interest in the Person in question, or more than fifty percent (50%) interest in the income of the Person in question; or (b) other than through ownership of securities, possession, directly or indirectly, of the power to direct or cause the direction of management or policies of the Person in question.

1.2 "**Applicable Law**" means all laws, statutes, ordinances, codes, rules, and regulations that have been enacted by a Governmental Authority and are in force as of the Effective Date or come into force during the Term, in each case to the extent that the same are applicable to the performance by a Party of its obligations, and/or exercise of its rights, under this Agreement.

1.3 "**Bankruptcy Event**" means the occurrence of any of the following in respect of a Person: (a) an admission in writing by such Person of its inability to pay its debts generally or a general assignment by such Person for the benefit of creditors; (b) the filing of any petition or answer by such Person seeking to adjudicate itself as bankrupt or insolvent, or seeking for itself any liquidation, winding-up, reorganization, arrangement, adjustment, protection, relief or composition of such Person or its debts under any Applicable Law relating to bankruptcy, insolvency, receivership, winding-up, liquidation, reorganization, examination, relief of debtors or other similar Applicable Law now or hereafter in effect, or seeking, consenting to or acquiescing in the entry of an order for relief in any case under any such Applicable Law, or the appointment of or taking possession by a receiver, trustee, custodian, liquidator, examiner, assignee, sequestrator or other similar official for such Person or for any substantial part of its property; (c) corporate or other entity action taken by such Person to authorize any of the actions set forth in clause (a) or clause (b) above; (d) without the consent or acquiescence of such Person, the entering of an order for relief or approving a petition for relief or reorganization or any other petition seeking any reorganization, arrangement, composition, readjustment, liquidation, dissolution or other similar relief under any present or future bankruptcy, insolvency or similar Applicable Law, or the filing of any such petition against such Person, or, without the consent or acquiescence of such Person, the entering of an order appointing a trustee, custodian, receiver or liquidator of such Person or of all or any substantial part of the property of such Person, in each case where such petition or order shall remain unstayed or shall not have been stayed or dismissed within ninety (90) days from entry thereof; *provided* that in the case of an involuntary petition, such Person has not challenged such petition within ninety (90) days thereof; (e) the appointment of a trustee, receiver, or custodian for all or substantially all of the property of such Person, or for any lesser portion of such property, if the result materially and adversely affects the ability of such Person to fulfill its obligations hereunder, which appointment is not dismissed within sixty (60) days; or (f) the dissolution or liquidation of such Person.

1.4 "**Business Day**" means any day that is not a Saturday, Sunday or other day on which commercial banks in New York City are authorized or required by Applicable Law to remain closed.

1.5 "**Calendar Quarter**" means the respective periods of three (3) consecutive calendar months ending on March 31, June 30, September 30 and December 31; *provided, however*, that (a) the first Calendar Quarter of the Term will extend from the Effective Date to the end of the first complete Calendar Quarter thereafter, and (b) the last Calendar Quarter of the Term will end upon the expiration or termination of this Agreement.

1.6 "**Calendar Year**" means (a) for the first Calendar Year of the Term, the period beginning on the Effective Date and ending on December 31, 2019, (b) for each Calendar Year of the Term thereafter, each successive period beginning on January 1 and ending twelve (12) consecutive calendar months later on December 31, and (c) for the last Calendar Year of the Term, the period beginning on January 1 of the Calendar Year in which this Agreement expires or terminates and ending on the effective date of expiration or termination of this Agreement.

1.7 "**Change of Control**" means with respect to a Party: (a) the sale or exclusive license of all or substantially all of such Party's assets or business relating to this Agreement to a Third Party; (b) a merger, reorganization or consolidation involving the Party and a Third Party in which the voting securities of the Party outstanding immediately prior thereto cease to represent at least fifty percent (50%) of the combined voting power of the surviving entity immediately after such merger, reorganization or consolidation; or (c) a transaction (which may include a tender offer for such Party's stock or the issuance, sale or exchange of stock of such Party) with a Third Party or Third Parties in which the stockholders of such Party immediately prior to the transaction do not, immediately after consummation of such transaction, (i) own, directly or indirectly through one or more intermediaries, stock or other securities of such Party that possess a majority of the voting power of all of such Party's outstanding stock and other securities or (ii) possess the power to elect a majority of the members of such Party's board of directors.

1.8 "**Claims**" has the meaning set forth in Section 7.1.

1.9 "**Commercially Reasonable Efforts**" means, as to Novan and the Product, the level of effort, expertise, and resources required to Develop and Commercialize the Product consistent with the reasonable efforts that would be typically exerted by a biotechnology or pharmaceutical company of comparable size and capabilities as Novan in pursuing the development and commercialization of a similar product with similar product characteristics at a similar stage in its development or product life, including without limitation with respect to commercial potential, the proprietary position of the Product, the regulatory status and approval process and other relevant technical, scientific, medical or legal factors, but not taking into account any competitive product in Novan's portfolio.

1.10 "**Commercialize**," "**Commercializing**," and "**Commercialization**" means activities directed to manufacturing, obtaining pricing and reimbursement approvals for, marketing, promoting, distributing, importing, and/or selling the Product.

1.11 "**Confidential Information**" means any and all technical, business or other information or materials that are disclosed or provided by such Party to the other Party under or in connection with this Agreement and are designated as confidential or would otherwise reasonably

be understood to be confidential or proprietary in light of the nature of the information and the circumstances of the disclosure, whether disclosed or provided in oral, written, graphic, or electronic form, which may include without limitation trade secrets, processes, formulae, data, Know-How, improvements, inventions, chemical or biological materials, chemical structures, techniques, clinical, sublicensing and marketing and other Development and/or Commercialization plans, strategies, customer lists, financial data, intellectual property information, tangible or intangible proprietary information or materials or other information in whatever form. For clarity, Confidential Information of Novan shall include all reports delivered by Novan pursuant to this Agreement.

1.12 "**Control**" or "**Controlled**" means, with respect to an item, information, or an intellectual property right, that the applicable Party owns or has a license or other appropriate rights in, to, and under such item, information, or intellectual property right and has the ability to disclose and grant a license or sublicense to the other Party as provided for in this Agreement in, to, and under such item, information, or intellectual property right without violating the terms of any written agreement with any Third Party.

1.13 "**Cover**," "**Covered**," or "**Covering**" means, with respect to a Patent Right, that, in the absence of ownership of or a license under such Patent Right, the manufacture, use, offer for sale, sale or importation of the Product or components thereof would infringe a Valid Claim in such Patent Right.

1.14 "**Development**" means non-clinical, pre-clinical and clinical drug discovery, research, and/or development activities, including without limitation quality assurance and quality control development, and any other activities reasonably related to or leading to the development and submission of information to a Regulatory Authority. When used as a verb, "**Develop**" means to engage in Development.

1.15 "**Development Budget**" has the meaning set forth in Section 2.2.

1.16 "**Development Plan**" has the meaning set forth in Section 2.2.

1.17 "**Disclosing Party**" has the meaning set forth in Section 5.1.

1.18 "**Dollars**" or "**US$**" means the lawful currency of the United States.

1.19 "**Export Control Laws**" means all applicable laws and regulations relating to (a) sanctions and embargoes imposed by the Office of Foreign Assets Control of the U.S. Department of the Treasury or the European Union or (b) the export or re-export of commodities, technologies or services or data, including without limitation the Export Administration Act of 1979, 24 U.S.C. §§ 2401-2420; the International Emergency Economic Powers Act, 50 U.S.C. §§ 1701-1706; the Trading with the Enemy Act, 50 U.S.C. App. §§ 1 et. seq.; the Arms Export Control Act, 22 U.S.C. §§ 2778 and 2779; and the International Boycott Provisions of Section 999 of the U.S. Internal Revenue Code of 1986, and European Union laws and regulations (including without limitation Regulation (EC) No 428/2009, as amended), in each case as amended.

1.20 "**FCPA**" means the U.S. Foreign Corrupt Practices Act (15 U.S.C. § 78dd-1 et. seq.), as amended.

1.21 "**FDA**" means the United States Food and Drug Administration, or any successor agency thereto.

1.22 "**Field**" means the treatment of any and all indications, diseases, disorders, and/or conditions, including without limitation treatment of molluscum contagiosum in humans.

1.23 "**First Commercial Sale**" means, with respect to a particular product, the first commercial sale for monetary value by Novan, one or more of its Affiliates or one or more of its Licensees in an arm's length transaction to a Third Party that is not a Licensee, including without limitation any final sale to a distributor or wholesaler under any non-conditional sale arrangement, of such Product in the Field in the Territory after Regulatory Approval of such Product has been granted in the Field in the Territory. For the avoidance of doubt, sales or transfers of a Product for clinical and non-clinical research and trials (including studies reasonably necessary to comply with Applicable Law or requests by a Regulatory Authority), early access programs or for compassionate or similar use, shall not be considered a First Commercial Sale.

1.24 "**GAAP**" means generally accepted accounting principles in the United States, consistently applied.

1.25 "**Governmental Authority**" will mean any supranational, federal, national, multinational, regional, provincial, county, city, state, or local government, court, governmental agency, authority, board, bureau, instrumentality, regulatory body, or other political subdivision, domestic or foreign.

