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

FORM 8-K

CURRENT REPORT
Pursuant to Section 13 or 15(d)
of the Securities Exchange Act of 1934

Date of report (Date of earliest event reported): January 5, 2018

Novan, Inc.

(Exact name of registrant as specified in its charter)

Delaware
(State or other jurisdiction of
incorporation or organization)

001-37880
(Commission
File Number)

20-4427682
(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, include area code)

N/A
(Former Name or Former Address, if Changed Since Last Report)

Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligation of the registrant under any of the following provisions:

- Written communications pursuant to Rule 425 under the Securities Act (17 CFR 230.425)
- Soliciting material pursuant to Rule 14a-12 under the Exchange Act (17 CFR 240.14a-12)
- Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d-2(b))
- Pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act (17 CFR 240.13e-4(c))

Indicate by check mark whether the registrant is an emerging growth company as defined in as defined in Rule 405 of the Securities Act of 1933 (§ 230.405 of this chapter) or Rule 12b-2 of the Securities Exchange Act of 1934 (§ 240.12b-2 of this chapter).

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.

Item 1.01. Entry Into a Material Definitive Agreement.

On January 5, 2018, Novan, Inc. (the “Company”) entered into an Underwriting Agreement (the “Underwriting Agreement”) with Piper Jaffray & Co., as representative of the underwriters named therein (the “Underwriters”), related to the sale and issuance of 10,000,000 shares (the “Shares”) of its Common Stock, \$0.0001 par value per share (“Common Stock”), and warrants to purchase up to 10,000,000 shares of Common Stock (the “Warrants”). The Warrants are exercisable immediately upon issuance at an initial exercise price of \$4.66 per share and will expire four years from the date of issuance.

The combined public offering price in this offering for each Share and accompanying Warrant is \$3.80. The net proceeds to the Company from this offering are expected to be approximately \$35.2 million, after deducting underwriting discounts and commissions and other estimated offering expenses payable by the Company, and excluding any proceeds the Company may receive upon exercise of the Warrants. The offering closed on January 9, 2018.

The exercise price and the number of shares of common stock purchasable upon the exercise of the warrants are subject to adjustment upon the occurrence of specific events, including sales of additional shares of common stock, stock dividends, stock splits, reclassifications and combinations of our common stock. If, at any time Warrants are outstanding, any fundamental transaction occurs, as described in the Warrants and generally including any consolidation or merger into another corporation, the consummation of a transaction whereby another entity acquires more than 50% of the Company’s outstanding voting stock, or the sale of all or substantially all of its assets, the successor entity must assume the obligations to the Warrant holders. Additionally, in the event of a fundamental transaction, other than one in which a successor entity that is a publicly traded corporation assumes the Warrants, 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 such Warrants.

The Underwriting Agreement contains customary representations, warranties and agreements by the Company, customary conditions to closing, indemnification obligations of the Company and the Underwriters, including for liabilities under the Securities Act of 1933, as amended, termination provisions and other obligations of the parties. Upon closing of the offering, the Company entered into a warrant agreement (the “Warrant Agreement”) with American Stock Transfer & Trust Company, LLC (the “Transfer Agent”), pursuant to which the Warrants were issued and the Transfer Agent will act as warrant agent for the Warrants. The representations, warranties and covenants contained in the Underwriting Agreement were made only for purposes of such agreement and as of specific dates, were solely for the benefit of the parties to such agreement and may be subject to limitations agreed upon by the contracting parties.

The offering was made pursuant to the Company’s registration statement on Form S-3 (Registration Statement No. 333-220761) filed with the Securities and Exchange Commission (the “SEC”) on October 2, 2017 and declared effective on October 10, 2017 and the prospectus supplement dated January 5, 2018 thereunder. The Underwriting Agreement, the Warrant Agreement and the form of Warrant are attached hereto as Exhibit 1.1, Exhibit 4.1 and Exhibit 4.2, respectively, and are incorporated herein by reference, and the description of the terms of the Underwriting Agreement, the Warrant Agreement and the Warrants are qualified in their entirety by reference to such exhibits. A copy of the opinion of Smith, Anderson, Blount, Dorsett, Mitchell & Jemigan, L.L.P. relating to the legality of the issuance and sale of the Shares, the Warrants and the shares of Common Stock issuable upon exercise of the Warrants is attached hereto as Exhibit 5.1.

A copy of the press release announcing the pricing of the offering is attached hereto as Exhibit 99.1 and is incorporated herein by reference.

Forward-Looking Statements

This Current Report on Form 8-K contains forward-looking statements including, but not limited to, statements related to the anticipated amount of proceeds from a public offering. Forward-looking statements are subject to a number of risks and uncertainties that could cause actual results to differ materially from the Company’s expectations, including, but not limited to, risks and uncertainties described in the Company’s annual report filed with the SEC on Form 10-K for the twelve months ended Dec. 31, 2016, and in any subsequent filings with the SEC. These forward-looking statements speak only as of the date of this Current Report on Form 8-K, and the Company disclaims any intent or obligation to update these forward-looking statements to reflect events or circumstances after the date of such statements, except as may be required by law.

Item 9.01. Financial Statements and Exhibits.**EXHIBIT INDEX**

<u>Exhibit No.</u>	<u>Description</u>
1.1	Underwriting Agreement, dated January 5, 2018, by and between Novan, Inc. and Piper Jaffray & Co., as representative of the underwriters named therein.
4.1	Form of Warrant Agreement.
4.2	Form of Common Stock Purchase Warrant (included in Exhibit 4.1).
5.1	Opinion of Smith, Anderson, Blount, Dorsett, Mitchell & Jemigan, L.L.P.
23.1	Consent of Smith, Anderson, Blount, Dorsett, Mitchell & Jemigan, L.L.P. (included in Exhibit 5.1).
99.1	Press Release of Novan, Inc., issued on January 5, 2018.

SIGNATURES

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

Novan, Inc.

Date: January 9, 2018

By: /s/ William L. Hodges
William L. Hodges
Interim Chief Financial Officer

10,000,000 Shares of Common Stock
and
Warrants to Purchase up to 10,000,000 Shares of Common Stock
NOVAN, INC.
Common Stock
UNDERWRITING AGREEMENT

January 5, 2018

PIPER JAFFRAY & CO.
as Representative of the several Underwriters named in Schedule A hereto

c/o Piper Jaffray & Co.
345 Park Avenue, Suite 1200
New York, New York 10154

Dear Sirs and Madams:

1. *INTRODUCTORY.* Novan, Inc., a Delaware corporation (the “*Company*”), proposes to sell, pursuant to the terms of this Underwriting Agreement (this “*Agreement*”), to the several underwriters named in Schedule A hereto (the “*Underwriters*,” or, each, an “*Underwriter*”), (i) an aggregate of 10,000,000 shares (the “*Stock*”) of common stock, \$0.0001 par value per share, of the Company (the “*Common Stock*”) and (ii) warrants of the Company to purchase an aggregate of 10,000,000 shares of Common Stock (the “*Warrants*”) in the form of Warrant attached hereto as Exhibit II. Each share of Stock is being sold together with one Warrant to purchase one share of Common Stock at an initial exercise price of \$4.66 per share. The Stock and the Warrants are hereinafter referred to collectively as the “*Offered Securities*.” As used herein, “*Warrant Shares*” means the shares of Common Stock issuable upon exercise of the Warrants. Piper Jaffray & Co. is acting as representative of the several Underwriters and in such capacity is hereinafter referred to as the “*Representative*.”

2. *REPRESENTATIONS AND WARRANTIES OF THE COMPANY.* The Company represents and warrants to the several Underwriters, as of the date hereof and as of the Closing Date (as defined below), and agrees with the several Underwriters, that:

(a) A registration statement of the Company on Form S-3 (File No. 333-220761) (including all amendments thereto filed before execution of this Agreement, any document incorporated by reference therein and any information in a prospectus or prospectus supplement deemed or retroactively deemed to be a part thereof as of such time pursuant to Rule 430B under the Securities Act of 1933, as amended (the “*Securities Act*”), in respect of the Offered Securities, the “*Initial Registration Statement*”), including a base prospectus (the “*Base Prospectus*”), has been filed with the Securities and Exchange Commission (the “*Commission*”). The Initial Registration Statement and any post-effective amendment thereto, each in the form heretofore delivered to the Representative, have been declared effective by the Commission in such form and conform in all material respects with the requirements of the Securities Act, and the rules and regulations of the Commission thereunder (the “*Rules and Regulations*”). On the date of the filing of the Initial Registration Statement and on the date hereof, the

Company met or meets the requirements for use of Form S-3 under the Securities Act and the Rules and Regulations. Other than (i) the Initial Registration Statement, (ii) a registration statement, if any, increasing the size of the offering filed pursuant to Rule 462(b) under the Securities Act and the Rules and Regulations (a “**Rule 462(b) Registration Statement**”), (iii) the Preliminary Prospectus and the Prospectus (each as defined below) contemplated by this Agreement to be filed pursuant to Rule 424(b) of the Rules and Regulations in accordance with Section 4(a) hereof and (iv) any Issuer Free Writing Prospectus (as defined below), no other document with respect to the offer and sale of the Offered Securities has heretofore been filed with the Commission. No stop order suspending the effectiveness of the Initial Registration Statement, any post-effective amendment thereto or any Rule 462(b) Registration Statement, if any, has been issued, and no proceeding for that purpose or pursuant to Section 8A of the Securities Act has been initiated or, to the Company’s knowledge, threatened by the Commission. The preliminary prospectus supplement of the Company, dated January 4, 2018 and filed with the Commission pursuant to Rule 424(b) under the Securities Act, together with the Base Prospectus, including any document incorporated by reference therein, is hereinafter called a “**Preliminary Prospectus**.” The various parts of the Initial Registration Statement, any post-effective amendments thereto filed prior to the Applicable Time (as defined below) and the Rule 462(b) Registration Statement, if any, in each case including (x) all exhibits thereto and all documents incorporated, or deemed to be incorporated, by reference therein, (y) the information contained in the Prospectus filed with the Commission pursuant to Rule 424(b) of the Rules and Regulations and deemed by virtue of Rule 430B under the Securities Act to be part of the Initial Registration Statement at the time of effectiveness pursuant to Rule 430B under the Securities Act and (z) the documents incorporated by reference in the Rule 462(b) Registration Statement, if any, at the time the Rule 462(b) Registration Statement became effective, are hereinafter collectively called the “**Registration Statement**.” The final prospectus supplement, in the form filed pursuant to and within the time limits described in Rule 424(b) under the Rules and Regulations, together with the Base Prospectus, including any document incorporated by reference therein, is hereinafter called the “**Prospectus**.” The Registration Statement, at the Applicable Time, meets the requirements set forth in Rule 415(a)(1)(x). The initial effective date of the Initial Registration Statement was not earlier than the date three years before the Applicable Time.

(b) As of the Applicable Time and as of the Closing Date (as defined below), none of (i) the General Use Free Writing Prospectus(es) (as defined below) issued at or prior to the Applicable Time, the Pricing Prospectus (as defined below) and the information included on Schedule C hereto, all considered together (collectively, the “**General Disclosure Package**”), (ii) any individual Limited Use Free Writing Prospectus (as defined below), nor (iii) the bona fide electronic road show (as defined in Rule 433(h)(5) of the Rules and Regulations that has been made available without restriction to any person), if any, included or will include any untrue statement of a material fact or omitted or will omit to state a material fact required to be stated therein or necessary in order to make the statements therein, in the light of the circumstances under which they were made, not misleading; *provided, however*, that the Company makes no representations or warranties as to the information contained in or omitted from the Pricing Prospectus or any Issuer Free Writing Prospectus, in reliance upon, and in conformity with, the Underwriters’ Information (as defined in Section 17 hereof). As used in this paragraph (b) and elsewhere in this Agreement:

“**Applicable Time**” means 9:00 A.M., New York City time, on the date of this Agreement or such other time as agreed to by the Company and the Representative.

“**Pricing Prospectus**” means the Preliminary Prospectus, as amended and supplemented immediately prior to the Applicable Time.

“**Issuer Free Writing Prospectus**” means any “issuer free writing prospectus,” as defined in Rule 433 of the Rules and Regulations relating to the Stock in the form filed or required to be filed with the Commission or, if not required to be filed, in the form retained in the Company’s records pursuant to Rule 433(g) of the Rules and Regulations.

“**General Use Free Writing Prospectus**” means any Issuer Free Writing Prospectus that is identified on Schedule B to this Agreement.

“**Limited Use Free Writing Prospectuses**” means any Issuer Free Writing Prospectus that is not a General Use Free Writing Prospectus.

“**Testing-the-Waters Communication**” means any oral or written communication with potential investors undertaken in reliance on Section 5(d) of the Securities Act.

“**Written Testing-the-Waters Communication**” means any Testing-the-Waters Communication that is a written communication within the meaning of Rule 405 of the Rules and Regulations.

(c) No order preventing or suspending the use of any Preliminary Prospectus, any Issuer Free Writing Prospectus or the Prospectus relating to the proposed offering of the Stock has been issued by the Commission, and no proceeding for that purpose or pursuant to Section 8A of the Securities Act has been instituted or, to the Company’s knowledge, threatened by the Commission, and the Pricing Prospectus, at the time of filing thereof, conformed in all material respects to the requirements of the Securities Act and the Rules and Regulations, and did not contain an untrue statement of a material fact or omit to state a material fact required to be stated therein or necessary to make the statements therein, in the light of the circumstances under which they were made, not misleading; *provided, however*, that the Company makes no representations or warranties as to information contained in or omitted from any Preliminary Prospectus, in reliance upon, and in conformity with the Underwriters’ Information.

(d) At the respective times the Registration Statement and any amendments thereto became or become effective as to the Underwriters and at the Closing Date, the Registration Statement and any amendments thereto conformed and will conform in all material respects to the requirements of the Securities Act and the Rules and Regulations, and did not and will not contain any untrue statement of a material fact or omit to state any material fact required to be stated therein or necessary to make the statements therein not misleading; and the Prospectus and any amendments or supplements thereto, at the time the Prospectus or any amendment or supplement thereto was issued and at the Closing Date, conformed and will conform in all material respects to the requirements of the Securities Act and the Rules and Regulations, and did not and will not contain an untrue statement of a material fact or omit to state a material fact necessary in order to make the statements therein, in light of the circumstances under which they were made, not misleading; *provided, however*, that the foregoing representations and warranties in this paragraph (d) shall not apply to information contained in or omitted from the Registration Statement or the Prospectus or any amendment or supplement thereto, in reliance upon, and in conformity with the Underwriters’ Information. The Prospectus contains or will contain all required information under Rule 430B.

(e) Each Issuer Free Writing Prospectus, as of its issue date and at all subsequent times through the completion of the public offer and sale of the Stock or until any earlier date that the Company notified or notifies the Representative as described in Section 4(g) hereof, did not, does not and will not include any information that conflicted, conflicts or will conflict with the information contained in the Registration Statement, the Pricing Prospectus or the Prospectus, or included or would include an untrue statement of a material fact or omitted or would omit to state a material fact required to be stated therein or necessary in order to make the statements therein, in the light of the circumstances under which they were made, not misleading; *provided, however*, that the foregoing representations and warranties in this paragraph (e) shall not apply to information contained in or omitted from the Registration Statement, the Pricing Prospectus or the Prospectus, or any amendment or supplement thereto, in reliance upon, and in conformity with the Underwriters’ Information.

(f) The Company has not, directly or indirectly, distributed and will not distribute any offering material in connection with the offering and sale of the Stock other than any Preliminary Prospectus, the Prospectus and other materials, if any, permitted under the Securities Act and consistent with Section 4(d) below. The Company will file with the Commission all Issuer Free Writing Prospectuses (other than a “road show” as described in Rule 433(d)(8) of the Rules and Regulations) in the time and manner required under Rules 163(b)(2) and 433(d) of the Rules and Regulations.

(g) From the time of filing the Initial Registration Statement with the Commission, the Company has been and is an “emerging growth company,” as defined in Section 2(a) of the Securities Act (an “*Emerging Growth Company*”).

(h) At the time of filing the Initial Registration Statement, any Rule 462(b) Registration Statement and any post-effective amendments thereto, and at the date hereof, the Company was not, and the Company currently is not, an “ineligible issuer,” as defined in Rule 405 of the Rules and Regulations.

(i) The Company (a) has not alone engaged in any Testing-the-Waters Communication and (b) has not authorized anyone to engage in Testing-the-Waters Communications, in each case in respect of the Offered Securities. The Company has not distributed any Written Testing-the-Waters Communications in connection with the Offered Securities.

(j) The Company has been duly organized and is validly existing as a corporation under the laws of the State of Delaware. The Company is duly qualified to do business and is in good standing as a foreign corporation or other legal entity in each jurisdiction in which its ownership or lease of property or the conduct of its business requires such qualification and has all power and authority (corporate or other) necessary to own or hold its respective properties and to conduct the businesses in which it is engaged, except where the failure to so qualify or have such power or authority would not (i) have, singularly or in the aggregate, a material adverse effect on the business, properties, assets, general affairs, management, financial position, stockholders’ equity, results of operations or prospects of the Company and its subsidiaries taken as a whole, or (ii) impair in any material respect the ability of the Company to perform its obligations under this Agreement or to consummate any transactions contemplated by this Agreement, the General Disclosure Package or the Prospectus (any such effect as described in clauses (i) or (ii), a “*Material Adverse Effect*”). The only subsidiaries of the Company, listed on Schedule D hereto, are subsidiaries which, considered in the aggregate as a single subsidiary, do not constitute a “significant subsidiary” as defined in Rule 1-02 of Regulation S-X.

(k) This Agreement has been duly authorized, executed and delivered by the Company.

(l) The Stock to be issued and sold by the Company to the Underwriters hereunder has been duly and validly authorized and, when issued and delivered against payment therefor as provided herein, will be duly and validly issued, fully paid, nonassessable and free and clear of any preemptive or other similar rights, and will conform to the descriptions thereof in the Registration Statement, the General Disclosure Package and the Prospectus; and the issuance of the Stock is not subject to any preemptive or similar rights. The Warrants have been duly authorized by the Company and, when executed and delivered by the Company in accordance with their terms, will be enforceable against the Company, except as the enforcement thereof may be limited by bankruptcy, insolvency, reorganization, fraudulent conveyance, moratorium or other similar laws relating to or affecting the rights and remedies

of creditors or by general equitable principles. The Warrant Shares have been duly authorized and validly reserved for issuance upon exercise of the Warrants by the Company. The Warrant Shares, when issued and delivered upon exercise of the Warrants in accordance therewith, will be validly issued, fully paid and non-assessable, and the issuance of the Warrant Shares is not subject to any preemptive rights, rights of first refusal or other similar rights to subscribe for or purchase the Warrant Shares.

(m) The Company has an authorized capitalization as set forth under the heading “Capitalization” in the Pricing Prospectus, and all of the issued shares of capital stock of the Company have been duly and validly authorized and issued, are fully paid, nonassessable and free and clear of any preemptive or other similar rights and have been issued in compliance with federal and state securities laws. The Stock and the Warrant Shares conform in all material respects to the description thereof contained in the General Disclosure Package and the Prospectus under the heading “Description of Capital Stock”. The Warrants conform in all material respects to the description thereof contained in the General Disclosure Package and the Prospectus under the heading “Description of Warrants.” All of the Company’s options, warrants and other rights to purchase or exchange any securities for shares of the Company’s capital stock have been duly authorized and validly issued and were issued in compliance with federal and state securities laws. None of the outstanding shares of Common Stock was issued in violation of any preemptive rights, rights of first refusal or other similar rights to subscribe for or purchase securities of the Company. As of the date set forth in the General Disclosure Package, there were no authorized or outstanding shares of capital stock, options, warrants, preemptive rights, rights of first refusal or other rights to purchase, or equity or debt securities convertible into or exchangeable or exercisable for, any capital stock of the Company or any of its subsidiaries, other than those described above or accurately described in all material respects in the General Disclosure Package. Since such date, the Company has not issued any securities other than Common Stock issued (x) upon the exercise of stock options and awards described as outstanding in the Registration Statement, General Disclosure Package and the Prospectus, and (y) the grant of options and awards under the Company’s existing equity incentive plans that are described in the Registration Statement, General Disclosure Package and the Prospectus. The description of the Company’s stock option, stock bonus and other stock plans or arrangements, and the options or other rights granted thereunder, as described in the General Disclosure Package and the Prospectus, accurately and fairly present in all material respects the information required to be shown with respect to such plans, arrangements, options and rights. All of the outstanding capital stock of each subsidiary of the Company has been duly and validly authorized and issued, is fully paid, nonassessable and free of any preemptive or other similar rights, has been issued in compliance with federal and state securities laws and is owned by the Company free and clear of any claim, lien, encumbrance, security interest, restriction on voting or transfer or other claim of any third party.

(n) The execution, delivery and performance of this Agreement by the Company, the issue and sale of the Offered Securities by the Company and the consummation of the transactions contemplated by this Agreement and the Warrants will not (with or without notice or lapse of time or both) (i) conflict with or result in a breach or violation of any of the terms or provisions of, constitute a default or a Debt Repayment Triggering Event (as defined below) under, or result in the creation or imposition of any lien, encumbrance, security interest, claim or charge upon any property or assets of the Company or any of its subsidiaries pursuant to, any indenture, mortgage, deed of trust, loan agreement or other agreement or instrument to which the Company or any of its subsidiaries is a party or by which the Company or any of its subsidiaries is bound or to which any of the property or assets of the Company or any of its subsidiaries is subject, (ii) result in any violation of the provisions of the charter or by-laws (or analogous governing instruments, as applicable) of the Company or any of its subsidiaries or (iii) result in the violation of any law, statute, rule, regulation, judgment, order or decree of any court or governmental or regulatory agency or authority, domestic or foreign, having jurisdiction over the Company or any of its subsidiaries or any of their respective properties or assets except, in the case of clauses (i) and (iii) above, to the extent that any such conflict, breach, violation or default that would not, individually or in the

aggregate, reasonably be expected to have a Material Adverse Effect. A “*Debt Repayment Triggering Event*” means any event or condition that gives, or with the giving of notice or lapse of time would give the holder of any note, debenture or other evidence of indebtedness (or any person acting on such holder’s behalf) the right to require the repurchase, redemption or repayment of all or a portion of such indebtedness by the Company or any of its subsidiaries.

(o) Except for the registration of the Offered Securities under the Securities Act and applicable state securities laws, and such consents, approvals, authorizations, orders and registrations or qualifications as may be required by the Financial Industry Regulatory Authority, Inc. (“*FINRA*”) and The Nasdaq Global Market in connection with the purchase and distribution of the Offered Securities by the Underwriters and the listing of the Stock and the Warrant Shares on The Nasdaq Global Market, no consent, approval, authorization or order of, or filing, qualification or registration (each, an “*Authorization*”) with, any court, governmental or regulatory agency or authority, foreign or domestic, which has not been made, obtained or taken and is not in full force and effect, is required for the execution, delivery and performance of this Agreement by the Company, the issuance and sale of the Offered Securities or the consummation of the transactions contemplated hereby; and no event has occurred that allows or results in, or after notice or lapse of time or both would allow or result in, revocation, suspension, termination or invalidation of any such Authorization or any other impairment of the rights of the holder or maker of any such Authorization. All corporate approvals (including those of stockholders) necessary for the Company or its subsidiaries to consummate the transactions contemplated by this Agreement have been obtained and are in effect.

(p) PricewaterhouseCoopers LLP, who have certified certain financial statements of the Company and its subsidiaries included or incorporated by reference in the Registration Statement, General Disclosure Package and the Prospectus, is an independent registered public accounting firm with respect to the Company within the meaning of Article 2-01 of Regulation S-X and the Public Company Accounting Oversight Board (United States) (the “*PCAOB*”).

(q) The financial statements, together with the related notes, included or incorporated by reference in the General Disclosure Package, the Prospectus and the Registration Statement fairly present in all material respects the financial position and the results of operations and changes in financial position of the Company and its subsidiaries at the respective dates or for the respective periods therein specified. Such statements and related notes have been prepared in accordance with the generally accepted accounting principles in the United States (“*GAAP*”) applied on a consistent basis throughout the periods involved except as may be set forth in the related notes included or incorporated by reference in the General Disclosure Package. The financial statements, together with the related notes, included in the General Disclosure Package and the Prospectus comply in all material respects with Regulation S-X. No other financial statements or supporting schedules or exhibits are required by Regulation S-X to be described or included in the Registration Statement, the General Disclosure Package or the Prospectus. The summary and selected financial data included or incorporated by reference in the General Disclosure Package, the Prospectus and the Registration Statement fairly present, in all material respects, the information shown therein as at the respective dates and for the respective periods specified and are derived from the consolidated financial statements set forth in the Registration Statement, the Pricing Prospectus and the Prospectus and other financial information. All information contained in the Registration Statement, the General Disclosure Package and the Prospectus regarding “non-GAAP financial measures” (as defined in Regulation G) complies with Regulation G and Item 10 of Regulation S-K, to the extent applicable.

(r) Neither the Company nor any of its subsidiaries has sustained, since the date of the latest audited financial statements included or incorporated by reference in the General Disclosure Package, (i) any material loss or interference with its business from fire, explosion, flood or other

calamity, whether or not covered by insurance, or from any labor dispute or action, order or decree of any court or governmental or regulatory authority, otherwise than as set forth or contemplated in the General Disclosure Package, or (ii) any change in the capital stock (other than the issuance of shares of Common Stock upon exercise of stock options described as outstanding in, and the grant of options and awards under existing equity incentive plans described in, the Registration Statement, the General Disclosure Package and the Prospectus) or long-term debt of the Company or any of its subsidiaries, or any dividend or distribution of any kind declared, set aside for payment, paid or made by the Company on any class of capital stock, or any material adverse changes in or affecting the business, properties, assets, general affairs, management, financial position, stockholders' equity, results of operations or prospects of the Company and its subsidiaries, taken as a whole, otherwise than as set forth or contemplated in the General Disclosure Package.

(s) Except as set forth in the General Disclosure Package, there is no legal or governmental proceeding to which the Company or any of its subsidiaries is a party or of which any property or assets of the Company or any of its subsidiaries is the subject, including any proceeding before the United States Food and Drug Administration of the United States Department of Health and Human Services (the "**FDA**") or comparable federal, state, local or foreign governmental authorities (it being understood that the interaction between the Company and the FDA and such comparable governmental authorities relating to the clinical development and product approval process shall not be deemed proceedings for purposes of this representation), which is required to be described in the Registration Statement, the General Disclosure Package or the Prospectus and is not described therein, or which, singularly or in the aggregate, if determined adversely to the Company or any of its subsidiaries, could reasonably be expected to have a Material Adverse Effect; and to the Company's knowledge, no such proceedings have been threatened by governmental or regulatory authorities. The Company is in compliance with all applicable federal, state, local and foreign laws, regulations, orders and decrees governing its business as prescribed by the FDA, or any other federal, state or foreign agencies or bodies engaged in the regulation of pharmaceuticals or biohazardous substances or materials, except where noncompliance would not, singly or in the aggregate, have a Material Adverse Effect. All preclinical and clinical studies conducted by or on behalf of the Company to support approval for commercialization of the Company's products have been conducted by the Company, or to the Company's knowledge by third parties, in compliance with all applicable federal, state or foreign laws, rules, orders and regulations, except for such failure or failures to be in compliance as would not reasonably be expected to have, singly or in the aggregate, a Material Adverse Effect.

(t) Neither the Company nor any of its subsidiaries is in (i) violation of its charter or by-laws (or analogous governing instrument, as applicable), (ii) default in any respect, and no event has occurred which, with notice or lapse of time or both, would constitute such a default, in the due performance or observance of any term, covenant or condition contained in any indenture, mortgage, deed of trust, loan agreement, lease or other agreement or instrument to which it is a party or by which it is bound or to which any of its property or assets is subject or (iii) violation in any respect of any law, ordinance, governmental rule, regulation or court order, decree or judgment to which it or its property or assets may be subject except, in the case of clauses (ii) and (iii) above, for any such violation or default that would not, singularly or in the aggregate, reasonably be expected to have a Material Adverse Effect.

(u) The Company possesses all licenses, certificates, authorizations and permits issued by, and has made all declarations and filings with, the appropriate local, state, federal or foreign governmental or regulatory agencies or bodies (including, without limitation, those administered by the FDA or by any foreign, federal, state or local governmental or regulatory authority performing functions similar to those performed by the FDA) that are necessary for the ownership or lease of the Company's properties or the conduct of the Company's businesses as described in the Registration Statement, General Disclosure Package and the Prospectus (collectively, the "**Governmental Permits**") except where

any failures to possess or make the same could not, singularly or in the aggregate, have a Material Adverse Effect. The Company is in compliance with all such Governmental Permits, and all such Governmental Permits are valid and in full force and effect, except where the failure to comply or the invalidity or failure to be in full force and effect could not, singularly or in the aggregate, reasonably be expected to have a Material Adverse Effect. The Company has not received notification of any revocation, adverse modification, suspension, termination or invalidation (or proceedings related thereto) of any such Governmental Permit and the Company has no reason to believe that any such Governmental Permit that requires renewal for continued conduct of the Company's businesses as described in the Registration Statement, General Disclosure Package, and the Prospectus will not be renewed in ordinary course.

(v) The studies, tests and preclinical studies or clinical trials conducted by or on behalf of the Company that are described in the General Disclosure Package and the Prospectus (the "*Company Studies and Trials*") were and, if still pending, are being, conducted in all material respects in accordance with experimental protocols, procedures and controls pursuant to, where applicable, accepted professional scientific standards; the descriptions of the results of the Company Studies and Trials contained or incorporated by reference in the Registration Statement, General Disclosure Package and the Prospectus are accurate in all material respects; the Company has no knowledge of any other studies or trials not described in the General Disclosure Package and the Prospectus, the results of which are inconsistent with or call in question the results described or referred to in the Registration Statement, General Disclosure Package and the Prospectus; and the Company has not received any notices or correspondence from the FDA or any foreign, state or local governmental authority exercising comparable authority requiring the termination, suspension or material modification of the Company Studies and Trials, which termination suspension or material modification would reasonably be expected to have a Material Adverse Effect and, to the Company's knowledge, there are no reasonable grounds for the same. The Company has obtained (or caused to be obtained) informed consent by or on behalf of each human subject who participated in the Company Studies and Trials. In using or disclosing patient information received by the Company in connection with the Company Studies and Trials, the Company has complied in all material respects with all applicable laws and regulatory rules or requirements, including, without limitation, the Health Insurance Portability and Accountability Act of 1996 and the rules and regulations thereunder. To the Company's knowledge, none of the Company Studies and Trials involved any investigator who has been disqualified as a clinical investigator or has been found by the FDA to have engaged in scientific misconduct. To the Company's knowledge, the manufacturing facilities and operations of its suppliers are operated in compliance in all material respects with all applicable statutes, rules, regulations and policies of the FDA and comparable governmental authorities outside of the United States to which the Company is subject.