1.26 "**Indemnitee**" has the meaning set forth in Section 7.1.

1.27 "**Know-How**" means technical information and materials, including without limitation technology, software, instrumentation, devices, data, biological materials, assays, constructs, compounds, inventions (patentable or otherwise), practices, methods, algorithms, models, knowledge, know-how, trade secrets, skill and experience (including without limitation all biological, chemical, pharmacological, toxicological, clinical, assay and related know-how and trade secrets, and all manufacturing data, manufacturing processes, specifications, assays, quality control and testing procedures, regulatory submissions and related know-how and trade secrets).

1.28 "**Knowledge**" means, with respect to the applicable Party, that the officers of such Party have actual, or reasonably should have, knowledge of facts that make the associated statement true or untrue.

1.29 "**License**" means any agreement pursuant to which Novan grants to a Third Party (a "**Licensee**") a license, sublicense, option, or other right to any Novan Patents or Regulatory Filings or Regulatory Approvals relating to the Products; *provided, however*, that a License shall not include any agreement pursuant to which Novan or any of its Affiliates grants a license or sublicense of any of its intellectual property rights (i) solely to conduct research, (ii) solely to manufacture a Product, or (iii) otherwise to service providers solely on a non-exclusive basis in the ordinary course of Development or Commercialization of a Product (e.g., material transfer agreements, distribution agreements, and consulting agreements).

1.30 "**Licensee**" has the meaning set forth in the definition of License.

1.31 "**Losses**" has the meaning set forth in Section 7.1.

1.32 "**Milestone Payment**" has the meaning set forth in Section 4.2.

1.33 "**NDA**" means a New Drug Application filed with the FDA that is required for approval for Commercialization of a Product in the United States, or its foreign equivalent in the Territory.

1.34 "**Net Sales**" means, with respect to any Product, the total invoiced sales price received for such Product sold by Novan or its Affiliates or Licensees less (a) [***], (b) [***], (c) [***], (d) [***], (e) [***], and (f) [***]. Such Product will be considered sold when paid for. Notwithstanding the foregoing, Net Sales shall not include, and shall be deemed zero with respect to, (1) the distribution of reasonable quantities of promotional samples of a Product, (2) Product provided for clinical trials or research purposes, or charitable or compassionate use purposes or (3) Product provided to any Affiliate or Licensee under an agreement in which Net Sales by such Affiliate or Licensee shall be subject to Royalties under Section 4.3. For the avoidance of doubt, any revenue from sales of Product that is booked by Novan or its Affiliates or Licensees and recorded as revenue in accordance with GAAP will be counted as Net Sales, subject to the deductions set forth above in this Section 1.34, without duplication.

1.35 "**Novan Patents**" means any and all patents and patent applications in the Territory that are Controlled by Novan or its Affiliates and Cover a Product or its manufacture, use, sale, export or import.

1.36 "**Novan Technology**" means berdazimer sodium (NVN1000).

1.37 "**Patent Rights**" means (a) patents and patent applications, and any foreign counterparts thereof, (b) all divisionals, continuations, continuations-in-part of any of the foregoing, and any foreign counterparts thereof, and (c) all patents issuing on any of the foregoing, and any foreign counterparts thereof, together with all registrations, reissues, re-examinations, supplemental protection certificates, substitutions or extensions thereof, and any foreign counterparts thereof.

1.38 "**Person**" means any natural person, firm, corporation, limited liability company, partnership, joint venture, association, joint-stock company, trust, business trust, unincorporated organization, Governmental Authority or any other legal entity, including without limitation public bodies, whether acting in an individual, fiduciary or other capacity.

1.39 "**Prior CDA**" means the Mutual Nondisclosure Agreement between the Parties, effective as of January 21, 2019.

1.40 "**Product**" means (a) SB206 and/or (b) any other pharmaceutical product that incorporates and/or uses the Novan Technology to the extent that such product is Commercialized by Novan and/or its Affiliates or Licensees for the treatment of molluscum contagiosum in humans.

1.41 "**Public Official or Entity**" means (a) any officer, employee (including without limitation physicians, hospital administrators or other healthcare professionals), agent,

representative, department, agency, de facto official, representative, corporate entity, instrumentality or subdivision of any government, military or international organization, including without limitation any ministry or department of health or any state-owned or affiliated company or hospital, or (b) any candidate for political office, any political party or any official of a political party.

1.42 "**Purchase Price**" has the meaning set forth in Section 4.1.

1.43 "**Receiving Party**" has the meaning set forth in Section 5.1.

1.44 "**Regulatory Approval**" means approval of an NDA by the FDA for the applicable Product in the United States, or approval by the applicable Regulatory Authority of a regulatory approval application that is equivalent to an NDA in a country in the Territory other than the United States, and any approvals, licenses, registrations, or authorizations necessary for the manufacture, marketing, and sale of Product in such country and, where relevant, including without limitation any reimbursement or pricing approvals. For the sake of clarity, except as otherwise expressly provided herein, "Regulatory Approval" will not be achieved for a Product in a country or, where applicable, a multinational jurisdiction until any applicable approvals relating to pricing and reimbursement from the relevant Regulatory Authorities have been obtained in such country or such jurisdiction.

1.45 "**Regulatory Authority**" means any national or supranational Governmental Authority, including without limitation FDA, that has responsibility for granting any licenses or approvals or granting pricing and/or reimbursement approvals necessary for the development, marketing, and sale of a Product in any country.

1.46 "**Regulatory Exclusivity**" means any exclusive marketing rights or data exclusivity rights conferred by any Governmental Authority under Applicable Law with respect to a Product in a country or jurisdiction in the Territory to prevent Third Parties from Commercializing such Product in such country or jurisdiction, other than a Patent Right, including without limitation orphan drug exclusivity, pediatric exclusivity, rights conferred in the U.S. under the Hatch-Waxman Act or the FDA Modernization Act of 1997, in the EU under Directive 2001/83/EC, or rights similar thereto in other countries or regulatory jurisdictions in the Territory.

1.47 "**Regulatory Filings**" means any and all regulatory applications, filings, modifications, amendments, supplements, revisions, reports, submissions, authorizations, and Regulatory Approvals, and associated correspondence required to Develop and Commercialize Products in the Territory, including without limitation any reports or amendments necessary to maintain Regulatory Approvals.

1.48 "**Royalties**" has the meaning set forth in Section 4.3.1.

1.49 "**Royalty Term**" has the meaning set forth in Section 4.3.2.

1.50 "**SEC**" has the meaning set forth in Section 3.3.2.

1.51 "**SB206**" means the composition described in Investigational New Drug application #137015 in section 3.2.P.2.1, as may be amended from time to time.

1.52 "**Securities Act**" means the Securities Act of 1933, as amended.

1.53 "**Term**" has the meaning set forth in Section 6.1.

1.54 "**Territory**" means the United States, Canada and Mexico and all of their respective territories and possessions.

1.55 "**Third Party**" means any Person other than Novan, Ligand, and their respective Affiliates.

1.56 "**United States**" or "**U.S.**" means the United States of America and all of its territories and possessions.

1.57 "**Valid Claim**" means either (a) a claim of an issued and unexpired patent or a supplementary protection certificate within the Novan Patents that has not been held permanently revoked, unenforceable, or invalid by a decision of a court or other Governmental Authority of competent jurisdiction, unappealable or unappealed within the time allowed for appeal and that is not admitted to be invalid or unenforceable through reissue, disclaimer, or otherwise (i.e., only to the extent the subject matter is disclaimed or is sought to be deleted or amended through reissue), or (b) a claim of a pending patent application within the Novan Patents that has not been abandoned, finally rejected, or expired without the possibility of appeal or refiling.

ARTICLE 2

NOVAN RESPONSIBILITIES; LICENSING; REPORTING

2.1 Responsibilities. Novan will have the sole right, as between the Parties, to Develop and Commercialize Products in the Field, including without limitation determining the marketing and regulatory strategies for seeking (if and when appropriate) Regulatory Approvals and Regulatory Exclusivity in the Territory for Products in the Field, filing for such Regulatory Approvals and Regulatory Exclusivity for Products in the Field in the Territory, preparing, submitting, and maintaining any and all Regulatory Filings and Regulatory Approvals for Products in the Field in the Territory, and seeking any necessary Regulatory Approvals of Regulatory Authorities for Product labeling and promotional materials to be used in the applicable jurisdiction(s) in connection with Commercializing Products in the Field. As between the Parties, Novan will be responsible for all costs and expenses incurred by Novan in connection with the foregoing activities, except for the Purchase Price paid by Ligand pursuant to Section 4.1. If an Affiliate and/or a Licensee meets or fulfills any or all of the obligations of Novan under this Agreement, and/or observes any of the terms or conditions hereof, then Novan will be deemed to have met or fulfilled such obligations or observed such terms or conditions, as the case may be.