(w) Neither the Company nor any of its subsidiaries is and, after giving effect to the offering of the Offered Securities and the application of the proceeds thereof as described in the General Disclosure Package and the Prospectus, will be required to register as an "investment company" or an entity controlled by an "investment company" within the meaning of the Investment Company Act of 1940, as amended.

(x) Neither the Company nor any of its officers or directors nor, to its knowledge, any affiliates has taken or will take, directly or indirectly, any action designed or intended to stabilize or manipulate the price of any security of the Company, or which caused or resulted in, or which might in the future reasonably be expected to cause or result in, stabilization or manipulation of the price of any security of the Company.

(y) The Company owns, possesses, or has, to the knowledge of the Company, valid, binding, and enforceable licenses or other rights to and under the patents, patent applications, trademarks, trademark registrations, service marks, service mark registrations, Internet domain names and registrations, copyrights, copyright registrations, licenses, inventions, software, works of authorships, trade names, databases, formulae, and other intellectual property (including know how, trade secrets and other unpatented and/or unpatentable proprietary confidential information, systems, or procedures) (collectively, “**Intellectual Property Rights**”) necessary to conduct its business as currently conducted, and as currently proposed to be conducted as described in the Registration Statement, General Disclosure Package and the Prospectus. The Company has not received any opinion from its legal counsel concluding that any activities of its business infringes, misappropriates, or otherwise violates, valid and enforceable Intellectual Property Rights of any third party and has not received written notice of any challenge, which is to its knowledge still pending, by any other person to the rights of the Company with respect to any Intellectual Property Rights owned by or licensed to the Company (the “**Company Intellectual Property**”). To the Company’s knowledge, there is no third-party United States issued patent which contains claims that would be infringed by the Company’s commercialization of any product or product candidate described in the Registration Statement, General Disclosure Package and the Prospectus. The Company has complied in all material respects with, and is not in material breach of, nor has it received any asserted or, to the knowledge of the Company, threatened claim of material breach of all intellectual property licenses to Company Intellectual Property, and the Company has no knowledge of any material breach or anticipated material breach by any third party of any such intellectual property licenses. Except as described in the General Disclosure Package, there is no pending or, to the knowledge of the Company, threatened claim against the Company alleging the infringement by the Company of any Intellectual Property Right of any third party. The Company has taken all reasonable steps to protect, maintain and safeguard the Company Intellectual Property, including the execution of appropriate nondisclosure and confidentiality agreements. The consummation of the transactions contemplated by this Agreement will not result in the loss or impairment of or payment of any additional amounts with respect to, nor require the consent of any other person in respect of, the Company’s right to own, use, or hold for use any of the Intellectual Property Rights as owned, used or held for use in the conduct of the business as currently conducted. Except as would not be reasonably expected to have a Material Adverse Effect on the Company, the Company has at all times complied with all applicable laws relating to privacy, data protection, and the collection and use of personal information collected, used, or held for use by the Company in the conduct of the Company’s business. Except as would not be reasonably expected to have a Material Adverse Effect on the Company, no claims have been asserted or, to the Company’s knowledge, threatened against the Company alleging a violation of any person’s privacy or personal information or data rights and the consummation of the transactions contemplated hereby will not breach or otherwise cause any violation of any law related to privacy, data protection, or the collection and use of personal information collected, used, or held for use by the Company in the conduct of the Company’s business. The Company takes reasonable measures to ensure that such information is protected against unauthorized access, use, modification or other misuse. To the knowledge of the Company and except as would not be reasonably expected to have a Material Adverse Effect on the Company, the Company has taken all necessary actions to obtain ownership of all works of authorship and inventions made by its employees, consultants and contractors during the time they were employed by or under contract with the Company and which relate to the Company Intellectual Property. All founders and key employees have signed confidentiality and invention assignment agreements with the Company.

(z) The Company and its subsidiaries have good and marketable title in fee simple (in the case of real property) to, or have valid and marketable rights to lease or otherwise use, all items of real or personal property which are material to the business of the Company and its subsidiaries taken as a whole, in each case free and clear of all liens, encumbrances, security interests, claims and defects that do not, singularly or in the aggregate, materially affect the value of such property and do not interfere with the use made and proposed to be made of such property by the Company; and all of the leases and subleases material to the business of the Company, and under which the Company holds properties described in the General Disclosure Package and the Prospectus, are in full force and effect and the

Company has not received any notice of any material claim of any sort that has been asserted by anyone adverse to the rights of the Company under any of the leases or subleases mentioned above, or affecting or questioning the rights of the Company to the continued possession of the leased or subleased premises under any such lease or sublease.

(aa) The Company is not aware of any existing or imminent labor disturbance by the employees of any of its principal suppliers, manufacturers or contractors, that could reasonably be expected, singularly or in the aggregate, to have a Material Adverse Effect. The Company is not aware that any key employee or significant group of employees of the Company plans to terminate employment with the Company.

(bb) No "prohibited transaction" (as defined in Section 406 of the Employee Retirement Income Security Act of 1974, as amended, including the regulations and published interpretations thereunder ("*ERISA*"), or Section 4975 of the Internal Revenue Code of 1986, as amended from time to time (the "*Code*")) or any of the events set forth in Section 4043(b) of ERISA (other than events with respect to which the thirty (30)-day notice requirement under Section 4043 of ERISA has been waived) has occurred or would reasonably be expected to occur with respect to any "employee benefit plan" (within the meaning of Section 3(3) of ERISA) of the Company which would, singularly or in the aggregate, have a Material Adverse Effect. Each employee benefit plan of the Company is in compliance in all material respects with applicable law, including ERISA and the Code. The Company has not incurred and would not reasonably be expected to incur material liability under Title IV of ERISA with respect to the termination of, or withdrawal from, any "pension plan" (as defined in ERISA). Each pension plan for which the Company would have any liability that is intended to be qualified under Section 401(a) of the Code is so qualified, and, to the knowledge of the Company, nothing has occurred, whether by action or by failure to act, which would, singularly or in the aggregate, cause the loss of such qualification.

(cc) The Company is in material compliance with all foreign, federal, state and local rules, laws and regulations relating to the use, treatment, storage and disposal of hazardous or toxic substances or waste and protection of health and safety or the environment which are applicable to its businesses (the "*Environmental Laws*"). There has been no storage, generation, transportation, handling, treatment, disposal, discharge, emission, or other release of any kind of toxic or other wastes or other hazardous substances by, due to, or caused by the Company (or, to the Company's knowledge, any other entity for whose acts or omissions the Company is or may otherwise be liable) upon any of the property now or previously owned or leased by the Company, or upon any other property, in violation of any law, statute, ordinance, rule, regulation, order, judgment, decree or permit or which would, under any law, statute, ordinance, rule (including rule of common law), regulation, order, judgment, decree or permit, give rise to any liability; and there has been no disposal, discharge, emission or other release of any kind on to such property or into the environment surrounding such property of any toxic or other wastes or other hazardous substances, in each case, that would singularly or in the aggregate have a Material Adverse Effect.

(dd) The Company (i) has timely filed all necessary federal, state, local and foreign tax returns (or timely filed extensions with respect to such returns), and all such returns were true, complete and correct, (ii) has paid all federal, state, local and foreign taxes, assessments, governmental or other charges due and payable for which it is liable, including, without limitation, all sales and use taxes and all taxes which the Company is obligated to withhold from amounts owing to employees, creditors and third parties, and (iii) does not have any tax deficiency or claims outstanding or assessed or, to its knowledge, proposed against it, except those, in each of the cases described in clauses (i), (ii) and (iii) above, that would not, singularly or in the aggregate, have a Material Adverse Effect. Neither the Company nor any of its subsidiaries has engaged in any transaction which is a corporate tax shelter or

which could be characterized as such by the Internal Revenue Service or any other taxing authority. The accruals and reserves, if any, on the books and records of the Company and its subsidiaries in respect of tax liabilities for any taxable period not yet finally determined are adequate to meet any assessments and related liabilities for any such period, and since December 31, 2016 the Company and its subsidiaries have not incurred any liability for taxes other than in the ordinary course.

(ee) The Company carries or is covered by insurance in such amounts and covering such risks as is adequate for the conduct of its business and the value of its properties and as is customary for companies engaged in similar businesses, at a similar stage of development, in similar industries. The Company has no reason to believe that it will not be able to renew its existing insurance coverage as and when such coverage expires or to obtain similar coverage from similar insurers as may be necessary to continue its business at a cost that would not reasonably be expected to have a Material Adverse Effect. All policies of insurance owned by the Company are, to the Company's knowledge, in full force and effect and the Company is in compliance with the terms of such policies, except as would not reasonably be expected to have a Material Adverse Effect. The Company has not received written notice from any insurer, agent of such insurer or the broker of the Company that any material capital improvements or any other material expenditures (other than premium payments) are required or necessary to be made in order to continue such insurance.

(ff) The Company and its subsidiaries maintain a system of "*internal control over financial reporting*" (as such term is defined in Rule 13a-15(f) of the General Rules and Regulations under the Securities Exchange Act of 1934, as amended (such act, the "*Exchange Act*," and such rules and regulations, the "*Exchange Act Rules*") that complies with the requirements of the Exchange Act and has been designed by its principal executive and principal financial officers, or under their supervision, to provide reasonable assurances that: (i) transactions are executed in accordance with management's general or specific authorizations; (ii) transactions are recorded as necessary to permit preparation of financial statements in conformity with GAAP and to maintain accountability for assets; (iii) access to assets is permitted only in accordance with management's general or specific authorization; and (iv) the recorded accountability for assets is compared with existing assets at reasonable intervals and appropriate action is taken with respect to any differences. Each of the Company's and its subsidiaries' internal controls over financial reporting, taken as a whole, are effective. Except as described in the General Disclosure Package, since the end of the Company's most recently audited fiscal year, there has been (A) no material weakness (as defined by the Public Company Accounting Oversight Board) in the Company's internal control over financial reporting (whether or not remediated), (B) no change in the Company's internal control over financial reporting that has materially affected, or is reasonably likely to materially affect, the Company's internal control over financial reporting, (C) no fraud involving management or other employees who have a significant role in the internal control over the financial reporting; and (D) no material violation of, or failure to comply in all material respects with, United States federal securities laws. The Company's internal control over financial reporting is, or upon consummation of the offering of the Offered Securities will be, overseen by the Audit Committee (the "*Audit Committee*") of the board of directors of the Company (the "*Board*") in accordance with the Exchange Act Rules. Except as described in the General Disclosure Package and the Prospectus, none of the Company, the Board or the Audit Committee is aware of any significant deficiency, material weakness, change in internal control over financial reporting or fraud involving management or other employees who have a significant role in the internal control over financial reporting (each, an "*Internal Control Event*") or any material violation of, or failure to comply in all material respects with, United States federal securities laws.

(gg) A member of the Audit Committee has confirmed to the Chief Executive Officer or Chief Financial Officer of the Company that, except as set forth in the General Disclosure Package, the Audit Committee is not reviewing or investigating, and neither the Company's independent auditors nor its internal auditors is currently recommending that the Audit Committee review or investigate, (i) adding

to, deleting, changing the application of or changing the Company's disclosure with respect to, any of the Company's material accounting policies, (ii) any matter which could result in a restatement of the Company's financial statements for any annual or interim period during the current or prior three (3) fiscal years; or (iii) any Internal Control Event.

(hh) The Company maintains disclosure controls and procedures (as such is defined in Rule 13a-15(e) of the Exchange Act Rules) that are designed to comply with the requirements of the Exchange Act; such disclosure controls and procedures have been designed to ensure that information required to be disclosed by the Company in reports that it files or submits under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the Commission's rules and forms, including controls and procedures designed to ensure that such information is accumulated and communicated to the Company's management to allow timely decisions regarding disclosures.

(ii) [Reserved.]

(jj) There is no lease, contract or other agreement or document required by the Securities Act or by the Rules and Regulations to be described in the General Disclosure Package or to be filed as an exhibit to the Registration Statement which is not so described or filed therein as required; and all descriptions of any such leases, contracts or other agreements or documents contained in the General Disclosure Package are accurate and complete descriptions of such documents in all material respects. Other than as described in the General Disclosure Package, no lease, contract or other agreement has been suspended or terminated for convenience or default by the Company or any of the other parties thereto, and the Company has not received notice of and the Company does not have knowledge of any such pending or threatened suspension or termination.

(kk) No relationship, direct or indirect, exists between or among the Company or any of its subsidiaries, on the one hand, and the directors, officers, stockholders (or analogous interest holders), customers or suppliers of the Company or any of its affiliates, on the other hand, which is required to be described in the General Disclosure Package and the Prospectus and which is not so described.

(ll) No person or entity has the right to require registration of shares of Common Stock or other securities of the Company or any of its subsidiaries because of the filing or effectiveness of the Registration Statement or otherwise, except for persons and entities who have expressly waived such right in writing or who have been given timely and proper written notice and have failed to exercise such right within the time or times required under the terms and conditions of such right. Except as described in the General Disclosure Package, there are no persons with registration rights or similar rights to have any securities registered by the Company or any of its subsidiaries under the Securities Act.

(mm) The Company does not own any "margin securities" as that term is defined in Regulation U of the Board of Governors of the Federal Reserve System (the "**Federal Reserve Board**"), and none of the proceeds of the sale of the Offered Securities will be used, directly or indirectly, for the purpose of purchasing or carrying any margin security, for the purpose of reducing or retiring any indebtedness which was originally incurred to purchase or carry any margin security or for any other purpose which might cause any of the Offered Securities to be considered a "purpose credit" within the meanings of Regulation T, U or X of the Federal Reserve Board.

(nn) Other than as contemplated by this Agreement, neither the Company nor any of its subsidiaries is a party to any contract, agreement or understanding with any person that would give rise to a valid claim against the Company or any of its subsidiaries, or the Underwriters for a brokerage

commission, finder's fee or like payment in connection with the offering and sale of the Offered Securities or any transaction contemplated by this Agreement, the Registration Statement, the General Disclosure Package or the Prospectus.

(oo) The exercise price of each option issued under the Company's stock option or other employee benefit plans has been no less than the fair market value of a share of common stock as determined on the date of grant of such option. All grants of options were validly issued and properly approved by the Board (or a duly authorized committee thereof) in material compliance with all applicable laws and regulations and recorded in the Company's financial statements in accordance with GAAP and, to the Company's knowledge, no such grants involved "back dating," "forward dating" or similar practice with respect to the effective date of grant.

(pp) Since the date as of which information is given in the General Disclosure Package through the date hereof, and except for the obligations created by this Agreement and as set forth in the Pricing Prospectus, the Company has not (i) issued or granted any securities other than shares of Common Stock and options to purchase common stock pursuant to the Company's stock option plan, (ii) incurred any material liability or obligation, direct or contingent, other than liabilities and obligations which were incurred in the ordinary course of business, (iii) entered into any material transaction other than in the ordinary course of business or (iv) declared or paid any dividend on its capital stock.

(qq) No forward-looking statement (within the meaning of Section 27A of the Securities Act and Section 21E of the Exchange Act) contained in either the General Disclosure Package or the Prospectus has been made or reaffirmed without a reasonable basis or has been disclosed other than in good faith.

(rr) The Company has submitted a listing of additional shares notification form to The Nasdaq Global Market (the "*Exchange*") to include the Stock and the Warrant Shares on the Exchange.

(ss) There is and has been no failure on the part of the Company or, to the Company's knowledge, any of the Company's officers or directors, in their capacities as such, to comply with any applicable provision of the Sarbanes-Oxley Act of 2002 and the rules and regulations promulgated in connection therewith (the "*Sarbanes-Oxley Act*"), and the Company is in compliance in all material respects with all applicable provisions thereof.

(tt) Neither the Company nor any of its subsidiaries nor, to the Company's knowledge, any employee or agent of the Company or any of its subsidiaries, has (i) used any corporate funds for unlawful contributions, gifts, entertainment or other unlawful expenses relating to political activity, (ii) made any unlawful payment to foreign or domestic government officials or employees or to foreign or domestic political parties or campaigns from corporate funds, (iii) violated any provision of the Foreign Corrupt Practices Act of 1977, as amended or (iv) made any other unlawful payment.

(uu) There are no transactions, arrangements or other relationships between and/or among the Company, any of its affiliates (as such term is defined in Rule 405 of the Rules and Regulations) and any unconsolidated entity, including, but not limited to, any structured finance, special purpose or limited purpose entity that could materially affect the Company's liquidity or the availability of or requirements for its capital resources required to be described in the General Disclosure Package and the Prospectus which have not been described as required.

(vv) There are no outstanding loans, advances (except normal advances for business expenses in the ordinary course of business) or guarantees of indebtedness by the Company to or for the benefit of any of the officers or directors of the Company or any of their respective family members, except as disclosed in the Registration Statement, the General Disclosure Package and the Prospectus.

(ww) The statistical and market-related data included or incorporated by reference in the Registration Statement, the General Disclosure Package and the Prospectus are based on or derived from sources that the Company believes to be reliable and accurate.

(xx) The operations of the Company and its subsidiaries are and have been conducted at all times in compliance with applicable financial recordkeeping and reporting requirements of the Currency and Foreign Transactions Reporting Act of 1970, as amended, applicable money laundering statutes and applicable rules and regulations thereunder (collectively, the “*Money Laundering Laws*”), and no action, suit or proceeding by or before any court or governmental or regulatory authority or any arbitrator involving the Company or any of its subsidiaries with respect to the Money Laundering Laws is pending, or to the Company’s knowledge, threatened.

(yy) Neither the Company nor any of its subsidiaries nor, to the Company’s knowledge, any director, officer, agent, employee or affiliate of the Company or any of its subsidiaries is currently subject to any United States sanctions administered by the Office of Foreign Assets Control of the United States Treasury Department of Treasury, the United Nations Security Council, the European Union, Her Majesty’s Treasury, or other relevant sanctions authority (collectively, “*Sanctions*”), nor is the Company located, organized or resident in a country or territory that is the subject of Sanctions; and the Company will not directly or indirectly use the proceeds of the offering, or lend, contribute or otherwise make available such proceeds to any subsidiary, joint venture partner or other person or entity, for the purpose of financing the activities of any person currently subject to any Sanctions or in any manner that will result in a violation by any such person (including any person participating in the transactions, whether as an underwriter, advisor, investor or otherwise) of Sanctions.

(zz) Neither the Company nor any of its affiliates (within the meaning of FINRA Rule 5121(f)(1)) directly or indirectly controls, is controlled by, or is under common control with, or is an associated person (within the meaning of Article I, Section 1(ff) of the By-laws of FINRA) of, any member firm of FINRA.

(aaa) The Company’s does not hold any debt securities that are subject to review by any “nationally recognized statistical rating organization,” as that term is defined by the Commission for purposes of Rule 436(g)(2) of the Rules and Regulations.

(bbb) The interactive data in eXtensible Business Reporting Language included or incorporated by reference in the Registration Statement fairly presents the information called for in all material respects and has been prepared in accordance with the Commission’s rules and guidelines applicable thereto.

(ccc) The Company is subject to and in compliance with the reporting requirements of Section 13 or Section 15(d) of the Exchange Act in all material respects, and filed in a timely manner all reports required to be filed thereunder during the twelve calendar months and any portion of a month immediately preceding the filing of the Initial Registration Statement.

(ddd) The Common Stock is registered pursuant to Section 12(b) of the Exchange Act and is listed on the Nasdaq Global Market. The Company has taken no action designed to, or likely to have the effect of, terminating the registration of the Common Stock under the Exchange Act or delisting the Common Stock from the Nasdaq Global Market, nor has the Company received any notification that the Commission or the Nasdaq Global Market is contemplating terminating such registration or listing. To the Company’s knowledge, it is in compliance with all applicable listing requirements of Nasdaq Global Market.

Any certificate signed by or on behalf of the Company and delivered to the Representative or to counsel to the Underwriters shall be deemed to be a representation and warranty by the Company to each Underwriter as to the matters covered thereby.

3. *PURCHASE, SALE AND DELIVERY OF OFFERED SECURITIES.* (a) On the basis of the representations, warranties and agreements herein contained, but subject to the terms and conditions herein set forth, the Company agrees to sell to the Underwriters, and the Underwriters agree, severally and not jointly, to purchase from the Company the respective number of Offered Securities set forth opposite the names of the Underwriters in Schedule A hereto.

(b) The purchase price per combined one share of Stock and accompanying Warrant to be paid by the Underwriters to the Company for the Offered Securities will be \$3.5625 (the "**Purchase Price**").

(c) The Company will deliver the Offered Securities to the Representative for the respective accounts of the several Underwriters in such names and in such denominations as the Representative may direct by notice in writing to the Company given at or prior to 12:00 Noon, New York City time, at least one full business day preceding the Closing Date against payment of the aggregate Purchase Price therefor by wire transfer in federal (same day) funds to an account at a bank acceptable to the Representative payable to the order of the Company for the Firm Stock sold by them all at the offices of Cooley LLP, 1114 Avenue of the Americas, New York, New York, 10036-7798. Time shall be of the essence, and delivery at the time and place specified pursuant to this Agreement is a further condition of the obligations of each Underwriter hereunder. The time and date of the delivery and payment shall be at 10:00 A.M., New York City time, on January 9, 2018, in accordance with Rule 15c6-1 of the Exchange Act. The time and date of such payment and delivery are herein referred to as the "**Closing Date**". Delivery of the Stock shall be made through the facilities of The Depository Trust Company, and delivery of the Warrants shall be made by physical delivery or electronic delivery via .pdf file to be received by the Representative on the Closing Date. The Closing Date and the location of delivery of, and the form of payment for, the Offered Securities may be varied by agreement between the Company and the Representative.

(d) The several Underwriters propose to offer the Offered Securities for sale upon the terms and conditions set forth in the Prospectus.

4. *FURTHER AGREEMENTS OF THE COMPANY.* The Company agrees with the several Underwriters:

(a) To prepare the Rule 462(b) Registration Statement, if necessary, in a form approved by the Representative and file such Rule 462(b) Registration Statement with the Commission by 10:00 P.M., New York City time, on the date hereof, and the Company shall at the time of filing either pay to the Commission the filing fee for the Rule 462(b) Registration Statement or give irrevocable instructions for the payment of such fee pursuant to Rule 111(b) under the Rules and Regulations; to prepare the Prospectus in a form approved by the Representative containing information previously omitted at the time of effectiveness of the Registration Statement in reliance on Rules 430B of the Rules and Regulations and to file such Prospectus pursuant to Rule 424(b) of the Rules and Regulations not later than the second (2nd) business day following the execution and delivery of this Agreement or, if applicable, such earlier time as may be required by Rule 430B of the Rules and Regulations; to notify the

Representative immediately of the Company's intention to file or prepare any supplement or amendment to any Registration Statement or to the Prospectus and to make no amendment or supplement to the Registration Statement, the General Disclosure Package or to the Prospectus to which the Representative shall reasonably object by notice to the Company after a reasonable period to review; to advise the Representative, promptly after it receives notice thereof, of the time when any amendment to the Registration Statement has been filed or becomes effective or any supplement to the General Disclosure Package or the Prospectus or any amended Prospectus or any Issuer Free Writing Prospectus has been filed and to furnish the Underwriters with copies thereof; to file promptly all material required to be filed by the Company with the Commission pursuant to Rules 433(d) or 163(b)(2) of the Rules and Regulations; to file promptly all reports and any definitive proxy or information statements required to be filed by the Company with the Commission pursuant to Section 13(a), 13(c), 14 or 15(d) of the Exchange Act subsequent to the date of the Prospectus and for so long as the delivery of a Prospectus (or in lieu thereof, the notice referred to in Rule 173(a) of the Rules and Regulations) is required in connection with the offering or sale of the Offered Securities; to advise the Representative, promptly after it receives notice thereof, of the issuance by the Commission of any stop order or of any order preventing or suspending the use of any Preliminary Prospectus, any Issuer Free Writing Prospectus or the Prospectus, of the suspension of the qualification of the Offered Securities for offering or sale in any jurisdiction, of the initiation or threatening of any proceeding for any such purpose, or of any request by the Commission for the amending or supplementing of the Registration Statement, the General Disclosure Package or the Prospectus or for additional information; and, in the event of the issuance of any stop order or of any order preventing or suspending the use of any Preliminary Prospectus, any Issuer Free Writing Prospectus or the Prospectus or suspending any such qualification, and promptly to use its best efforts to obtain the withdrawal of such order.

(b) The Company will promptly notify the Representative if the Company ceases to be an Emerging Growth Company at any time prior to the later of (i) the completion of the distribution of the Offered Securities within the meaning of the Securities Act and (ii) completion of the Lock-Up Period (as defined below).

(c) The Company represents and agrees that, unless it obtains the prior written consent of the Representative, and each Underwriter represents and agrees that, unless it obtains the prior consent of the Company and the Representative, it has not made and will not, make any offer relating to the Offered Securities that would constitute a "free writing prospectus" as defined in Rule 405 of the Rules and Regulations (each, a "**Permitted Free Writing Prospectus**"); *provided, however*, that the prior written consent of the Representative hereto shall be deemed to have been given in respect of the Issuer Free Writing Prospectuses included in Schedule B hereto. The Company represents that it has treated and agrees that it will treat each Permitted Free Writing Prospectus as an Issuer Free Writing Prospectus, comply with the requirements of Rules 164 and 433 of the Rules and Regulations applicable to any Issuer Free Writing Prospectus, including the requirements relating to timely filing with the Commission, legending and record keeping, and will not take any action that would result in an Underwriter or the Company being required to file with the Commission pursuant to Rule 433(d) of the Rules and Regulations a free writing prospectus prepared by or on behalf of such Underwriter that such Underwriter otherwise would not have been required to file thereunder. The Company will satisfy the condition in Rule 433 of the Rules and Regulations to avoid a requirement to file with the Commission any electronic road show.

(d) When a prospectus relating to the Offered Securities is required to be delivered under the Securities Act (or in lieu thereof, the notice referred to in Rule 173(a) of the Rules and Regulations) in connection with the sales of the Offered Securities by any Underwriter or dealer (the "**Prospectus Delivery Period**"), if any event occurs or condition exists as a result of which the Prospectus as then amended or supplemented would include any untrue statement of a material fact, or omit to state

any material fact necessary to make the statements therein, in light of the circumstances under which they were made when the Prospectus is delivered (or in lieu thereof, the notice referred to in Rule 173(a) of the Rules and Regulations), not misleading, or if it is necessary at any time to amend or supplement the Registration Statement or the Prospectus or to file under the Exchange Act any document incorporated by reference in the Prospectus to comply with the Securities Act, that the Company will promptly notify the Representative thereof and upon their request will prepare an appropriate amendment or supplement in form and substance satisfactory to the Representative which will correct such statement or omission or effect such compliance and will use its reasonable best efforts to have any amendment to any Registration Statement declared effective as soon as possible. During the Prospectus Delivery Period, the Company will furnish without charge to each Underwriter and to any dealer in securities as many copies as the Representative may from time to time reasonably request of such amendment or supplement.

(e) If the General Disclosure Package is being used to solicit offers to buy the Offered Securities at a time when the Prospectus is not yet available to prospective purchasers and any event shall occur as a result of which, in the judgment of the Company or in the reasonable opinion of the Underwriters, it becomes necessary to amend or supplement the General Disclosure Package in order to make the statements therein, in the light of the circumstances then prevailing, not misleading, or to make the statements therein not conflict with the information contained in the Registration Statement then on file and not superseded or modified, or if it is necessary at any time to amend or supplement the General Disclosure Package to comply with any law, the Company promptly will prepare, file with the Commission (if required) and furnish to the Underwriters and any dealers an appropriate amendment or supplement to the General Disclosure Package.

(f) If at any time following issuance of an Issuer Free Writing Prospectus there occurred or occurs an event or development as a result of which such Issuer Free Writing Prospectus conflicted or will conflict with the information contained in the Registration Statement, Pricing Prospectus or Prospectus and not superseded or modified or included or would include an untrue statement of a material fact or omitted or would omit to state a material fact required to be stated therein or necessary in order to make the statements therein, in the light of the circumstances prevailing at the subsequent time, not misleading, the Company has promptly notified or will promptly notify the Representative so that any use of the Issuer Free Writing Prospectus may cease until it is amended or supplemented and has promptly amended or will promptly amend or supplement, at its own expense, such Issuer Free Writing Prospectus to eliminate or correct such conflict, untrue statement or omission. The foregoing sentence does not apply to statements in or omissions from any Issuer Free Writing Prospectus in reliance upon, and in conformity with, written information furnished to the Company through the Representative by or on behalf of any Underwriter specifically for inclusion therein, which information the parties hereto agree is limited to the Underwriters' Information.

(g) To the extent not available on the Commission's Electronic Data Gathering, Analysis and Retrieval system or any successor system ("**EDGAR**"), upon the request of the Representative, to furnish promptly to the Representative and to counsel for the Underwriters a signed copy of the Registration Statement as originally filed with the Commission, and of each amendment thereto filed with the Commission, including all consents and exhibits filed therewith.

(h) To the extent not available on EDGAR, to deliver promptly to the Representative in New York such number of the following documents as the Representative shall reasonably request: (i) a conformed copy of the Registration Statement as originally filed with the Commission (excluding exhibits); (ii) each Preliminary Prospectus; (iii) any Issuer Free Writing Prospectus; (iv) the Prospectus (the delivery of the documents referred to in clauses (i), (ii), (iii) and (iv) of this paragraph (h) to be made not later than 10:00 A.M., New York City time, on the business day following the execution and delivery of this Agreement); (v) conformed copies of any amendment to the Registration Statement (excluding

exhibits); (vi) any amendment or supplement to the General Disclosure Package or the Prospectus (the delivery of the documents referred to in clauses (v) and (vi) of this paragraph (h) to be made not later than 10:00 A.M., New York City time, on the business day following the date of such amendment or supplement); and (vii) any document incorporated by reference in the General Disclosure Package or the Prospectus (excluding exhibits thereto) (the delivery of the documents referred to in clause (vii) of this paragraph (h) to be made not later than 10:00 A.M., New York City time, on the business day following the date of such document).

(i) To make generally available to its stockholders as soon as practicable, but in any event not later than sixteen (16) months after the effective date of each Registration Statement (as defined in Rule 158(c) of the Rules and Regulations), an earnings statement of the Company and its subsidiaries (which need not be audited) complying with Section 11(a) of the Securities Act (including, at the option of the Company, Rule 158); and to furnish to its stockholders as soon as practicable after the end of each fiscal year an annual report (including a balance sheet and statements of income, stockholders' equity and cash flows of the Company certified by independent public accountants) and as soon as possible after each of the first three (3) fiscal quarters of each fiscal year (beginning with the first fiscal quarter after the effective date of such Registration Statement), consolidated summary financial information of the Company for such quarter in reasonable detail; *provided that* any report, communication or financial statement furnished or filed with the Commission that is publicly available on the Commission's EDGAR system shall be deemed to have been furnished to the Company's stockholders at the time furnished or filed with the Commission.