2.2 Development Plan and Development Budget. Novan will conduct the activities set forth in the Development plan set forth on Appendix A (the "**Development Plan**") in accordance with the Development budget set forth on Appendix B (the "**Development Budget**"). Novan may update or modify in good faith the Development Plan and the Development Budget from time to time in its sole discretion without Ligand's consent; *provided* that Novan must obtain Ligand's

consent (not to be unreasonably withheld, delayed or conditioned) with respect to any updates or modifications that are not made to implement reasonable and customary modifications in Development activities, or that could reasonably materially adversely affect Ligand's ability to receive Milestone Payments and Royalties under this Agreement. Novan will use the Purchase Price paid by Ligand pursuant to Section 4.1 solely to fund activities in accordance with the Development Plan and the Development Budget, including for the purpose of seeking Regulatory Approval of the Products in the Field, each of which may be modified from time to time in accordance with this Section 2.2. Without limiting any other remedies available, if all Development of Products in the Field in the Territory is ceased prior to the first Regulatory Approval of Products in the Territory, Novan will pay to Ligand an amount equal to the Purchase Price less the amounts spent in accordance with the Development Budget on Development activities conducted prior to such cessation.

2.3 Diligence. Novan will use Commercially Reasonable Efforts to carry out its responsibilities under this Agreement. During the Term, Novan will use Commercially Reasonable Efforts to (i) Develop and Commercialize at least one (1) Product in the Field in the Territory, (ii) initiate a Phase 3 trial with respect to at least one (1) Product by [***] and (iii) file an NDA with respect to at least one (1) Product by [***]. Without limiting the foregoing, Novan will use Commercially Reasonable Efforts to perform all of the activities set forth in the Development Plan in accordance with the timelines set forth therein.

2.4 Licensing.

2.4.1 Right to License. Novan will retain the right to perform its activities under this Agreement through Licensees, subject to this Section 2.4. Novan will remain responsible for the performance of Licensees as set forth in this Agreement, including without limitation with respect to all payments due hereunder. Novan will provide Ligand with notice of the entering into of each License promptly after execution of such License. In addition, Novan will provide a copy of any such License to Ligand after execution of such License. Ligand will treat Licenses as Confidential Information of Novan, subject to the terms of Article 5.

2.4.2 Terms. Each License granted by Novan pursuant to Section 2.4.1 will contain terms and conditions consistent in all material respects with Novan's obligations in this Agreement. Without limiting the foregoing, agreements with any Licensee that include the right to Commercialize any Product will contain provisions consistent with the following: (a) the requirements set forth in Sections 4.4, 4.5, and 8.2.19, and (b) a requirement that such Licensee comply with the confidentiality and non-use provisions of Article 5 with respect to both Parties' Confidential Information.

2.4.3 Subcontracting. Novan may utilize the services of Third Parties, including without limitation Third Party contract research organizations, contract manufacturing organizations, suppliers, partners and service providers to perform its Development and Commercialization activities; *provided* that Novan will remain at all times fully responsible for its respective responsibilities under this Agreement. Any agreement with a Third Party to perform

Novan's responsibilities under this Agreement will include confidentiality and non-use provisions which are no less stringent than those set forth in Article 5.

ARTICLE 3

REGULATORY AND PATENT MATTERS

3.1 Regulatory Filings. As between the Parties, Novan will solely own and control any and all Regulatory Approvals and any and all other Regulatory Filings submitted in connection with seeking and maintaining Regulatory Approvals for Products in the Field in the Territory.

3.2 Regulatory Communications. Novan will be the sole contact, as between the Parties, with the applicable Regulatory Authorities and will be solely responsible, using Commercially Reasonable Efforts, for all communications with such Regulatory Authorities that relate to any Regulatory Approvals or other Regulatory Filings prior to and after any Regulatory Approval with respect to Products in the Field in the Territory. If Ligand is required to respond to any requests from or by any and all Regulatory Authorities with respect to any Product, Novan will have an opportunity to comment on the response to the extent such response may materially impact a Product before Ligand submits such response and Ligand will provide a copy of the final response to Novan.

3.3 Reports.

3.3.1 Within [***] after the end of each Calendar Quarter during the Term, Novan will deliver to Ligand a report containing information regarding its Development and Commercialization activities conducted by or on behalf of Novan and its Affiliates and Licensees during such Calendar Quarter. Without limiting the foregoing, such report shall include a description of all material activities in connection with any Regulatory Approvals and Regulatory Exclusivity for Products in the Field in the Territory, preparing, submitting, and maintaining any and all Regulatory Filings and Regulatory Approvals for Products in the Field in the Territory, and seeking any necessary Regulatory Approvals of Regulatory Authorities for Product labeling and promotional materials to be used in the applicable jurisdiction(s) in connection with Commercializing Products in the Field. In addition, such reports shall contain a description of Novan's performance against the activities and timelines set forth in the Development Plan and costs and expenses incurred against the Development Budget.

3.3.2 If at any time Novan is no longer required to publicly disclose audited financial reports with U.S. Securities and Exchange Commission ("**SEC**"), Novan will furnish to Ligand, within [***] after the last day of each quarter, financial statements, which shall include a balance sheet as of the last date of the applicable quarter and a statement of income and operating expenses with respect to such quarter.

3.3.3 Novan will provide Ligand with prompt written notice at such time as (a) Novan becomes insolvent as defined in Applicable Law, including without limitation interpretations in applicable case law; (b) Novan's liabilities (which, for clarity, shall not be deemed to include

warrants and preferred stock issued by Novan) exceed its assets; (c) Novan is unable to pay its debts as they become due; (d) there is an occurrence of a default by Novan with respect to any of its debt or payment obligations or any agreement having a materially adverse effect on this Agreement or the Development of Products; (e) Novan suspends, closes, or otherwise ceases to operate a portion of its business having a material adverse effect on Novan's ability to comply with its obligations and/or Ligand's ability to receive payments under this Agreement; or (f) any corporate or other action is taken by Novan for the purpose of effecting any of the foregoing. In addition, if at any time Novan is no longer required to publicly disclose audited financial reports with the SEC, within [***] of a written request of Ligand (such request not to be made more than four times during any Calendar Year), Novan will provide Ligand with its most recent audited financial reports. Ligand will treat all notices and financial reports (and the information contained therein) as Confidential Information of Novan, subject to the terms of Article 5.

3.3.4 It is the intention of the Parties that the sale, transfer, assignment and conveyance of the Royalties contemplated by this Agreement constitute a sale of the Royalties from Novan to Ligand and not a financing transaction, borrowing or loan. In connection therewith, Novan shall treat the sale, transfer, assignment and conveyance of the Royalties as a sale of an "account" or a "payment intangible" (as appropriate) in accordance with the Uniform Commercial Code in the applicable jurisdiction ("**UCC**"), and Novan hereby authorizes Ligand to file financing statements (and continuation statements with respect to such financing statements when applicable) naming Novan as the debtor and Ligand as the secured party in respect of the Royalties. Not in derogation of the foregoing statement of the intent of the Parties in this regard, and for the purposes of providing additional assurance to Ligand in the event that, despite the intent of the Parties, the sale, transfer, assignment and conveyance contemplated hereby is hereafter held not to be a sale, Novan does hereby grant to Ligand, as security for the obligations of Novan hereunder, a first priority security interest in and to all right, title and interest of Novan, in, to and under the Royalties and any "proceeds" (as such term is defined in the UCC) thereof, and Novan does hereby authorize Ligand, from and after the Effective Date, to file such financing statements (and continuation statements with respect to such financing statements when applicable) as may be necessary to perfect such security interest. Prior to filing any financing statement, Ligand shall provide a copy of such financing statement to Novan to review and provide comments on such financing statement, and shall in good faith take such comments into account.

3.4 Patent Matters.

3.4.1 As between the Parties, Novan will have the sole responsibility, at its expense, for the preparation, filing, prosecution, and maintenance of the Novan Patents, including without limitation any patent term extensions. Novan will provide copies to Ligand of any and all correspondence with the PTO relating to the Novan Patents that are owned by Novan. During the Term, Novan will maintain the Novan Patents owned by Novan comprising issued patents, and with respect to the Novan Patents controlled but not owned by Novan, will maintain such Novan Patents to the extent Novan has the right and obligation to do so, in each case in a manner that would not result in a material adverse effect on the Royalties. In no event will Novan permit any of the Novan Patents to be abandoned in any country in the Territory in any manner that could reasonably have

a material adverse effect on Ligand's ability to receive the Royalties. Novan will provide Ligand with notice of any decision to abandon any of the Novan Patents at least [***] prior to any abandonment thereof.

3.4.2 In the event that either Party has cause to believe that a Third Party may be infringing or misappropriating any of the Novan Patents in the Field in the Territory, it will promptly notify the other Party in writing, identifying the alleged infringer and the alleged infringement or misappropriation complained of and furnishing the information upon which such determination is based. As between the Parties, Novan will have the sole right to stop such infringement or misappropriation of the Novan Patents by such Third Party in the Field in the Territory or settle with such Third Party. Upon reasonable request by Ligand, Novan will give Ligand all reasonable information with respect to any such enforcement action or settlement. As between the Parties, Novan will bear all costs and expenses (including without limitation any costs or expenses incurred that exceed the amounts recovered by Novan) in pursuing any such enforcement action or settlement and will be responsible for payments awarded against or agreed to be paid by Novan. After deducting any amounts recovered by Novan, its Affiliates and Licensees in connection with the foregoing, whether by settlement or judgment, to reimburse Novan, its Affiliates and Licensees for their respective reasonable costs and expenses in making such recovery, Novan will retain any remainder; *provided* that, solely for purposes of Section 4.3, to the extent such remaining amount constitutes lost profits and/or recovery resulting from sales by a Third Party of a Product in the Territory that infringes a Valid Claim, such remaining amount will be deemed to be Net Sales in the Calendar Quarter in which such amounts were received by or paid, and thereby will be subject to the Royalties payments contemplated in Section 4.3.