(j) To take promptly from time to time such actions as the Representative may reasonably request to qualify the Offered Securities for offering and sale under the securities or Blue Sky laws of such jurisdictions (domestic or foreign) as the Representative may designate and to continue such qualifications in effect, and to comply with such laws, for so long as required to permit the offer and sale of the Offered Securities in such jurisdictions; *provided, however*, that the Company shall not be obligated to (i) qualify as a foreign corporation in any jurisdiction in which it is not so qualified, (ii) file a general consent to service of process in any jurisdiction or (iii) subject itself to taxation in any such jurisdiction if it is not otherwise so subject.

(k) Upon request, during the period of five (5) years from the date hereof, to deliver to each of the Underwriters, (i) as soon as they are available, copies of all reports or other communications (financial or other) furnished to stockholders of the Company, and (ii) as soon as they are available, copies of any reports and financial statements furnished or filed with the Commission or any national securities exchange on which the Stock and the Warrant Shares are listed. However, so long as the Company is subject to the reporting requirements of either Section 13 or Section 15(d) of the Exchange Act and is timely filing reports with the Commission on its EDGAR system, it is not required to furnish such reports or statements to the Underwriters.

(l) During the period commencing on and including the date hereof and ending on and including the ninetieth (90th) day following the date of this Agreement (as the same may be extended as described below, the "*Lock-Up Period*"), the Company will not, without the prior written consent of the Representative (which consent may be withheld at the sole discretion of the Representative), directly or indirectly offer, sell (including, without limitation, any short sale), assign, transfer, pledge, contract to sell, establish an open "put equivalent position" within the meaning of Rule 16a-1(h) under the Exchange Act, or otherwise dispose of, or announce the offering of, or file any registration statement under the Securities Act in respect of, any Common Stock, options, rights or warrants to acquire Common Stock or securities exchangeable or exercisable for or convertible into Common Stock (other than is contemplated by this Agreement with respect to the Offered Securities) or publicly announce any intention to do any of the foregoing; *provided, however*, that the Company may: (i) issue Common Stock and options to

purchase Common Stock, shares of Common Stock underlying options granted and other securities, each pursuant to any director or employee stock option plan, stock ownership plan or dividend reinvestment plan of the Company in effect on the date hereof and described in the General Disclosure Package; (ii) issue Common Stock or securities exercisable for, convertible into or exchangeable for Common Stock in connection with any acquisition, collaboration, licensing or other joint venture or strategic transaction or any debt financing transaction involving the Company; *provided* that, in the case of clause (ii), (x) such issuances shall not in the aggregate be greater than 5% of the total outstanding shares of Common Stock of the Company immediately following the completion of this offering of Offered Securities and (y) the recipients of such securities agree to be bound by a lockup letter in the form of Exhibit I hereto; and (iii) adopt a new equity incentive plan, and file a registration statement on Form S-8 under the Securities Act to register the offer and sale of securities to be issued pursuant to such new equity incentive plan, and issue securities pursuant to such new equity incentive plan (including, without limitation, the issuance of shares of Common Stock upon the exercise of options or other securities issued pursuant to such new equity incentive plan); *provided* that (x) such new equity incentive plan satisfies the transaction requirements of General Instruction A.1 of Form S-8 under the Securities Act and (y) this clause (iii) shall not be available unless each recipient of shares of Common Stock, or securities exchangeable or exercisable for or convertible into Common Stock, pursuant to such new equity incentive plan shall be contractually prohibited from selling, offering, disposing of or otherwise transferring any such shares or securities during the remainder of the Lock-Up Period. The Company has caused to be delivered to the Representative prior to the date of this Agreement a Lock-Up Agreement in the form of Exhibit I-A hereto from each individual or entity listed on Exhibit I-B, which, in addition to each other individual or entity listed on Exhibit I-B, shall constitute all executive officers and directors of the Company.

(m) [Reserved.]

(n) To supply the Representative with copies of all correspondence to and from, and all documents issued to and by, the Commission and FINRA in connection with the registration of the Offered Securities under the Securities Act or any Registration Statement, any Preliminary Prospectus or the Prospectus, or any amendment or supplement thereto.

(o) Prior to the Closing Date, not to issue any press release or other communication directly or indirectly or hold any press conference with respect to the Company, its condition, financial or otherwise, or earnings, business affairs or business prospects (except for routine oral marketing communications in the ordinary course of business and consistent with the past practices of the Company and of which the Representative are notified), without the prior written consent of the Representative, unless in the judgment of the Company and its counsel, and after notification to the Representative, such press release or communication is required by law.

(p) Until the Representative shall have notified the Company of the completion of the resale of the Offered Securities, that the Company will not, and will use its reasonable best efforts to cause its affiliated purchasers (as defined in Regulation M under the Exchange Act Rules) not to, either alone or with one or more other persons, bid for or purchase, for any account in which it or any of its affiliated purchasers has a beneficial interest, any Offered Securities, or attempt to induce any person to purchase any Offered Securities; and not to, and to use its reasonable best efforts to cause its affiliated purchasers not to, make bids or purchases for the purpose of creating actual, or apparent, active trading in or of raising the price of the Offered Securities.

(q) Not to take any action prior to the Closing Date which would require the Prospectus to be amended or supplemented pursuant to Section 4(d).

(r) To at all times comply in all material respects with all applicable provisions of the Sarbanes-Oxley Act in effect from time to time.

(s) To maintain, at its expense, a registrar and transfer agent for the Common Stock.

(t) To apply the net proceeds from the sale of the Offered Securities as set forth in the Pricing Prospectus, the General Disclosure Package and the Prospectus under the heading "Use of Proceeds," and not to use any of the proceeds from the sale of the Offered Securities hereunder to repay any outstanding debt owed to any affiliate of any Underwriter. The Company shall manage its affairs and investments in such a manner as not to be or become an "investment company" within the meaning of the Investment Company Act and the rules and regulations thereunder.

(u) To use its reasonable best efforts to maintain the listing of the Common Stock (including the Stock and the Warrant Shares) on the Exchange.

(v) To use its reasonable best efforts to do and perform all things required to be done or performed under this Agreement by the Company prior to the Closing Date and to satisfy all conditions precedent to the delivery of the Offered Securities.

(w) Upon request of any Underwriter, to furnish, or cause to be furnished, to such Underwriter an electronic version of the Company's trademarks, service marks and corporate logo for use on the website, if any, operated by such Underwriter for the purpose of facilitating the on-line offering of the Offered Securities (the "**License**"); *provided, however*, that the License shall be used solely for the purpose described above, is granted without any fee and may not be assigned or transferred.

5. **PAYMENT OF EXPENSES.** The Company agrees to pay, or reimburse if paid by any Underwriter, whether or not the transactions contemplated hereby are consummated or this Agreement is terminated: (a) the costs incident to the authorization, issuance, sale, preparation and delivery of the Offered Securities and any taxes payable in that connection; (b) the costs incident to the registration of the Offered Securities under the Securities Act and the Exchange Act; (c) the costs incident to the preparation, printing and distribution of the Registration Statement, any Preliminary Prospectus, any Issuer Free Writing Prospectus, the General Disclosure Package, the Prospectus, any amendments, supplements and exhibits thereto or any document incorporated by reference therein and the costs, if any, of printing, reproducing and distributing the "Agreement Among Underwriters" among the Representative and the Underwriters, the Master Selected Dealers' Agreement, the Underwriters' questionnaire, this Agreement and any closing documents by mail, telex or other means of communications; (d) the fees and expenses (including related fees and expenses of counsel for the Underwriters) incurred by the Underwriters in connection with the offering of the Offered Securities in an amount not to exceed \$125,000 in the aggregate; (e) the fees and expenses (including related fees and expenses of counsel for the Underwriters) incurred in connection with securing any required review by FINRA of the terms of the sale of the Offered Securities and any filings made with FINRA in an amount not to exceed \$20,000 in the aggregate; (f) any applicable listing or other fees; (g) the fees and expenses (including related fees and expenses of counsel to the Underwriters) of qualifying the Offered Securities under the securities laws of the several jurisdictions as provided in Section 4(k) and of preparing, printing and distributing wrappers, Blue Sky memoranda and legal investment surveys; (h) the cost of preparing and printing stock certificates; (i) all fees and expenses of the registrar and transfer agent of the Offered Securities; (j) the costs and expenses of the Company relating to investor presentations on any "road show" undertaken in connection with the marketing of the offering of the Offered Securities, including, without limitation, expenses associated with the preparation or dissemination of any electronic road show, expenses associated with the production of road show slides and graphics, fees and expenses of any consultants engaged in connection with the road show presentations with the prior approval of the

Company, travel and lodging expenses of the officers of the Company and such consultants; and (k) all other costs and expenses of the Company incident to the offering of the Offered Securities or the performance of the obligations of the Company under this Agreement (including, without limitation, the fees and expenses of the Company's counsel and the Company's independent accountants). Except to the extent otherwise provided in this Section 5 and in Sections 9 and 10, the Underwriters shall pay their own costs and expenses, including the fees and expenses of their counsel not contemplated herein, any transfer taxes on the resale of any Offered Securities by them and the expenses of advertising any offering of the Offered Securities made by the Underwriters.

6. *CONDITIONS OF UNDERWRITERS' OBLIGATIONS.* The respective obligations of the several Underwriters hereunder are subject to the accuracy, when made and as of the Applicable Time and on the Closing Date, of the representations and warranties of the Company contained herein, to the accuracy of the statements of the Company made in any certificates pursuant to the provisions hereof, to the performance by the Company of its obligations hereunder, and to each of the following additional terms and conditions:

(a) The Registration Statement has become effective under the Securities Act, and no stop order suspending the effectiveness of the Registration Statement or any part thereof, preventing or suspending the use of any Preliminary Prospectus, the Prospectus or any Permitted Free Writing Prospectus or any part thereof shall have been issued and no proceedings for that purpose or pursuant to Section 8A under the Securities Act shall have been initiated or, to the Company's knowledge, threatened by the Commission, and all requests for additional information on the part of the Commission (to be included in the Registration Statement or the Prospectus or otherwise) shall have been complied with to the reasonable satisfaction of the Representative; the Rule 462(b) Registration Statement, if any, each Issuer Free Writing Prospectus and the Prospectus shall have been filed with the Commission within the applicable time period prescribed for such filing by, and in compliance with, the Rules and Regulations and in accordance with Section 4(a); the Rule 462(b) Registration Statement, if any, shall have become effective immediately upon its filing with the Commission, and FINRA shall have raised no unresolved objection to the fairness and reasonableness of the terms of this Agreement or the transactions contemplated hereby.

(b) None of the Underwriters shall have discovered and disclosed to the Company on or prior to such Closing Date that the Registration Statement or any amendment or supplement thereto contains an untrue statement of a fact which, in the opinion of counsel for the Underwriters, is material or omits to state any fact which, in the opinion of such counsel, is material and is required to be stated therein or is necessary to make the statements therein not misleading, or that the General Disclosure Package, any Issuer Free Writing Prospectus or the Prospectus or any amendment or supplement thereto contains an untrue statement of fact which, in the opinion of such counsel, is material or omits to state any fact which, in the opinion of such counsel, is material and is necessary in order to make the statements, in the light of the circumstances in which they were made, not misleading.

(c) [Reserved.]

(d) Smith, Anderson, Blount, Dorsett, Mitchell & Jernigan, L.L.P. shall have furnished to the Representative such counsel's written opinion and negative assurance letter, as counsel to the Company, addressed to the Underwriters and each dated as of the Closing Date, in form and substance reasonably satisfactory to the Representative.

(e) Myers Bigel LLP shall have furnished to the Representative such counsel's written opinion, as intellectual property counsel to the Company, addressed to the Underwriters and each dated such Closing Date, in form and substance reasonably satisfactory to the Representative.

(f) Latham & Watkins LLP shall have furnished to the Representative such counsel's written opinion, as regulatory counsel to the Company, addressed to the Underwriters and each dated such Closing Date, in form and substance reasonably satisfactory to the Representative.

(g) The Representative shall have received from Cooley LLP, counsel for the Underwriters, such opinion or opinions, dated as of such Closing Date, with respect to such matters as the Underwriters may reasonably require, and the Company shall have furnished to such counsel such documents as they request for enabling them to pass upon such matters.

(h) At the time of the execution of this Agreement, the Representative shall have received from PricewaterhouseCoopers LLP, a letter, addressed to the Underwriters, executed and dated such date, in form and substance satisfactory to the Representative (i) confirming that they are an independent registered accounting firm with respect to the Company and its subsidiaries within the meaning of the Securities Act and the Rules and Regulations and PCAOB and (ii) stating the conclusions and findings of such firm, of the type ordinarily included in accountants' "comfort letters" to underwriters, with respect to the financial statements and certain financial information contained in the Registration Statement, the General Disclosure Package and the Prospectus.

(i) On the effective date of any post-effective amendment to the Registration Statement and on such Closing Date, the Representative shall have received a letter (the "**bring-down letter**") from PricewaterhouseCoopers LLP addressed to the Underwriters and dated such Closing Date confirming, as of the date of the bring-down letter (or, with respect to matters involving changes or developments since the respective dates as of which specified financial information is given in the General Disclosure Package and the Prospectus, as the case may be, as of a date not more than three (3) business days prior to the date of the bring-down letter), the conclusions and findings of such firm, of the type ordinarily included in accountants' "comfort letters" to underwriters, with respect to the financial information and other matters covered by its letter delivered to the Representative concurrently with the execution of this Agreement pursuant to paragraph (g) of this Section 6.

(j) The Company shall have furnished to the Representative a certificate, dated the Closing Date, of its Chief Executive Officer and its Chief Financial Officer stating in their respective capacities as officers of the Company on behalf of the Company and not in their individual capacities that (i) no stop order suspending the effectiveness of the Registration Statement (including, for avoidance of doubt, any Rule 462(b) Registration Statement), or any post-effective amendment thereto, shall be in effect and no proceedings for such purpose shall have been instituted or, to their knowledge, threatened by the Commission, (ii) for the period from and including the date of this Agreement through and including such Closing Date, there has not occurred any Material Adverse Effect, (iii) to their knowledge, after reasonable investigation, as of such Closing Date, the representations and warranties of the Company in this Agreement are true and correct and the Company has complied with all agreements and satisfied all conditions on its part to be performed or satisfied hereunder at or prior to such Closing Date and (iv) there has not been, subsequent to the date of the most recent audited financial statements included or incorporated by reference in the General Disclosure Package, any Material Adverse Effect in the financial position or results of operations of the Company or any change or development that, singularly or in the aggregate, would reasonably be expected to involve a Material Adverse Effect, except as set forth in the General Disclosure Package and the Prospectus.

(k) Since the date of the most recently audited financial statements included or incorporated by reference in the General Disclosure Package, (i) the Company shall not have sustained any loss or interference with its business from fire, explosion, flood or other calamity, whether or not covered by insurance, or from any labor dispute or court or governmental action, order or decree, otherwise than as set forth in the General Disclosure Package, and (ii) there shall not have been any

change in the capital stock (other than stock option exercises and stock repurchases in the ordinary course of business) or long-term debt of the Company, or any change, or any development involving a prospective change, in or affecting the business, properties, assets, general affairs, management, financial position, stockholders' equity or results of operations of the Company and its subsidiaries, taken as a whole, otherwise than as set forth in the General Disclosure Package or the Prospectus, the effect of which, in any such case described in clause (i) or (ii) of this Section 6(k), is, in the judgment of the Representative, so material and adverse as to make it impracticable or inadvisable to proceed with the sale or delivery of the Offered Securities on the terms and in the manner contemplated in the General Disclosure Package.

(l) No action shall have been taken and no law, statute, rule, regulation or order shall have been enacted, adopted or issued by any governmental or regulatory authority that would prevent the issuance or sale of the Offered Securities or materially and adversely affect or potentially materially and adversely affect the business or operations of the Company; and no injunction, restraining order or order of any other nature by any federal or state court of competent jurisdiction shall have been issued which would prevent the issuance or sale of the Offered Securities or materially and adversely affect or potentially materially and adversely affect the business or operations of the Company.

(m) Subsequent to the execution and delivery of this Agreement, there shall not have occurred any of the following: (i) trading in any of the Company's securities shall have been suspended, or materially limited by the Commission or the Exchange, or trading in securities generally on the New York Stock Exchange, Nasdaq Global Select Market, Nasdaq Global Market, Nasdaq Capital Market or the NYSE American, or trading in any securities of the Company on any exchange, shall have been suspended, or minimum or maximum prices or maximum range for prices shall have been established on any such exchange or such market by the Commission, by such exchange or market or by any other regulatory body or governmental authority having jurisdiction, (ii) a banking moratorium shall have been declared by federal or state authorities, or a material disruption has occurred in commercial banking or securities settlement or clearance services in the United States, (iii) the United States shall have become engaged in hostilities or the subject of an act of terrorism, or there shall have been an outbreak of or escalation in hostilities involving the United States, or there shall have been a declaration of a national emergency or war by the United States or (iv) there shall have occurred such a material adverse change in general economic, political or financial conditions (or the effect of international conditions on the financial markets in the United States shall be such) as to make it, in the judgment of the Representative, impracticable or inadvisable to proceed with the sale or delivery of the Offered Securities on the terms and in the manner contemplated in the General Disclosure Package and the Prospectus.

(n) The Company shall have submitted a listing of additional shares notification form to the Exchange with respect to the Stock and the Warrant Shares.

(o) The Representative shall have received on and as of such Closing Date satisfactory evidence of the good standing of the Company in its jurisdiction of organization and its good standing as a foreign corporation in such other jurisdictions as the Representative may reasonably request, in each case in writing or any standard form of telecommunication from the appropriate governmental authorities of such jurisdictions.

(p) The Representative shall have received the written agreements, substantially in the form of Exhibit I-A hereto, from each of the Company's executive officers and directors, and each other person or entity set forth in Exhibit I-B hereto.

(q) The Company shall have furnished to the Representative a Secretary's Certificate of the Company, in form and substance reasonably satisfactory to counsel to the Underwriters and customary for the type of offering contemplated by this Agreement.

(r) On or prior to the Closing Date, the Company shall have furnished to the Representative such further certificates and documents as the Representative may reasonably request.

All opinions, letters, evidence and certificates mentioned above or elsewhere in this Agreement shall be deemed to be in compliance with the provisions hereof only if they are in form and substance reasonably satisfactory to counsel for the Underwriters.

7. INDEMNIFICATION AND CONTRIBUTION.

(a) The Company shall indemnify and hold harmless each Underwriter and its affiliates, directors, officers, managers, members, employees, representatives and agents and each person, if any, who controls any Underwriter within the meaning of Section 15 of the Securities Act or Section 20 of the Exchange Act (collectively the "**Underwriter Indemnified Parties**," and each, an "**Underwriter Indemnified Party**") against any loss, claim, damage, expense or liability whatsoever (or any action, investigation or proceeding in respect thereof), joint or several, to which such Underwriter Indemnified Party may become subject, under the Securities Act, the Exchange Act or otherwise, insofar as such loss, claim, damage, expense, liability, action, investigation or proceeding arises out of or is based upon (i) any untrue statement or alleged untrue statement of a material fact contained in any Preliminary Prospectus, any Issuer Free Writing Prospectus, any Registration Statement, the Prospectus, or in any amendment or supplement thereto or document incorporated by reference therein, or in any materials or information provided to investors by, or with the approval of, the Company in connection with the marketing of the offering of the Offered Securities, including any road show or investor presentations made to investors by the Company (whether in person or electronically) ("**Marketing Materials**"), or (ii) the omission or alleged omission to state in any Preliminary Prospectus, any Issuer Free Writing Prospectus, any Registration Statement or the Prospectus, or in any amendment or supplement thereto or document incorporated by reference therein, or in any Marketing Materials, a material fact required to be stated therein or necessary to make the statements therein not misleading, and shall reimburse each Underwriter Indemnified Party promptly upon demand for any legal fees or other expenses reasonably incurred by that Underwriter Indemnified Party in connection with investigating or preparing to defend or defending against or appearing as a third party witness in respect of, or otherwise incurred in connection with, any such loss, claim, damage, expense, liability, action, investigation or proceeding, as such fees and expenses are incurred; *provided, however*, that the Company shall not be liable in any such case to the extent that any such loss, claim, damage, expense or liability arises out of or is based upon an untrue statement or alleged untrue statement in, or omission or alleged omission from any Preliminary Prospectus, any Registration Statement or the Prospectus, or any such amendment or supplement thereto, any Issuer Free Writing Prospectus or any Marketing Materials made in reliance upon and in conformity with the Underwriters' Information. Each indemnity agreement in this Section 7(a) is not exclusive and is in addition to each other indemnity agreement in this Section 7(a) and each other liability which the Company might have under this Agreement or otherwise, and shall not limit any rights or remedies which may otherwise be available under this Agreement, at law or in equity to any Underwriter Indemnified Party.

(b) Each Underwriter, severally and not jointly, shall indemnify and hold harmless the Company and its directors, its officers who signed the Registration Statement and each person, if any, who controls the Company within the meaning of Section 15 of the Securities Act or Section 20 of the Exchange Act (collectively, the "**Company Indemnified Parties**," and each, a "**Company Indemnified Party**") against any loss, claim, damage, expense or liability whatsoever (or any action, investigation or

proceeding in respect thereof), joint or several, to which such Company Indemnified Party may become subject, under the Securities Act or otherwise, insofar as such loss, claim, damage, expense, liability, action, investigation or proceeding arises out of or is based upon (i) any untrue statement or alleged untrue statement of a material fact contained in any Preliminary Prospectus, any Issuer Free Writing Prospectus, any Registration Statement or the Prospectus, or in any amendment or supplement thereto, or (ii) the omission or alleged omission to state in any Preliminary Prospectus, any Issuer Free Writing Prospectus, any Registration Statement or the Prospectus, or in any amendment or supplement thereto, a material fact required to be stated therein or necessary to make the statements therein not misleading, but in each case only to the extent that the untrue statement or alleged untrue statement or omission or alleged omission was made in reliance upon and in conformity with the Underwriters' Information, and shall reimburse the Company Indemnified Parties for any legal or other expenses reasonably incurred by such party in connection with investigating or preparing to defend or defending against or appearing as a third-party witness in connection with any such loss, claim, damage, liability, action, investigation or proceeding, as such fees and expenses are incurred. This indemnity agreement is not exclusive and will be in addition to any liability which the Underwriters might otherwise have and shall not limit any rights or remedies which may otherwise be available under this Agreement, at law or in equity to the Company Indemnified Parties.

(c) Promptly after receipt by an indemnified party under this Section 7 of notice of the commencement of any action, the indemnified party shall, if a claim in respect thereof is to be made against an indemnifying party under this Section 7, notify such indemnifying party in writing of the commencement of that action; *provided, however*, that the failure to notify the indemnifying party shall not relieve it from any liability which it may have under this Section 7 except to the extent it has been materially prejudiced by such failure; *provided, further*, that the failure to notify an indemnifying party shall not relieve it from any liability which it may have to an indemnified party otherwise than under this Section 7. If any such action shall be brought against an indemnified party, and it shall notify the indemnifying party thereof, the indemnifying party shall be entitled to participate therein and, to the extent that it wishes, jointly with any other similarly notified indemnifying party, to assume the defense of such action with counsel reasonably satisfactory to the indemnified party (which counsel shall not, except with the written consent of the indemnified party, be counsel to the indemnifying party). After notice from the indemnifying party to the indemnified party of its election to assume the defense of such action, except as provided herein, the indemnifying party shall not be liable to the indemnified party under Section 7 for any legal or other expenses subsequently incurred by the indemnified party in connection with the defense of such action other than reasonable costs of investigation; *provided, however*, that any indemnified party shall have the right to employ separate counsel in any such action and to participate in the defense of such action, but the fees and expenses of such counsel (other than reasonable costs of investigation) shall be at the expense of such indemnified party unless (i) the employment thereof has been specifically authorized in writing by the Company in the case of a claim for indemnification under Section 7(a) or the Representative in the case of a claim for indemnification under Section 7(b), (ii) such indemnified party shall have been advised by its counsel that there may be one or more legal defenses available to it which are different from or additional to those available to the indemnifying party or (iii) the indemnifying party has failed to assume the defense of such action and employ counsel reasonably satisfactory to the indemnified party within a reasonable period of time after notice of the commencement of the action or the indemnifying party does not diligently defend the action after assumption of the defense, in which case, if such indemnified party notifies the indemnifying party in writing that it elects to employ separate counsel at the expense of the indemnifying party, the indemnifying party shall not have the right to assume the defense of (or, in the case of a failure to diligently defend the action after assumption of the defense, to continue to defend) such action on behalf of such indemnified party and the indemnifying party shall be responsible for legal or other expenses subsequently incurred by such indemnified party in connection with the defense of such action; *provided, however*, that the indemnifying party shall not, in connection with any one such action or separate but

substantially similar or related actions in the same jurisdiction arising out of the same general allegations or circumstances, be liable for the reasonable fees and expenses of more than one separate firm of attorneys at any time for all such indemnified parties (in addition to any local counsel), which firm shall be designated in writing by the Representative if the indemnified parties under this Section 7 consist of any Underwriter Indemnified Party or by the Company if the indemnified parties under this Section 7 consist of any Company Indemnified Parties. Subject to this Section 7(c), the amount payable by an indemnifying party under Section 7 shall include, but not be limited to, (x) reasonable and documented legal fees and expenses of counsel to the indemnified party and any other expenses in investigating or preparing to defend or defending against or appearing as a third-party witness in respect of, or otherwise incurred in connection with, any action, investigation, proceeding or claim, and (y) all amounts paid in settlement of any of the foregoing. No indemnifying party shall, without the prior written consent of the indemnified parties, settle or compromise or consent to the entry of judgment with respect to any pending or threatened action or any claim whatsoever, in respect of which indemnification or contribution could be sought under this Section 7 (whether or not the indemnified parties are actual or potential parties thereto), unless such settlement, compromise or consent (A) includes an unconditional release of each indemnified party in form and substance reasonably satisfactory to such indemnified party from all liability arising out of such action or claim and (B) does not include a statement as to or an admission of fault, culpability or a failure to act by or on behalf of any indemnified party. Subject to the provisions of the following sentence, no indemnifying party shall be liable for settlement of any pending or threatened action or any claim whatsoever that is effected without its written consent, but if settled with its written consent, if its consent has been unreasonably withheld or delayed or if there be a judgment for the plaintiff in any such matter, the indemnifying party agrees to indemnify and hold harmless any indemnified party from and against any loss or liability by reason of such settlement or judgment. In addition, if at any time an indemnified party shall have requested that an indemnifying party reimburse the indemnified party for fees and expenses of counsel, such indemnifying party agrees that it shall be liable for any settlement of the nature contemplated by this Section 7 effected without its written consent if (i) such settlement is entered into more than forty-five (45) days after receipt by such indemnifying party of the request for reimbursement, (ii) such indemnifying party shall have received notice of the terms of such settlement at least thirty (30) days prior to such settlement being entered into and (iii) such indemnifying party shall not have reimbursed such indemnified party in accordance with such request prior to the date of such settlement.

(d) If the indemnification provided for in this Section 7 is unavailable or insufficient to hold harmless an indemnified party under Section 7(a) or 7(b), then each indemnifying party shall, in lieu of indemnifying such indemnified party, contribute to the amount paid, payable or otherwise incurred by such indemnified party as a result of such loss, claim, damage, expense or liability (or any action, investigation or proceeding in respect thereof), as incurred, (i) in such proportion as shall be appropriate to reflect the relative benefits received by the Company on the one hand and the Underwriters on the other from the offering of the Offered Securities, or (ii) if the allocation provided by clause (i) of this Section 7(d) is not permitted by applicable law, in such proportion as is appropriate to reflect not only the relative benefits referred to in clause (i) of this Section 7(d), but also the relative fault of the Company on the one hand and the Underwriters on the other with respect to the statements, omissions, acts or failures to act which resulted in such loss, claim, damage, expense or liability (or any action, investigation or proceeding in respect thereof) as well as any other relevant equitable considerations. The relative benefits received by the Company on the one hand and the Underwriters on the other with respect to such offering shall be deemed to be in the same proportion as the total net proceeds from the offering of the Offered Securities purchased under this Agreement (before deducting expenses) received by the Company bear to the total underwriting discounts and commissions received by the Underwriters with respect to the Offered Securities purchased under this Agreement, in each case as set forth in the table on the cover page of the Prospectus. The relative fault of the Company on the one hand and the Underwriters on the other shall be determined by reference to, among other things, whether the untrue or alleged untrue statement of a

material fact or the omission or alleged omission to state a material fact relates to information supplied by the Company on the one hand or the Underwriters on the other, the intent of the parties and their relative knowledge, access to information and opportunity to correct or prevent such untrue statement, omission, act or failure to act; *provided, however*, that the parties hereto agree that the written information furnished to the Company through the Representative by or on behalf of the Underwriters for use in the Preliminary Prospectus, any Registration Statement or the Prospectus, or in any amendment or supplement thereto, consists solely of the Underwriters' Information.

(e) The Company and the Underwriters agree that it would not be just and equitable if contributions pursuant to Section 7(d) above were to be determined by pro rata allocation or by any other method of allocation which does not take into account the equitable considerations referred to Section 7(d) above. The amount paid or payable by an indemnified party as a result of the loss, claim, damage, expense, liability, action, investigation or proceeding referred to in Section 7(d) above shall be deemed to include, subject to the limitations set forth above, any legal or other expenses reasonably incurred by such indemnified party in connection with investigating, preparing to defend or defending against or appearing as a third party witness in respect of, or otherwise incurred in connection with, any such loss, claim, damage, expense, liability, action, investigation or proceeding. Notwithstanding the provisions of this Section 7, no Underwriter shall be required to contribute any amount in excess of the amount by which the total underwriting discounts and commissions received by such Underwriter with respect to the offering of the Offered Securities exceeds the amount of any damages which the Underwriter has otherwise paid or become liable to pay by reason of any untrue or alleged untrue statement, omission or alleged omission, act or alleged act or failure to act or alleged failure to act. No person guilty of fraudulent misrepresentation (within the meaning of Section 11(f) of the Securities Act) shall be entitled to contribution from any person who was not guilty of such fraudulent misrepresentation. The Underwriters' obligations to contribute as provided in this Section 7 are several in proportion to their respective underwriting obligations and not joint.

8. *TERMINATION*. The obligations of the Underwriters hereunder may be terminated by the Representative, in its absolute discretion, by notice given to the Company prior to delivery of and payment for the Offered Securities if, prior to that time, any of the events described in Sections 6(k), 6(l) or 6(m) have occurred or if the Underwriters shall decline to purchase the Offered Securities for any reason permitted under this Agreement.