3.4.3 Novan will promptly inform Ligand in writing of any actual, threatened, or alleged infringement or misappropriation, based on the making, using, selling, or offering for sale of Products in the Field in the Territory, of a Third Party's intellectual property rights of which it becomes aware.

ARTICLE 4

PAYMENTS

4.1 Purchase Price. In consideration for the rights transferred or granted under this Agreement to Ligand, including without limitation the sale of the Royalties, Ligand will pay Novan a one-time payment of Twelve Million Dollars ($12,000,000) (the "**Purchase Price**") within [***] after the Effective Date to an account designated in writing by Novan.

4.2 Milestone Payments. In partial consideration for the Purchase Price paid to Novan under Section 4.1, Novan will pay Ligand each milestone payment set forth in the table in this Section 4.2 below (each, a "**Milestone Payment**") after the first achievement of the corresponding milestone event set forth in the table in this Section 4.2 below (each, a "**Milestone Event**") for a Product. All such payments are non-refundable and non-creditable. For the avoidance of doubt, each of the Milestone Payments shall be payable no more than one time. Novan will notify Ligand of any achievement of a Milestone Event within [***] after Novan achieves such Milestone Event

or otherwise obtains information from its Affiliates and Licensees which establish such achievement. Ligand may submit an invoice to Novan for each Milestone Payment at any time after the corresponding Milestone Event is achieved. Novan will pay any Milestone Payments payable under this Section 4.2 within [***] after the date of Novan's required notice under this Section 4.2.

Milestone Event	Milestone Payment
[***]	[***]
[***]	[***]
[***]	[***]
[***]	[***]

4.3 Royalty Payments.

4.3.1 Royalties on Products. In partial consideration for the Purchase Price paid to Novan under Section 4.1, Novan hereby sells to Ligand all of its right, title, and interest in and to royalties on annual aggregate Net Sales of Products in the Field in the Territory in each Calendar Year during the Royalty Term, in an amount calculated by multiplying the applicable royalty rate in the table below by the corresponding amount of incremental Net Sales of Products in the Field in the Territory ("**Royalties**"). Novan shall have no right, title, or interest in the Royalties and Novan shall remit all Royalties to Ligand in accordance with Section 4.4. Ligand's ownership interest in the Royalties shall vest upon Novan's receipt of payment of the Purchase Price pursuant to Section 4.1. Ligand is acquiring no rights other than those expressly assigned herein. For the avoidance of doubt, Ligand is acquiring no rights under any intellectual property of Novan, including any Novan Patents.

Net Sales Tier	Royalty Rate
For that portion of annual aggregate Net Sales of Products in the Field in the Territory in a Calendar Year that are less than [***]	[***]
For that portion of annual aggregate Net Sales of Products in the Field in the Territory in a Calendar Year that are greater than or equal to [***] but less than [***]	[***]
For that portion of annual aggregate Net Sales of Products in the Field in the Territory in a Calendar Year that are greater than or equal to [***] but less than [***]	[***]
For that portion of annual aggregate Net Sales of Products in the Field in the Territory in a Calendar Year that are greater than or equal to [***]	[***]

4.3.2 Royalty Term. Royalties will be remitted under this Section 4.3, on a country-by-country basis, commencing on First Commercial Sale of the first Product in such country until the last to occur of: (i) [***]; (ii) [***]; and (iii) the [***] of the First Commercial Sale of such first Product in such country (the **"Royalty Term"**).

4.4 Royalty Reports and Payments. During the Term following the First Commercial Sale of any Product, within [***] after the end of each of the first three (3) Calendar Quarters of each Calendar Year and within [***] after the end of the last Calendar Quarter of each Calendar Year, Novan will pay to Ligand Royalties due for such Calendar Quarter calculated in accordance with Section 4.3 and will deliver to Ligand a Royalties report showing, on a country-by-country basis for the Territory, the information set forth in this Section 4.4 below:

4.4.1 the gross amount invoiced for and the amounts received and the Net Sales resulting from sales of Products sold by Novan, its Affiliates or Licensees during such Calendar Quarter, including without limitation the specific deductions applied in the calculation of such Net Sales amounts, and any amounts required to be included in Net Sales pursuant to Section 3.4.2;

4.4.2 the Royalties (in Dollars) that have accrued in such Calendar Quarter with respect to such Net Sales;

4.4.3 withholding taxes, if any, required by Applicable Law to be deducted with respect to such Royalties; and

4.4.4 the rate of exchange used by Novan in determining the amount of Dollars due hereunder.

If no Royalties are due for any Calendar Quarter hereunder, Novan will so report. Novan will keep, and will require in its Licenses, and use good faith efforts to enforce such requirements, its Licensees and their respective Affiliates to keep (all in accordance with GAAP), complete and accurate records

in sufficient detail to properly reflect the Net Sales to enable the Royalties due hereunder to be determined for a period of at least three (3) Calendar Years.

In addition, Novan will deliver to Ligand no later than [***] following the end of each Calendar Quarter a preliminary statement setting forth the actual Net Sales for the first two (2) months of such Calendar Quarter and estimated Net Sales for the third (3rd) month of such Calendar Quarter, the calculation of Royalties or Net Sales due on a country-by-country basis in the Territory (based on such actual and estimated Net Sales) and, if applicable, the exchange rate to be utilized by Novan to convert a local currency payment to Dollars.

4.5 Audits of Royalty Reports. Upon the written request of Ligand and not more than [***] in any twelve (12) month period, Novan will permit an independent certified public accounting firm selected by Ligand and reasonably acceptable to Novan, at Ligand's expense, to have access during normal business hours to such records of Novan as may be necessary to verify the accuracy of the payment reports made and the amounts owed to Ligand under this Agreement for any Calendar Year period ending not more than [***] prior to the date of such request. Such rights with respect to any Calendar Year will terminate [***] after the end of any such Calendar Year. Ligand will provide Novan with a copy of such accounting firm's written report within thirty (30) days after completion of such report. If such accounting firm concludes that an overpayment or underpayment was made, then the owing Party will pay the amount due within thirty (30) days after the date Ligand delivers to Novan such accounting firm's written report so concluding, and any accrued interest as determined in accordance with Section 4.9 from the date such overpayment was paid or such underpayment was originally due, as applicable, until payment thereof. Ligand will bear the full cost of such audit unless such audit discloses that the additional payment payable by Novan for the audited period is more than five percent (5%) of the amount of the payments due for that audited period or Ten Thousand Dollars, whichever is greater, in which case Novan will pay the reasonable documented fees and expenses charged by the accounting firm. If the Parties dispute any such accounting firm's conclusion, they will resolve such issue pursuant to Article 10. Ligand will treat all information subject to review under Section 4.5 in accordance with the confidentiality provisions of this Agreement.

4.6 Currency of Payments. All payments under this Agreement will be made in Dollars by wire transfer of immediately available funds into an account designated by the Party receiving the funds. Net Sales outside of the U.S. will be first determined in the currency in which they are earned and will then be converted into an amount in Dollars using Novan's customary and usual conversion procedures used in preparing its financial statements pursuant to GAAP for the applicable reporting period.

4.7 Blocked Currency. In each country in the Territory where the local currency is blocked and cannot be removed from the country, at the election of Ligand, Royalties accrued on Net Sales in such country will be paid to Ligand in local currency by deposit in a local bank in such country designated by Ligand.

4.8 Taxes. Each Party will be solely responsible for the payment of all taxes imposed on its share of income arising directly or indirectly from the efforts of the Parties under this

Agreement. The Parties agree to cooperate with one another and use reasonable efforts to reduce or eliminate tax withholding or similar obligations in respect of Royalties, Milestone Payments, and other payments made by Novan to Ligand under this Agreement. To the extent Novan is required under the Internal Revenue Code of 1986, as amended (the **"Code"**), or any other tax laws to deduct and withhold taxes on any payment to Ligand, Novan will deduct from such royalty or other payment the tax amount to be withheld, and Novan will pay the amounts of such taxes to the proper Governmental Authority in a timely manner and promptly transmit to Ligand an official tax certificate or other evidence of such withholding sufficient to enable Ligand to claim such payment of taxes. Upon Novan's reasonable request, Ligand will provide Novan any tax forms that may be reasonably necessary in order for Novan to determine whether to withhold tax on any such payments or to withhold tax on such payments at a reduced rate under the Code or any other tax laws, including without limitation any applicable bilateral income tax treaty. Novan will give reasonable support so that any withholding tax or value added tax may be minimized or avoided to the extent permitted under the Applicable Laws and treaties. Each Party will provide the other with reasonable assistance to enable the recovery, as permitted by Applicable Laws, of withholding taxes, value added taxes, or similar obligations resulting from payments made under this Agreement, such recovery to be for the benefit of the Party bearing such withholding tax or value added tax. Novan will require its Licensees to cooperate with Ligand in a manner consistent with this Section 4.8.