9. *REIMBURSEMENT OF UNDERWRITERS' EXPENSES*. Notwithstanding anything to the contrary in this Agreement, if (a) this Agreement shall have been terminated pursuant to Section 8 or 10, (b) the Company shall fail to tender the Offered Securities for delivery to the Underwriters for any reason not permitted under this Agreement or (c) the sale of the Offered Securities is not consummated because any condition to the obligations of the Underwriters set forth herein is not satisfied or because of the refusal, inability or failure on the part of the Company to perform any agreement herein or to satisfy any condition or to comply with the provisions hereof, then, in addition to the payment of amounts in accordance with Section 5, the Company shall reimburse the Underwriters for the reasonable and documented fees and expenses of Underwriters' counsel and for such other documented out-of-pocket expenses as shall have been reasonably incurred by them in connection with this Agreement and the proposed purchase of the Offered Securities, including, without limitation, travel and lodging expenses of the Underwriters, and, upon demand, the Company shall pay the full amount thereof to the Representative; *provided, however*, that if this Agreement is terminated pursuant to Section 10 by reason of the default of one or more Underwriters, the Company shall not be obligated to reimburse any defaulting Underwriter on account of expenses to the extent incurred by such defaulting Underwriter; *provided, further*, that the foregoing shall not limit any reimbursement obligation of the Company to any non-defaulting Underwriter under this Section 9.

10. *SUBSTITUTION OF UNDERWRITERS.* (a) If any Underwriter or Underwriters shall default in its or their obligations to purchase the Offered Securities hereunder on the Closing Date, and the aggregate number of shares which such defaulting Underwriter or Underwriters agreed but failed to purchase does not exceed ten percent (10%) of the total number of shares to be purchased by all Underwriters on such Closing Date, the other Underwriters shall be obligated severally, in proportion to their respective commitments hereunder, to purchase the shares which such defaulting Underwriter or Underwriters agreed but failed to purchase on such Closing Date. If any Underwriter or Underwriters shall so default and the aggregate number of shares with respect to which such default or defaults occur is more than ten percent (10%) of the total number of shares to be purchased by all Underwriters on such Closing Date, and arrangements satisfactory to the Representative and the Company for the purchase of such shares by other persons are not made within forty-eight (48) hours after such default, this Agreement shall terminate.

(b) If the remaining Underwriters or substituted Underwriters are required hereby or agree to take up all or part of the shares of Offered Securities of a defaulting Underwriter or Underwriters on such Closing Date as provided in this Section 10, (i) the Company shall have the right to postpone the Closing Date for a period of not more than five (5) full business days in order that the Company may effect whatever changes may thereby be made necessary in the Registration Statement or the Prospectus, or in any other documents or arrangements, and the Company agrees promptly to file any amendments to the Registration Statement or supplements to the Prospectus which may thereby be made necessary, and (ii) the respective numbers of shares to be purchased by the remaining Underwriters or substituted Underwriters shall be taken as the basis of their underwriting obligation for all purposes of this Agreement. Nothing herein contained shall relieve any defaulting Underwriter of its liability to the Company or the other Underwriters for damages occasioned by its default hereunder. Any termination of this Agreement pursuant to this Section 10 shall be without liability on the part of any non-defaulting Underwriter, subsidiary or the Company, except that the representations, warranties, covenants, indemnities, agreements and other statements set forth in Section 2, the obligations with respect to expenses to be paid or reimbursed pursuant to Sections 5 and 9 and the provisions of Section 7 and Sections 11 through 21, inclusive, shall not terminate and shall remain in full force and effect.

11. *ABSENCE OF FIDUCIARY RELATIONSHIP.* The Company acknowledges and agrees that:

(a) each Underwriter's responsibility to the Company is solely contractual in nature, the Representative has been retained solely to act as underwriter in connection with the sale of the Offered Securities and no fiduciary, advisory or agency relationship between the Company and the Representative has been created in respect of any of the transactions contemplated by this Agreement, irrespective of whether the Representative has advised or is advising the Company on other matters;

(b) the price of the Offered Securities set forth in this Agreement was established by the Company following discussions and arm's-length negotiations with the Representative, and the Company is capable of evaluating and understanding, and understands and accepts, the terms, risks and conditions of the transactions contemplated by this Agreement;

(c) it has been advised that the Representative and its affiliates are engaged in a broad range of transactions which may involve interests that differ from those of the Company and that the Representative has no obligation to disclose such interests and transactions to the Company by virtue of any fiduciary, advisory or agency relationship; and

(d) it waives, to the fullest extent permitted by law, any claims it may have against the Representative for breach of fiduciary duty or alleged breach of fiduciary duty and agrees that the Representative shall have no liability (whether direct or indirect) to the Company in respect of such a fiduciary duty claim or to any person asserting a fiduciary duty claim on behalf of or in right of the Company, including stockholders, employees or creditors of the Company.

12. *SUCCESSORS; PERSONS ENTITLED TO BENEFIT OF AGREEMENT.* This Agreement shall inure to the benefit of and be binding upon the several Underwriters, the Company and their respective successors and assigns. Nothing expressed or mentioned in this Agreement is intended or shall be construed to give any person, other than the persons mentioned in the preceding sentence, any legal or equitable right, remedy or claim under or in respect of this Agreement or any provisions herein contained, this Agreement and all conditions and provisions hereof being intended to be and being for the sole and exclusive benefit of such persons and for the benefit of no other person; except that the representations, warranties, covenants, agreements and indemnities of the Company contained in this Agreement shall also be for the benefit of the Underwriter Indemnified Parties, and the indemnities of the several Underwriters shall be for the benefit of the Company Indemnified Parties. It is understood that each Underwriter's responsibility to the Company is solely contractual in nature and the Underwriters do not owe the Company, or any other party, any fiduciary duty as a result of this Agreement. No purchaser of any of the Offered Securities from any Underwriter shall be deemed to be a successor or assign by reason merely of such purchase.

13. *SURVIVAL OF INDEMNITIES, REPRESENTATIONS, WARRANTIES, ETC.* The respective indemnities, covenants, agreements, representations, warranties and other statements of the Company and the several Underwriters, as set forth in this Agreement or made by them, respectively, pursuant to this Agreement, shall remain in full force and effect, regardless of any investigation made by or on behalf of any Underwriter, the Company or any person controlling any of them and shall survive delivery of and payment for the Offered Securities. Notwithstanding any termination of this Agreement, including without limitation any termination pursuant to Section 8 or Section 10, the indemnities, covenants, agreements, representations, warranties and other statements forth in Sections 2, 5, 7 and 9 and Sections 11 through 21, inclusive, of this Agreement shall not terminate and shall remain in full force and effect at all times.

14. *NOTICES.* All statements, requests, notices and agreements hereunder shall be in writing, and:

(a) if to the Underwriters, shall be delivered or sent by mail, telex, facsimile transmission or email to (i) Piper Jaffray & Co., 800 Nicollet Mall, Minneapolis, Minnesota 55402, Attention: General Counsel with a copy to Legal, Fax: (612) 303-1068; (ii) Divakar Gupta and Joshua A. Kaufman, Cooley LLP, 1114 Avenue of the Americas, New York, New York 10036-7798, Fax: 212-479-6275; and

(b) if to the Company shall be delivered or sent by mail or facsimile to Novan, Inc., Attention: Chief Financial Officer, 4105 Hopson Road, Morrisville, North Carolina 27560, Fax: (919) 237-9212, with a copy to Gerald Roach and Amy Batten, Smith, Anderson, Blount, Dorsett, Mitchell, & Jemigan, L.L.P., Wells Fargo Capitol Center, 150 Fayetteville Street, Suite 2300, Raleigh, North Carolina 27601, Fax: (919) 821-6800;

provided, however, that any notice to an Underwriter pursuant to Section 7 shall be delivered or sent by mail, or facsimile transmission to such Underwriter at its address set forth in its acceptance telex to the Representative, which address will be supplied to any other party hereto by the Representative upon request. Any such statements, requests, notices or agreements shall take effect at the time of receipt thereof.

15. *DEFINITION OF CERTAIN TERMS.* For purposes of this Agreement, (i) “*affiliate*” has the meaning set forth in Rule 405 under the Securities Act, (ii) “*business day*” means any day on which the Nasdaq Global Market is open for trading and (iii) “*subsidiary*” has the meaning set forth in Rule 405 of the Rules and Regulations.

16. *GOVERNING LAW.* **This Agreement shall be governed by and construed in accordance with the laws of the State of New York, including without limitation Sections 5-1401 and 5-1402 of the New York General Obligations Law.** The Company irrevocably (i) submits to the non-exclusive jurisdiction of the Federal and state courts in the Borough of Manhattan in The City of New York for the purpose of any suit, action or other proceeding arising out of this Agreement or the transactions contemplated by this Agreement, the Registration Statement and any Preliminary Prospectus or the Prospectus, (ii) agrees that all claims in respect of any such suit, action or proceeding may be heard and determined by any such court, (iii) waives to the fullest extent permitted by applicable law, any immunity from the jurisdiction of any such court or from any legal process, (iv) agrees not to commence any such suit, action or proceeding other than in such courts, and (v) waives, to the fullest extent permitted by applicable law, any claim that any such suit, action or proceeding is brought in an inconvenient forum.

17. *UNDERWRITERS' INFORMATION.* The parties hereto acknowledge and agree that, for all purposes of this Agreement, the “*Underwriters' Information*” consists solely of the following information in the Prospectus: (i) the last paragraph on the front cover page concerning delivery of shares by the Underwriters; and (ii) the statements concerning the Underwriters contained in the penultimate paragraph under the heading “Discounts and Commissions”, the paragraph under the heading “Discretionary Accounts”, the first sentence under the heading “Price Stabilization, Short Positions and Penalty Bids” and the first three sentences under the heading “Electronic Offer, Sale and Distribution of Shares” under the caption “Underwriting.”

18. *AUTHORITY OF THE REPRESENTATIVE.* In connection with this Agreement, the Representative will act for and on behalf of the several Underwriters, and any action taken under this Agreement by the Representative will be binding on all the Underwriters.

19. *PARTIAL UNENFORCEABILITY.* The invalidity or unenforceability of any section, paragraph, clause or provision of this Agreement shall not affect the validity or enforceability of any other section, paragraph, clause or provision hereof. If any section, paragraph, clause or provision of this Agreement is for any reason determined to be invalid or unenforceable, there shall be deemed to be made such minor changes (and only such minor changes) as are necessary to make it valid and enforceable.

20. *GENERAL.* This Agreement constitutes the entire agreement of the parties to this Agreement and supersedes all prior written or oral and all contemporaneous oral agreements, understandings and negotiations with respect to the subject matter hereof. In this Agreement, the masculine, feminine and neuter genders and the singular and the plural include one another. The section headings in this Agreement are for the convenience of the parties only and will not affect the construction or interpretation of this Agreement. This Agreement may be amended or modified, and the observance of any term of this Agreement may be waived, only by a writing signed by the Company and the Representative.

21. *COUNTERPARTS.* This Agreement may be signed in any number of counterparts, including by facsimile or other electronic transmission, each of which shall be an original, with the same effect as if the signatures thereto and hereto were upon the same instrument.

[Signature page follows]

If the foregoing is in accordance with your understanding of the agreement between the Company and the several Underwriters, kindly indicate your acceptance in the space provided for that purpose below.

Very truly yours,
NOVAN, INC.

By: /s/ William L. Hodges
Name: William L. Hodges
Title: CFO

Accepted as of
the date first above written:

PIPER JAFFRAY & CO.

Acting on its own behalf
and as Representative of the several
Underwriters listed on Schedule A to this Agreement.

By: PIPER JAFFRAY & CO.

By: /s/ David W. Stadinski
Name: David W. Stadinski
Title: Managing Director

[Signature Page to Novan, Inc. Underwriting Agreement]

SCHEDULE A

	<u>Name</u>	Number of Shares of Stock to be Purchased	Number of Shares Underlying Warrants to be Purchased
Piper Jaffray & Co.		<u>10,000,000</u>	<u>10,000,000</u>
Total		<u><u>10,000,000</u></u>	<u><u>10,000,000</u></u>

Sch. A

SCHEDULE B

General Use Free Writing Prospectuses

Free Writing Prospectus, dated January 5, 2018

Sch. B

SCHEDULE C

Pricing Information

Offered Securities to be Sold:	10,000,000 shares and warrants to purchase 10,000,000 shares
Offering Price:	\$3.80 per share and warrant
Estimated Net Proceeds to the Company (after underwriting discounts and commissions, but before transaction expenses):	\$35,625,000
	Sch. C

SCHEDULE D

Subsidiaries

Novan Therapeutics, LLC

Sch. D

Exhibit I-A

Form of Lock-Up Agreement

, 2017

PIPER JAFFRAY & CO.

As representative of the Underwriters

c/o Piper Jaffray & Co.

800 Nicollet Mall, Suite 800

Minneapolis, MN 55402

Re: Proposed Public Offering of Novan, Inc.

Dear Sir or Madam:

This letter agreement (this "**Agreement**") is being delivered to you in connection with the proposed Underwriting Agreement (the "**Underwriting Agreement**") by and between Novan, Inc., a Delaware corporation (the "**Company**"), and Piper Jaffray & Co. ("**Piper Jaffray**"), as representative (the "**Representative**") of a group of underwriters to be named therein (the "**Underwriters**"), relating to the proposed public offering (the "**Offering**") of shares of the common stock, par value \$0.0001 per share (the "**Common Stock**") and warrants of the Company to purchase shares of Common Stock (the "**Warrants**"), of the Company pursuant to a registration statement (the "**Registration Statement**") on Form S-3 (File No. 333-220761) filed with the Securities and Exchange Commission (the "**SEC**").

In order to induce you and the other Underwriters to enter into the Underwriting Agreement, and in light of the benefits that the Offering will confer upon the undersigned in its capacity as a securityholder and/or an officer, director or employee of the Company, and for good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the undersigned agrees with each Underwriter that, during the period beginning on the date hereof through and including the date that is the 90th day after the date of the Underwriting Agreement (the "**Lock-Up Period**"), the undersigned will not, without the prior written consent of the Representative, directly or indirectly, (i) offer, sell, assign, transfer, pledge, contract to sell, or otherwise dispose of, or announce the intention to otherwise dispose of, any shares of Common Stock (including, without limitation, Common Stock which may be deemed to be beneficially owned by the undersigned in accordance with the rules and regulations promulgated under the Securities Exchange Act of 1934, as amended (such shares, the "**Beneficially Owned Shares**," and such act, the "**Exchange Act**")), or securities convertible into or exercisable or exchangeable for Common Stock, (ii) enter into any swap, hedge or similar agreement or arrangement that transfers in whole or in part, the economic risk of ownership of the Beneficially Owned Shares or securities convertible into or exercisable or exchangeable for Common Stock, whether now owned or hereafter acquired by the undersigned or with respect to which the undersigned has or hereafter acquires the power of disposition, or (iii) engage in any short selling of the Common Stock or securities convertible into or exercisable or exchangeable for Common Stock.