4.9 Interest Due. Novan will pay Ligand interest on any payments that are not paid on or before the date such payments are due under this Agreement at a monthly interest rate equal to the U.S. prime interest rate, as reported by *The Wall Street Journal* (New York edition) for the first Business Day of the month in which such payment was due plus one percentage point (1 ppt), or the maximum applicable legal rate, if less, calculated based on the total number of days payment is delinquent.

ARTICLE 5

NONDISCLOSURE OF CONFIDENTIAL INFORMATION

5.1 Nondisclosure. Each Party agrees that, during the Term and for a period of [***] thereafter (or, for any trade secret, for so long as the Disclosing Party maintains such trade secret as a trade secret), a Party (the "**Receiving Party**") receiving Confidential Information of the other Party (the "**Disclosing Party**") will (a) maintain in confidence such Confidential Information, (b) not disclose such Confidential Information to any Third Party without the prior written consent of the Disclosing Party, except for disclosures expressly permitted in this Article 5, and (c) not use such Confidential Information for any purpose except those expressly permitted by this Agreement. The Parties agree that any Confidential Information (within the meaning of the Prior CDA) disclosed by the Parties or their Affiliates pursuant to the Prior CDA will be Confidential Information within the meaning of, and will be subject to, this Article 5. The Agreement shall be deemed Confidential Information of both Parties.

5.2 Exceptions. The obligations under Section 5.1 will not apply with respect to any portion of Confidential Information of a Disclosing Party that the Receiving Party can show by competent evidence:

5.2.1 at the time of disclosure to Receiving Party is in the public domain;

5.2.2 after disclosure, becomes part of the public domain by publication or otherwise, except by breach of this Agreement by the Receiving Party or anyone to whom the Receiving Party disclosed Confidential Information;

5.2.3 was (a) in the Receiving Party's possession at the time of disclosure without any obligation to keep it confidential or any restriction on its use or (b) subsequently and independently developed by the Receiving Party's employees who had no knowledge of and who did not use, rely on or refer to any of Disclosing Party's Confidential Information, in each case as shown by Receiving Party's records; or

5.2.4 is received by the Receiving Party from a Third Party who has the lawful right to disclose such Confidential Information and who has not obtained such Confidential Information either directly or indirectly from the Disclosing Party.

5.3 Authorized Disclosure. To the extent (and only to the extent) that it is reasonably necessary or appropriate to fulfill its obligations or exercise its rights under this Agreement, the Receiving Party may disclose Confidential Information belonging to the Disclosing Party in the following instances:

5.3.1 prosecuting or defending litigation;

5.3.2 subject to Sections 5.4 and 5.5, required by Applicable Laws (including without limitation the rules and regulations of the SEC or any national securities exchange) and with judicial process; and

5.3.3 to Affiliates in connection with the performance of this Agreement and solely on a need-to-know basis; to potential or actual collaborators (including without limitation actual and potential Licensees), who prior to disclosure must be bound by written obligations of confidentiality and non-use no less restrictive than the obligations set forth in this Article 5; to potential or actual investment bankers, investors, lenders, acquirers, merger partners or other potential financial partners, and their attorneys and agents, who prior to disclosure must be bound by written or professional obligations of confidentiality and non-use no less restrictive than the obligations set forth in this Article 5; or employees, independent contractors (including without limitation contract research organizations, contract manufacturing organizations, consultants and clinical investigators) or agents, each of whom prior to disclosure must be bound by written obligations of confidentiality and non-use no less restrictive than the obligations set forth in this Article 5; *provided, however*, that the Receiving Party will remain responsible for any failure by any Person who receives Confidential Information pursuant to this Section 5.3.3 to treat such Confidential Information as required under this Article 5.

If and whenever any Confidential Information is disclosed in accordance with this Section 5.3, such disclosure will not cause any such information to cease to be Confidential Information except to the extent that such disclosure results in a public disclosure of such information (other than in breach of this Agreement). Where reasonably possible and subject to Sections 5.4 and 5.5, the Receiving Party will notify the Disclosing Party in writing of the Receiving Party's intent to make such disclosure pursuant to Sections 5.3.1–5.3.3 sufficiently prior to making such disclosure so as to allow the Disclosing Party adequate time to take whatever action appropriate to protect the confidentiality of the information while still permitting such disclosure, and the Receiving Party will cooperate with the Disclosing Party in such efforts.

5.4 Required Disclosure. A Receiving Party may disclose Confidential Information of the Disclosing Party to the extent such disclosure is required pursuant to interrogatories, judicial requests for information or documents, subpoena, civil investigative demand issued by a court or Governmental Authority or as otherwise required by Applicable Law; *provided, however*, that the Receiving Party will notify the Disclosing Party promptly in writing upon receipt thereof, giving (where practicable) the Disclosing Party sufficient advance notice to permit it to oppose, limit or seek a protective order or confidential treatment for such disclosure; and *provided, further*, that the Receiving Party will furnish only that portion of the Confidential Information that it is advised by counsel is legally required whether or not a protective order or other similar order is obtained by the Disclosing Party.

5.5 Securities Filings. In the event a Party proposes to file with the SEC or the securities regulators of any state or other jurisdiction a registration statement or any other disclosure document which describes or refers to this Agreement under the Securities Act, the Securities Exchange Act, of 1934, as amended, or any other applicable securities laws, such Party will notify the other Party in writing of such intention and will provide such other Party with a copy of relevant portions of the proposed filing not less than five (5) days prior to such filing (and any revisions to such portions of the proposed filing a reasonable time prior to the filing thereof), including without limitation any appendices to this Agreement, will consider in good faith the other Party's comments and will use reasonable efforts to obtain confidential treatment of any information concerning this Agreement that such other Party requests, no later than two (2) days prior to such filing, be kept confidential, and will only disclose Confidential Information that it is advised by counsel is legally required to be disclosed. No such notice will be required under this Section 5.5 if the substance of the description of or reference to this Agreement contained in the proposed filing has been included in any previous filing made by the either Party hereunder or otherwise approved by the other Party (including pursuant to Section 5.6).

5.6 Disclosure of Agreement. Except for a press release and a Current Report on Form 8-K previously approved in form and substance by Ligand and Novan or any other public announcement using substantially the same text as such press release or Form 8-K, or as otherwise permitted under Section 5.3.3 or Section 5.5, neither Party may issue any press release or make any other public statement or other disclosure disclosing to any Third Party any information relating to this Agreement or its terms or the transactions contemplated hereby without the prior written consent of the other Party, such consent not to be unreasonably withheld, delayed, or conditioned; *provided*

that either Party shall be entitled to respond to analysts' and investors' questions in the ordinary course and in a manner substantially consistent with any previous disclosure made in accordance with this Section 5.6.

ARTICLE 6

TERM AND TERMINATION

6.1 Term and Expiration. The term of this Agreement will commence on the Effective Date and will continue for as long as payments are due and payable under this Agreement or until such date as this Agreement is sooner terminated in accordance with Section 6.2, 6.3 or 6.4 or by mutual written consent of the Parties (the "**Term**").

6.2 Termination by Ligand. Ligand may terminate this Agreement for any or no reason upon ninety (90) days prior written notice to Novan.

6.3 Termination for Material Breach.

6.3.1 If Ligand believes that Novan is in material breach of this Agreement, then Ligand may deliver notice of such breach to Novan. In such notice Ligand will identify with specificity the alleged breach and the actions or conduct that it wishes Novan to take for an acceptable and prompt cure of such breach; *provided* that such identified actions will not be binding upon Novan with respect to the actions that it may need to take to cure such breach. Novan will have sixty (60) days to cure such breach. If Novan fails to cure such breach within such cure period, Ligand may, subject to Section 6.3.2, terminate this Agreement immediately by providing Novan a written notice at the end of such cure period. Notwithstanding the foregoing, if Novan fails to cure such breach within such cure period, but within such cure period Novan is using good faith efforts to cure such breach, then Ligand may not terminate this Agreement for so long as Novan is using good faith efforts to cure such breach.

6.3.2 Notwithstanding the foregoing, if Novan disputes in good faith the existence or materiality of such breach and provides notice to Ligand of such dispute within such cure period, Ligand will not have the right to terminate this Agreement in accordance with this Section 6.3 unless and until it has been determined in accordance with Article 10 that this Agreement was materially breached by Novan and Novan failed to cure such breach within the applicable cure period. It is understood and acknowledged that during the pendency of such a dispute, all of the terms and conditions of this Agreement will remain in effect and the Parties will continue to perform all of their respective obligations hereunder.

6.4 Termination for Insolvency. To the extent permitted under Applicable Law, Ligand may terminate this Agreement upon written notice to Novan on or after the occurrence of any Bankruptcy Event relating to Novan.

6.5 Effect of Expiration or Termination of Agreement. Expiration or termination of this Agreement for any reason will not (a) release any Party from any obligation that has accrued prior to the effective date of such expiration or termination, (b) preclude any Party from claiming

any other damages, compensation, or relief that it may be entitled to upon such expiration or termination, or (c) terminate any right to obtain performance of any obligation provided for in this Agreement that will survive expiration or termination. Without limiting the foregoing, upon expiration or termination of this Agreement, the rights and obligations of the Parties under this Section 6.5 and Articles 1, 4, 5 (for the term set forth in Section 5.1), 7, 9, 10, and 11 will survive such expiration or termination. Without limiting any other remedies available, if this Agreement is terminated by Ligand pursuant to (x) Section 6.3 for a material breach of Section 2.3 or (y) Section 6.4, then within thirty (30) days following the effective date of such termination, Novan shall pay to Ligand an amount equal to the Purchase Price less any payments made by Novan under this Agreement as of the effective date of termination. Upon expiration of this Agreement or early termination of this Agreement, Ligand will have the right to retain all amounts previously paid to Ligand by Novan.

ARTICLE 7

INDEMNITY

7.1 Novan Indemnity Obligations. Novan will defend Ligand, its Affiliates, and their respective directors, officers, employees, contractors and agents (collectively, the "**Indemnitees**"), and will indemnify and hold harmless the Indemnitees, from and against any liabilities, losses, costs, damages, fees, or expenses incurred by such Indemnitees, and reasonable attorney's fees and other legal expenses with respect thereto, ("**Losses"**) arising out of any allegation, claim, action, lawsuit, or other proceeding ("**Claims**") brought against any Indemnitee to the extent directly resulting from or relating to: (a) any breach by Novan of any of its representations, warranties, covenants, or obligations pursuant to this Agreement, (b) research, Development, manufacturing, Commercialization, transfer, importation or exportation, labeling, handling or storage, or use of or other exploitation of any Product by or on behalf of Novan, its Affiliates, Licensees, distributors, or contractors, including without limitation Claims brought following the Effective Date based on product liability, bodily injury, risk of bodily injury, death, or property damage, (c) any allegations of infringement or misappropriation of the intellectual property of any Third Party with respect to any Product or the Novan Patents, (d) the gross negligence or willful misconduct of Novan, its Affiliates and/or Licensees, or (e) any violation of Applicable Law by Novan, its Affiliates, or Licensees; except in any such case to the extent such Losses and Claims directly result from: (i) the gross negligence or willful misconduct of Ligand or an Indemnitee, (ii) any breach by Ligand of any of its representations, warranties, covenants, or obligations pursuant to this Agreement, or (iii) any violation of Applicable Law by Ligand or an Indemnitee.

7.2 Procedure. If any Indemnitee intends to claim indemnification under this Article 7, the Indemnitee will promptly notify Novan in writing of any Claim in respect of which the Indemnitee intends to claim such indemnification, and Novan will assume the defense thereof with counsel selected by Novan and reasonably acceptable to the Indemnitee; *provided, however*, that an Indemnitee will have the right to retain its own counsel, with the fees and expenses to be paid by the Indemnitee, if representation of such Indemnitee by the counsel retained by Novan would be inappropriate due to actual or potential differing interests between such Indemnitee and any other

Party represented by such counsel in such proceedings. Novan will have the right to control the defense of, and settle, dispose of or compromise any Claims for which it is providing indemnification under this Article 7; *provided* that the prior written consent of the Indemnitee (which will not be unreasonably withheld, delayed, or conditioned) will be required in the event any such settlement, disposition or compromise would adversely affect the interests of the Indemnitee. The failure to deliver notice to Novan within a reasonable time after the commencement of any such action, to the extent prejudicial to Novan's ability to defend such action, will relieve Novan of any liability to the Indemnitee under this Article 7, but the omission to so deliver notice to Novan will not relieve it of any liability that it may have to any Indemnitee otherwise than under this Article 7. The Indemnitee under this Article 7, its employees, and its agents, will cooperate with Novan and its legal representatives in the investigation of any Claim covered by this indemnification.

ARTICLE 8

REPRESENTATIONS, WARRANTIES, AND COVENANTS

8.1 Mutual Representations and Warranties. Each Party represents and warrants to the other Party that:

8.1.1 it has the full right and corporate power and authority to enter into and perform this Agreement;

8.1.2 it has full legal power to extend the rights transferred or granted to the other under this Agreement;

8.1.3 it is not aware of any impediment that would inhibit its ability to perform the terms and conditions imposed on it by this Agreement; and

8.1.4 it has taken all necessary action on its part required to authorize the execution and delivery of this Agreement.

8.2 Further Representations and Warranties, and Covenants, of Novan. Novan represents and warrants as of the Effective Date, and, as applicable, Novan covenants, that:

8.2.1 it has enforceable written agreements with all of its employees, consultants, or independent contractors who receive Confidential Information under this Agreement obligating them to keep such information confidential and to use such information only as permitted in this Agreement, and assigning to Novan ownership of all intellectual property rights created in the course of their employment or performance of consulting or contracting services;

8.2.2 as of the Effective Date, it has the full right to transfer and grant the rights to receive payments transferred and granted to Ligand under this Agreement, and is not currently bound by any agreement with any Third Party, or by any outstanding order, judgment, or decree of any court or administrative agency, that restricts it in any way from transferring or granting to Ligand the rights as set forth in this Agreement;

8.2.3 it has not granted as of the Effective Date any right, option, license or interest in or to any Novan Patents or Regulatory Filings that is in conflict with the rights granted to Ligand under this Agreement and Novan will not do any of the foregoing during the Term; it has not granted, or permitted to be attached, any lien, security interest, or other encumbrance with respect to Novan Patents or Regulatory Filings;

8.2.4 Novan will not create, incur, assume or suffer to exist any lien, security interest, or other encumbrance on the Novan Patents or Regulatory Filings, except to the extent that such lien, security interest, or encumbrance does not have an adverse effect on the interest of Ligand under this Agreement, including without limitation the right to receive payments and related information under this Agreement;

8.2.5 Novan will not assign, transfer, convey, or otherwise encumber its right, title, and interest in Novan Patents or Regulatory Filings in a manner that conflicts with any rights transferred or granted to Ligand hereunder, including without limitation by assigning, transferring, or conveying its right, title, and interest in Novan Patents or Regulatory Filings to any Person to which this Agreement (including, for clarity, the obligation to pay to Ligand the Milestone Payments and Royalties) is not contemporaneously assigned, transferred, and conveyed; *provided* that this Section 8.2.5 will not restrict Novan's right to perform its activities under this Agreement through Licensees in accordance with Section 2.4 or to enter into any lending arrangements that are secured by any Novan Patents, Regulatory Filings or other assets of Novan, or product revenue monetization arrangements similar to this Agreement, *provided* that in each case the Milestone Payments and Royalties remain free and clear of any lien, security interest, or other encumbrance, and continue to be payable to Ligand in accordance with Article 4;

8.2.6 Novan has no Knowledge of any infringement or misappropriation by any Third Party of any of the Novan Patents or Regulatory Filings as of the Effective Date;

8.2.7 to Novan's Knowledge, Novan Controls, and is unaware of any facts that have lead Novan to suspect that it does not Control, Novan Patents existing as of the Effective Date;

8.2.8 Novan has not utilized and will not utilize, in conducting Development, manufacture, or Commercialization of Products, any Person that at such time, to Novan's Knowledge, is debarred by FDA or other Regulatory Authority;

8.2.9 Novan has obtained, and during the Term will maintain, all licenses, authorizations, and permissions necessary under Applicable Law for meeting and performing its obligations under this Agreement and all such licenses, authorizations, and permissions are in full force and effect;

8.2.10 All of Novan's activities relating to its use of Novan Patents and Regulatory Filings, and the research, Development and Commercialization of Products pursuant to this Agreement have complied and will comply in all material respects with all Applicable Laws;

8.2.11 Novan has not incurred, will not incur and does not presently intend to incur, debts, liabilities, or other obligations beyond its ability to pay such debts, liabilities, or other

obligations as they become absolute and matured. Novan is not subject to any Bankruptcy Event, and no action has been taken or is intended by Novan or, to its Knowledge, any other Person, to make Novan subject to a Bankruptcy Event;

8.2.12 Novan has no indebtedness for borrowed money of Novan. The fair salable value of Novan's assets (including goodwill minus disposition costs) exceeds the fair value of its liabilities. After giving effect to the transactions described in this Agreement, Novan (a) is not left with unreasonably small capital in relation to its business as presently conducted and (b) is able to pay its debts (including trade debts) as they mature.

8.2.13 Novan shall provide Ligand with written notice as promptly as possible (but in no event more than [***]) after acquiring Knowledge of the occurrence of a Bankruptcy Event in respect of Novan;

8.2.14 the claims and rights of Ligand created by this Agreement to receive the Milestone Payments and Royalties are not and shall not be subordinated to any creditor of Novan or any other Person (other than as a result of Ligand's own election);

8.2.15 Novan and, to its Knowledge, its Affiliates and Licensees and their respective employees and contractors have not, and Novan and its Affiliates will not, and will use good faith efforts to cause its Licensees and their respective employees and contractors to not, directly or indirectly through Third Parties, pay, promise, or offer to pay, or authorize the payment of, any money or give any promise or offer to give, or authorize the giving of anything of value to a Public Official or Entity or other Person for purpose of obtaining or retaining business for or with, or directing business to, any Person, including without limitation Ligand or Novan. Without any limitation to the foregoing, Novan and its Affiliates and Licensees and their respective employees and contractors have not, and Novan and its Affiliates will not, and will use good faith efforts to cause its Licensees and their respective employees and contractors to not, directly or indirectly promise, offer, or provide any corrupt payment, gratuity, emolument, bribe, kickback, illicit gift, or hospitality or other illegal or unethical benefit to a Public Official or Entity or any other Person;

8.2.16 Novan is aware of all applicable anti-corruption and anti-bribery laws, including without limitation the FCPA, and all applicable anti-corruption laws in effect in the countries in which Novan conducts or will conduct business. Novan and its Affiliates will not, and Novan will use good faith efforts to cause its Licensees and their respective employees and contractors to not, cause any Indemnitees to be in violation of the FCPA, Export Control Laws, or any other Applicable Laws;

8.2.17 Novan and its Affiliates will fully cooperate and will use good faith efforts to cause its Licensees and their respective employees, contractors, and subcontractors to cooperate fully with Ligand in ensuring compliance with the FCPA, Export Control Laws, and all other Applicable Laws. During the Term, Novan will provide Ligand with such due diligence information relating to compliance with the FCPA, Export Control Laws, and other Applicable Laws by Novan and its Affiliates, subcontractors, and Licensees and their respective principals, directors, officers, employees, representatives, and contractors, as Ligand may reasonably request;

8.2.18 Novan will immediately notify Ligand if Novan has any information or reasonable belief that there may be a violation of the FCPA, Export Control Laws, or any other Applicable Law in connection with the performance of this Agreement or the sale of Products in the Territory; and

8.2.19 Neither Novan nor its Affiliates or Licensees will directly or indirectly sell any Product to any Person outside of the Territory that Novan knows is going to market, distribute, or sell such Product, directly or indirectly, in the Territory. Novan will ensure that reasonable safeguards are put in place so that all Products that are sold by Novan, its Affiliates or its Licensees outside of the Territory will not subsequently be imported into or sold in the Territory.

ARTICLE 9

DISCLAIMER; LIMITATION OF LIABILITY

9.1 DISCLAIMER. EXCEPT AS PROVIDED UNDER ARTICLE 8, EACH PARTY EXPRESSLY DISCLAIMS ANY AND ALL WARRANTIES OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION THE WARRANTIES OF DESIGN, MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, NONINFRINGEMENT OF THE INTELLECTUAL PROPERTY RIGHTS OF THIRD PARTIES, OR ARISING FROM A COURSE OF DEALING, USAGE OR TRADE PRACTICES, IN ALL CASES WITH RESPECT THERETO.

9.2 LIMITATION OF LIABILITY.

9.2.1 NEITHER PARTY WILL BE LIABLE FOR INDIRECT, INCIDENTAL, CONSEQUENTIAL, SPECIAL, EXEMPLARY, PUNITIVE, OR MULTIPLE DAMAGES ARISING IN CONNECTION WITH THIS AGREEMENT OR THE EXERCISE OF ITS RIGHTS OR PERFORMANCE OF ITS OBLIGATIONS HEREUNDER, OR FOR LOST PROFITS OR LOSS OF USE ARISING FROM OR RELATING TO ANY BREACH OF THIS AGREEMENT, REGARDLESS OF ANY NOTICE OF SUCH DAMAGES.

9.2.2 NOTWITHSTANDING ANYTHING IN THIS AGREEMENT TO THE CONTRARY, SECTION 9.2.1 WILL NOT LIMIT OR RESTRICT (A) DAMAGES AVAILABLE FOR BREACHES OF CONFIDENTIALITY OBLIGATIONS UNDER ARTICLE 5, (B) THE INDEMNIFICATION OBLIGATIONS UNDER ARTICLE 7, OR (C) THE OBLIGATIONS TO PAY MILESTONE PAYMENTS AND ROYALTIES UNDER SECTIONS 4.2 AND 4.3.

9.3 No Assumed Obligations. Notwithstanding any provision in this Agreement, Ligand is not assuming any liability or obligation of Novan or any of Novan's Affiliates of whatever nature, whether presently in existence or arising or asserted hereafter. All such liabilities and obligations shall be retained by and remain liabilities and obligations of Novan or its Affiliates, as the case may be.

ARTICLE 10

DISPUTE RESOLUTION

10.1 Resolution by Senior Executives. The Parties will seek to settle amicably any and all disputes or differences arising out of or in connection with this Agreement. Any dispute between the Parties will be promptly presented to the Chief Executive Officer of Novan and the Chief Executive Officer of Ligand, or their respective designees, for resolution. Such officers, or their designees, will attempt in good faith to promptly resolve such dispute. Notwithstanding the foregoing, either Party may seek equitable or interim relief or provisional remedy in any court of competent jurisdiction to enforce its rights under this Agreement, including without limitation injunctive relief and specific performance, without having to prove actual damages or post a bond. If the Chief Executive Officers of the Parties, or their respective designees, are unable to resolve a given dispute within [***] of the matter being referred to them, either Party may have the dispute adjudicated in accordance with Section 10.2.

10.2 Applicable Law and Venue. This Agreement will be governed by, enforced, and will be construed in accordance with the laws of the State of New York, United States of America without regard to any Applicable Law, rule, or principle that would result in the application of the laws of any other jurisdiction. All actions and proceedings arising out of or relating to this Agreement will be heard and determined exclusively in any New York State or federal court sitting in the Southern District of New York, and each Party hereby irrevocably consents to personal jurisdiction and venue in, and agrees to service of process issued or authorized by, such court in any such action or proceeding and irrevocably waive any defense of an inconvenient forum to the maintenance of any such action or proceeding. Notwithstanding the foregoing, either Party may seek injunctive relief in any court in any jurisdiction where appropriate.

ARTICLE 11

MISCELLANEOUS

11.1 Assignment.

11.1.1 Novan shall not enter into an agreement after the date hereof (i) with respect to a Change of Control of Novan or (ii) whereby Novan directly or indirectly sells, licenses, conveys, assigns or otherwise transfers all or any significant portion of its Regulatory Filings, Know-How, Patent Rights or other intellectual property rights or interests in and to any Product to a Third Party unless, in each case, such Third Party that succeeds to the rights of Novan to develop such Product assumes the obligations of Novan contained in this Agreement with respect to the development of such Product (including, without limitation, the obligations set forth in Sections 2.2 and 2.3 of this Agreement and the obligation to pay to Ligand the Milestone Payments and Royalties) and Novan assigns all of the applicable Novan Patents and Regulatory Filings to such Third Party; *provided*

that this Section 11.1.1 will not restrict Novan's right to perform its activities under this Agreement through Licensees in accordance with Section 2.4.

11.1.2 This Agreement may not be assigned or otherwise transferred by either Party without the consent of the other Party, which consent will not be unreasonably withheld, delayed, or conditioned; *provided, however*, that either Party may, without such consent, assign this Agreement together with all of its rights and obligations hereunder to its Affiliates, or to a successor in interest in connection with the transfer or sale of all or substantially all of its business to which this Agreement relates, or in the event of a Change of Control, subject in each case to Section 11.1.1 and the assignee or successor-in-interest agreeing to be bound by the terms of this Agreement. Any purported assignment in violation of this Section 11.1 will be void. Any permitted assignee or successor will assume and be bound by all obligations of its assignor or predecessor under this Agreement.

11.2 Severability. If any provision of this Agreement is held to be invalid or unenforceable, all other provisions will continue in full force and effect, and the Parties will substitute for the invalid or unenforceable provision a valid and enforceable provision which conforms as nearly as possible with the original intent of the Parties.

11.3 Notices. Any notice or other communication to a Party pursuant to this Agreement will be sufficiently made or given on the date it was sent; *provided* that such notice or other communication is sent by first class certified or registered mail, postage prepaid, or is sent by next day express delivery service, addressed to it at its address in this Section 11.3, below, or to such other address as the Party to whom notice is to be given may have furnished to the other Party in writing in accordance herewith.

If to Ligand:

Ligand Pharmaceuticals, Inc.
3911 Sorrento Valley Boulevard, Suite 110
San Diego, California 92121, U.S.A.
Attention: Chief Financial Officer

With copies to (which alone will not constitute notice):

Ligand Pharmaceuticals, Inc.
3911 Sorrento Valley Boulevard, Suite 110
San Diego, California 92121, U.S.A.
Attention: General Counsel

and

Latham & Watkins LLP
12670 High Bluff Drive
San Diego, CA 92130
Attention: Matthew Bush

If to Novan, to:

Novan, Inc.
4105 Hopson Road
Morrisville, NC 27560, U.S.A.
Attn: Chief Executive Officer

With copies to (which alone will not constitute notice):

Smith, Anderson, Blount,
Dorsett, Mitchell & Jernigan, LLP
Wells Fargo Capitol Center
150 Fayetteville Street, Suite 2300
Raleigh, NC 27601, U.S.A.
Attn: Gerald F. Roach, Esq.

11.4 Expenses. Except as expressly set forth in this Agreement or as may be specifically agreed to in writing by Novan and Ligand, each Party will be responsible for all costs and expenses it incurs in connection with this Agreement.

11.5 Headings. The headings of Articles and Sections of this Agreement are for ease of reference only and will not affect the meaning or interpretation of this Agreement in any way.

11.6 Waiver. The failure of either Party in any instance to insist upon the strict performance of the terms of this Agreement will not be construed to be waiver or relinquishment of any of the terms of this Agreement, either at the time of the Party's failure to insist upon strict performance or at any time in the future, and such terms will continue in full force and effect.

11.7 Counterparts; Electronic Delivery. This Agreement and any amendment may be executed in one or more counterparts (including without limitation by way of PDF or electronic transmission), each of which will be deemed an original, but all of which together will constitute one and the same instrument. When executed by the Parties, this Agreement will constitute an original instrument, notwithstanding any electronic transmission, storage and printing of copies of this Agreement from computers or printers. For clarity, PDF signatures will be treated as original signatures.

11.8 Use of Names. Neither Party will, without prior written consent of the other Party, use the name or any trademark or trade name owned by the other Party, or owned by an Affiliate of the other Party, in any publication, publicity, advertising, or otherwise, except as expressly permitted by Article 5.

11.9 Independent Contractors. Nothing contained in this Agreement will be deemed to constitute a joint venture, partnership, or employer-employee relationship between Ligand and Novan, or to constitute one as the agent of the other. Neither Party will be entitled to any benefits

applicable to employees of the other Party. Both Parties will act solely as independent contractors, and nothing in this Agreement will be construed to make one Party an agent, employee, or legal representative of the other Party for any purpose or to give either Party the power or authority to act for, bind, or commit the other Party.

11.10 Entire Agreement. This Agreement, together with the Appendices attached hereto, constitutes the entire agreement and understanding between the Parties with respect to the subject matter hereof, and supersedes all prior or contemporaneous proposals, oral or written, confidentiality agreements, and all other communications between the Parties with respect to such subject matter, including without limitation the Prior CDA.

11.11 Modifications. The terms and conditions of this Agreement may not be amended or modified, except in writing signed by both Parties.

11.12 Exports. The Parties acknowledge that the export of technical data, materials, or products is subject to the exporting Party receiving any necessary export licenses and that the Parties cannot be responsible for any delays attributable to export controls which are beyond the reasonable control of either Party. Novan and Ligand agree not to export or re-export, directly or indirectly, any information, technical data, the direct product of such data, samples, or equipment received or generated under this Agreement in violation of any applicable export control laws.

11.13 Further Assurances. Each Party agrees to do and perform all such further reasonable acts and things and will execute and deliver such other agreements, certificates, instruments, and documents necessary to carry out the intent and accomplish the purposes of this Agreement and to evidence, perfect, or otherwise confirm the other Party's rights hereunder. Novan shall make available to Ligand such information as Ligand may, from time to time, reasonably request with respect to the right to receive payments under this Agreement.

11.14 Interpretation.

11.14.1 This Agreement was prepared in the English language, which language will govern the interpretation of, and any dispute regarding, the terms of this Agreement.

11.14.2 Each of the Parties acknowledges and agrees that this Agreement has been diligently reviewed by and negotiated by and between them, that in such negotiations each of them has been represented by competent counsel and that the final agreement contained herein, including without limitation the language whereby it has been expressed, represents the joint efforts of the Parties and their counsel. Accordingly, in the event an ambiguity or a question of intent or interpretation arises, this Agreement will be construed as if drafted jointly by the Parties and no presumption or burden of proof will arise favoring or disfavoring any Party by virtue of the authorship of any provisions of this Agreement.

11.14.3 The definitions of the terms herein will apply equally to the singular and plural forms of the terms defined. Whenever the context may require, any pronoun will include the corresponding masculine, feminine, and neuter forms. The word "any" will mean "any and all" unless otherwise clearly indicated by context.

11.14.4 Unless the context requires otherwise, (a) any definition of or reference to any agreement, instrument, or other document herein will be construed as referring to such agreement, instrument, or other document as from time to time amended, supplemented, or otherwise modified (subject to any restrictions on such amendments, supplements or modifications set forth herein or therein), (b) any reference to any Applicable Laws herein will be construed as referring to such Applicable Laws as from time to time enacted, repealed, or amended, (c) any reference herein to any Person will be construed to mean the Person's successors and assigns (after any such succession or assignment), (d) the words "herein", "hereof" and "hereunder", and words of similar import, will be construed to refer to this Agreement in its entirety and not to any particular provision hereof, and (e) all references herein to Articles, Sections, or Appendices, unless otherwise specifically provided, will be construed to refer to Articles, Sections, and Appendices of this Agreement.

11.14.5 References to sections of the Code of Federal Regulations and to the United States Code will mean the cited sections, as these may be amended from time to time.

11.15 Force Majeure Event. Except for the payment of money, neither Party will be in breach or default, nor will either Party be liable or responsible to the other Party for losses or damages, nor will either Party have the right to terminate this Agreement, for any breach, default or delay by the other Party that is attributable to an event beyond their reasonable control, including without limitation acts of God, acts of government (including without limitation injunctions), fire, flood, earthquake, strike, lockout, labor dispute, breakdown of plant, shortage of equipment or supplies, loss or unavailability of manufacturing facilities or materials, casualty or accident, stoppage or interruption of transportation or utilities, civil commotion, acts of public enemies, acts of terrorism or threat of terrorist acts, blockage or embargo and the like (each, a "**Force Majeure Event**"); *provided, however*, that such Party will use reasonable efforts to avoid and/or minimize the impact of such occurrence, and give prompt written notice of any Force Majeure Event to the other Party.

[*Signature Page Follows*]

IN WITNESS WHEREOF, each of the Parties has caused its duly authorized officer to execute and deliver this Agreement as of the Effective Date.

LIGAND PHARMACEUTICALS INCORPORATED

By:	/s/ Charles Berkman
Name:	Charles Berkman
Title:	SVP, GC & Secretary

NOVAN, INC.

By:	/s/ G. Kelly Martin
Name:	G. Kelly Martin
Title:	CEO

Appendix A

Development Plan

[***]

Appendix B

Development Budget

[***]

Exhibit 31.1

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

I, G. Kelly Martin, certify that:

1. I have reviewed this quarterly report on Form 10-Q of Novan, Inc. (the "registrant");

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

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

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

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

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

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

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

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

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

Date: August 13, 2019

/s/ G. Kelly Martin

G. Kelly Martin

Chief Executive Officer

(Principal Executive Officer)

Exhibit 31.2

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

I, John M. Gay, certify that:

1. I have reviewed this quarterly report on Form 10-Q of Novan, Inc. (the "registrant");

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

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

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

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

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

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

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

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

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

Date: August 13, 2019

/s/ John M. Gay

John M. Gay

Vice President, Finance and Corporate Controller

(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

I, G. Kelly Martin, Chief Executive Officer of Novan, Inc. (the "Company"), do hereby certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that to the best of my knowledge:

(1) the Quarterly Report on Form 10-Q of the Company for the quarter ended June 30, 2019 (the "Report") fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

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

Date: August 13, 2019

/s/ G. Kelly Martin
G. Kelly Martin
Chief Executive Officer
(Principal Executive Officer)

This certification is being furnished solely to accompany the Report pursuant to 18 U.S.C. § 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, and shall not be deemed "filed" by the Company for purposes of Section 18 of the Securities Exchange Act of 1934, as amended, and shall not be incorporated by reference into any filing of the Company under the Securities Act of 1933, as amended, or the Securities Exchange Act of 1934, as amended, whether made before or after the date of this Report, irrespective of any general incorporation language contained in such filing.

A signed original of this written statement required by Section 906 of the Sarbanes-Oxley Act of 2002 has been provided to the Company and will be retained by the Company and furnished to the Securities and Exchange Commission or its staff upon request.

Exhibit 32.2

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

I, John M. Gay, Vice President, Finance and Corporate Controller of Novan, Inc. (the "Company"), do hereby certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that to the best of my knowledge:

(1) the Quarterly Report on Form 10-Q of the Company for the quarter ended June 30, 2019 (the "Report") fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

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

Date: August 13, 2019

/s/ John M. Gay

John M. Gay
Vice President, Finance and Corporate Controller
(Principal Financial Officer)

This certification is being furnished solely to accompany the Report pursuant to 18 U.S.C. § 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, and shall not be deemed "filed" by the Company for purposes of Section 18 of the Securities Exchange Act of 1934, as amended, and shall not be incorporated by reference into any filing of the Company under the Securities Act of 1933, as amended, or the Securities Exchange Act of 1934, as amended, whether made before or after the date of this Report, irrespective of any general incorporation language contained in such filing.

A signed original of this written statement required by Section 906 of the Sarbanes-Oxley Act of 2002 has been provided to the Company and will be retained by the Company and furnished to the Securities and Exchange Commission or its staff upon request.