The restrictions set forth in the preceding paragraph shall not apply to:

- (1) if the undersigned is a natural person, any transfers made by the undersigned (a) as a bona fide gift to any member of the immediate family (as defined below) of the undersigned or to

a trust the direct or indirect beneficiaries of which are exclusively the undersigned or members of the undersigned's immediate family, (b) by will or intestate succession upon the death of the undersigned or by operation of law, such as pursuant to a qualified domestic order or in connection with a divorce settlement or (c) as a bona fide gift to a charity or educational institution;

- (2) if the undersigned is a corporation, partnership, limited liability company or other business entity, any transfers to any stockholder, partner or member of, or owner of a similar equity interest in, the undersigned, as the case may be, if, in any such case, such transfer is not for value;
- (3) if the undersigned is a corporation, partnership, limited liability company or other business entity, any transfer made by the undersigned (a) in connection with the sale or other bona fide transfer in a single transaction of all or substantially all of the undersigned's capital stock, partnership interests, membership interests or other similar equity interests, as the case may be, or all or substantially all of the undersigned's assets, in any such case not undertaken for the purpose of avoiding the restrictions imposed by this Agreement or (b) to another corporation, partnership, limited liability company or other business entity so long as the transferee is an affiliate (as defined below) of the undersigned or to any investment fund or other entity that controls or manages the undersigned, in each case in a transaction not involving a transfer for value;
- (4) if the undersigned is a trust, distributions of shares of Common Stock or any security directly or indirectly convertible into Common Stock to a trustee or the beneficiaries or to the estate of a beneficiary of such trust in a transaction not involving a disposition for value; *provided* that no filing by the transferor or transferee under the Exchange Act, or other public announcement shall be required or shall be made voluntarily in connection with such distribution until after the expiration of the Lock-Up Period;
- (5) transfers of shares of Common Stock or other securities to the Company in connection with the vesting or exercise of any equity awards granted pursuant to the Company's equity incentive plans effective on the date hereof and held by the undersigned to the extent as may be necessary to satisfy tax withholding obligations pursuant to the Company's equity incentive or other plans; *provided* that in the case of any such transfer, no filing under Section 16(a) of the Exchange Act reporting a reduction in beneficial ownership of shares of Common Stock shall be required, and no such filing shall be made voluntarily, in each case, prior to the expiration of the Lock-Up Period;
- (6) transfers to the Company pursuant to agreements under which the Company has an option to repurchase such securities, or a right of first refusal with respect to the transfers of such securities; *provided* that if the undersigned is required to file a report under the Exchange Act, or any other public announcement, reporting such repurchase, the undersigned shall include a statement in such report to the effect that such repurchase was made under terms of the Company's repurchase rights upon termination of the undersigned;
- (7) the establishment of a trading plan pursuant to Rule 10b5-1 under the Exchange Act for the transfer of Common Stock, *provided* that such plan does not provide for the transfer of Common Stock during the Lock-Up Period, and *provided further* that no public announcement of the establishment or existence of such plan, and no filing with the SEC or any other regulatory authority in respect thereof, shall be required, and no such public announcement or filing shall be made voluntarily, in each case, prior to the expiration of the Lock-Up Period;

(8) transactions relating to securities acquired in open market transactions after the date of the Offering; and

(9) transfers pursuant to a bona fide third-party tender offer, merger, consolidation or other similar transaction made to all holders of the Company's capital stock involving a Change of Control (as defined below) of the Company that is approved by the Board of Directors of the Company (including, without limitation, the entry into any lock-up, voting or similar agreement pursuant to which the undersigned may agree to transfer, sell, tender or otherwise dispose of Common Stock or other such securities in favor of any such transaction, or vote any securities in favor of such transaction); *provided* that in the event that the tender offer, merger, consolidation or other such transaction is not completed, the Common Stock owned by the undersigned shall remain subject to the restrictions contained in this Agreement;

provided, however, that in the case of any transfer described in clause (1), (2), (3) or (4) above, it shall be a condition to the transfer that (A) the transferee executes and delivers to the Representative, acting on behalf of the Underwriters, not later than one (1) business day prior to such transfer, a written agreement, in substantially the form of this Agreement (it being understood that any references to "immediate family" in the agreement executed by such transferee shall expressly refer only to the immediate family of the undersigned and not to the immediate family of the transferee) and otherwise satisfactory in form and substance to the Representative, and (B) in the case of any transfer described in clause (1), (2) or (3) above, if the undersigned is required to file a report under Section 16(a) of the Exchange Act, reporting a reduction in beneficial ownership of shares of Common Stock or Beneficially Owned Shares or any securities convertible into or exercisable or exchangeable for Common Stock or Beneficially Owned Shares during the Lock-Up Period, the undersigned shall include a statement in such report to the effect that, (A) in the case of any transfer pursuant to clause (1) above, such transfer is being made as a gift or by will or intestate succession or by operation of law, (B) in the case of any transfer pursuant to clause (2) above, such transfer is being made to a stockholder, partner or member of, or owner of a similar equity interest in, the undersigned and is not a transfer for value, and (C) in the case of any transfer pursuant to clause (3) above, such transfer is being made either (a) in connection with the sale or other bona fide transfer in a single transaction of all or substantially all of the undersigned's capital stock, partnership interests, membership interests or other similar equity interests, as the case may be, or all or substantially all of the undersigned's assets or (b) to another corporation, partnership, limited liability company or other business entity that is an affiliate of the undersigned and such transfer is not for value.

For purposes of this Agreement, "immediate family" shall mean a spouse, domestic partner, child, grandchild or other lineal descendant (including by adoption), father, mother, brother or sister of the undersigned or other relationship not more remote than first cousin; and "affiliate" shall have the meaning set forth in Rule 405 under the Securities Act of 1933, as amended (the "*Securities Act*"). For purposes of this Agreement, "*Change of Control*" shall mean the transfer (whether by tender offer, merger, consolidation or other similar transaction), in one transaction or a series of related transactions, to a person or group of affiliated persons, of the Company's voting securities if, after such transfer, such person or group of affiliated persons would hold more than 90% of the outstanding voting securities of the Company (or the surviving entity).

For avoidance of doubt, nothing in this Agreement prohibits the undersigned from exercising any options or warrants to purchase Common Stock (which exercises may be effected on a cashless basis to the extent the instruments representing such options or warrants permit exercises on a cashless basis), it being understood that any Common Stock issued upon such exercises will be subject to the restrictions of this Agreement.

In order to enable this Agreement to be enforced, the undersigned hereby consents to the placing of legends or stop transfer instructions with the Company's transfer agent or other registrar with respect to any Common Stock or securities convertible into or exercisable or exchangeable for Common Stock.

The undersigned further agrees that it will not, during the Lock-Up Period, make any demand or request for or exercise any right with respect to the registration under the Securities Act, of any shares of Common Stock or other Beneficially Owned Shares or any securities convertible into or exercisable or exchangeable for Common Stock or other Beneficially Owned Shares. The undersigned hereby waives any and all preemptive rights, registration rights, participation rights, resale rights, rights of first refusal or similar rights that the undersigned may have in connection with the Offering. The undersigned further waives any related notice requirements pursuant to any agreement, understanding, or otherwise to which the undersigned is a party.

This Agreement and all authority herein conferred are irrevocable and shall survive the death or incapacity of the undersigned and shall be binding upon the heirs, personal representatives, successors and assigns of the undersigned.

The undersigned hereby represents and warrants that the undersigned has full power and authority to enter into this Agreement and that this Agreement has been duly authorized (if the undersigned is not a natural person), executed and delivered by the undersigned and is a valid and binding agreement of the undersigned. This Agreement and all authority herein conferred are irrevocable and shall survive the death or incapacity of the undersigned (if a natural person) and shall be binding upon the heirs, personal representatives, successors and assigns of the undersigned.

The undersigned hereby consents to receipt of this Agreement in electronic form and understands and agrees that execution and delivery of this Agreement by facsimile transmission, electronic mail or other electronic transmission is legal, valid and binding for all purposes. This Agreement shall be governed by and construed in accordance with the internal laws of the State of New York applicable to agreements made and to be performed in such state.

If (i) either the Company, on the one hand, or Piper Jaffray, on the other hand, has advised in writing, prior to the execution of the Underwriting Agreement, that it has determined not to proceed with the Offering, (ii) the Underwriting Agreement is not executed by January 31, 2017, *provided* that the Company may by written notice to the undersigned prior to January 31, 2017 extend such date for a period of up to 30 additional days, or (iii) the Underwriting Agreement (other than the provisions thereof which survive termination) shall terminate or be terminated for any reason prior to payment for and delivery of any Common Stock to be sold thereunder, then this Agreement shall immediately be terminated and the undersigned shall automatically be released from all of his or her obligations under this Agreement. The undersigned acknowledges and agrees that whether or not any public offering of Common Stock actually occurs depends on a number of factors, including market conditions.

[Signature page follows]

Very truly yours,

(Name of Stockholder - Please Print)

(Signature)

(Name of Signatory if Stockholder is an entity - Please Print)

(Title of Signatory if Stockholder is an entity - Please Print)

Address: _____

Ex. I-A

Exhibit I-B

Directors, Officers, Stockholders and Optionholders

Malin Life Sciences Holdings Limited

Nathan Stasko, Ph.D

William Hodges

Brian Johnson

Jeff Hunter

Robert A. Ingram

W. Kent Geer

Robert J. Keegan

G. Kelly Martin

Sean Murphy

John Palmour

Paula Brown Stafford

Machelle Sanders

Ex. I-B

Exhibit II

Form of Warrant

NOVAN, INC.

WARRANT TO PURCHASE COMMON STOCK

Warrant No. _____

Original Issue Date: _____, 2018

Novan, Inc., a Delaware corporation (the "*Company*"), hereby certifies that, for value received, _____ or its permitted registered assigns (the "*Holder*"), is entitled to purchase from the Company up to a total of _____ shares of common stock, \$0.0001 par value per share (the "*Common Stock*"), of the Company (each such share, a "*Warrant Share*" and all such shares, the "*Warrant Shares*") at an exercise price per share equal to \$ _____ per share (as adjusted from time to time as provided in Section 8 herein, the "*Exercise Price*"), at any time and from time to time through and including 5:30 P.M., New York City time, on _____, 20____ (the "*Expiration Date*"), and subject to the following terms and conditions:

This Warrant (this "*Warrant*") is one of a series of similar warrants issued pursuant to the Company's Registration Statement on Form S-3 (No. 333-220761), as amended. All such Warrants are referred to herein, collectively, as the "*Warrants*."

1. Registration of Warrants. The Company shall register this Warrant, upon records to be maintained by the Company for that purpose (the "*Warrant Register*"), in the name of the record Holder (which shall be the initial Holder set forth above or, as the case may be, any registered assignee to which this Warrant is permissibly assigned hereunder) from time to time. The Company may deem and treat the registered Holder of this Warrant as the absolute owner hereof for the purpose of any exercise hereof or any distribution to the Holder, and for all other purposes, absent actual notice to the contrary.

2. Registration of Transfers. The Company shall register the transfer of all or any portion of this Warrant in the Warrant Register, upon surrender of this Warrant, with the Form of Assignment attached as Schedule 2 hereto duly completed and signed, to the Company's transfer agent or to the Company at the address listed on the signature page hereto. Upon any such registration or transfer, a new warrant to purchase Common Stock in substantially the form of this Warrant (any such new warrant, a "*New Warrant*") evidencing the portion of this Warrant so transferred shall be issued to the transferee, and a New Warrant evidencing the remaining portion of this Warrant not so transferred, if any, shall be issued to the transferring Holder. The acceptance of the New Warrant by the transferee thereof shall be deemed the acceptance by such transferee of all of the rights and obligations in respect of the New Warrant that the Holder has in respect of this Warrant. The Company shall prepare, issue and deliver at its own expense any New Warrant under this Section 2.

Ex. II

3. Exercise and Duration of Warrants.

(a) All or any part of this Warrant shall be exercisable by the registered Holder in any manner permitted by Section 9 of this Warrant at any time and from time to time through and including 5:30 P.M. New York City time, on the Expiration Date. At 5:30 P.M., New York City time, on the Expiration Date, the portion of this Warrant not exercised prior thereto shall be and become void and of no value and this Warrant shall be terminated and no longer outstanding.

(b) The Holder may exercise this Warrant by delivering to the Company an exercise notice, in the form attached as Schedule 1 hereto (the “*Exercise Notice*”), completed and duly signed (the date on which the Exercise Notice is delivered to the Company (as determined in accordance with the notice provisions hereof), an “*Exercise Date*”). Within one (1) Trading Day following the Exercise Date, the Holder shall deliver to the Company payment of the Exercise Price for the number of Warrant Shares as to which this Warrant is being exercised (which may take the form of a “cashless exercise” if so indicated in the Exercise Notice and if a “cashless exercise” may occur at such time pursuant to Section 9 below, in which case no cash payment shall be required). The Holder shall not be required to deliver the original Warrant in order to effect an exercise hereunder. No ink original Exercise Notice shall be required, nor shall any medallion guarantee (or any other type of guarantee or notarization) of any Exercise Notice be required. Execution and delivery of the Exercise Notice shall have the same effect as cancellation of the original Warrant and issuance of a New Warrant evidencing the right to purchase the remaining number of Warrant Shares (if any).

4. Delivery of Warrant Shares.

(a) The Company shall cause the Warrant Shares purchased hereunder to be transmitted by the Company’s transfer agent to the Holder by (i) provided that the Company’s transfer agent is participating in The Depository Trust Company (“*DTC*”) Fast Automated Securities Transfer Program, by crediting the Holder’s or its designee’s balance account with DTC through its Deposit/Withdrawal at Custodian system, or (ii) if the Company’s transfer agent is not participating in the DTC Fast Automated Securities Transfer Program, or if this Warrant is being exercised via cashless exercise, by issuing and delivering (via reputable overnight courier) to the address as specified in the Exercise Notice, a certificate, registered in the name of the Holder or its designee, in each case by the date that is two (2) Trading Days after the Exercise Date (the “*Warrant Share Delivery Date*”); provided, that the Holder delivers the payment to the Company of the aggregate Exercise Price with respect to the Exercise Notice (other than in the case of a cashless exercise) within one (1) Trading Day following the date of Exercise Date; provided, further, that if the Holder fails to deliver such payment within one (1) Trading Day following the Exercise Date, such Warrant Share Delivery Date shall instead become the first Trading Day following the delivery of such payment. Upon the Exercise Date, the Holder shall be deemed for all corporate purposes to have become the holder of record of the Warrant Shares with respect to which this Warrant has been exercised, irrespective of the date of delivery of the Warrant Shares; provided payment of the aggregate Exercise Price (other than in the case of a cashless exercise) is received within one (1) Trading Day following the Exercise Date. While this Warrant remains outstanding, the Company shall use a transfer agent that participates in the DTC Fast Automated Securities Transfer Program.

(b) If by the close of the Warrant Share Delivery Date, the Company fails to deliver to the Holder a certificate representing the required number of Warrant Shares (or such number of uncertificated Warrant Shares) in the manner required pursuant to Section 4(a), and if after such second (2nd) Trading Day and prior to the receipt of such Warrant Shares, the Holder purchases (in an open market transaction or otherwise) shares of Common Stock to

deliver in satisfaction of a sale by the Holder of the Warrant Shares which the Holder anticipated receiving upon such exercise (a “Buy-In”), then the Company shall, within two (2) Trading Days after the Holder’s request and in the Holder’s sole discretion, either (1) pay in cash to the Holder an amount equal to the Holder’s total purchase price (including brokerage commissions, if any) for the shares of Common Stock so purchased, at which point the Company’s obligation to deliver such Warrant Shares shall terminate or (2) promptly honor its obligation to deliver to the Holder a certificate or certificates representing such Warrant Shares (or such Warrant Shares in uncertificated form) and pay cash to the Holder in an amount equal to the excess (if any) of Holder’s total purchase price (including brokerage commissions, if any) for the shares of Common Stock so purchased in the Buy-In over the product of (A) the number of shares of Common Stock purchased in the Buy-In, times (B) the closing bid price of a share of Common Stock on the Exercise Date.

(c) In addition to any other rights available to the Holder, if the Company fails for any reason to deliver to the Holder the Warrant Shares subject to an Exercise Notice by the Warrant Share Delivery Date, the Company shall pay to the Holder, in cash, as liquidated damages and not as a penalty, for each \$1,000 of Warrant Shares subject to such exercise (based on the VWAP of the Common Stock on the date of the applicable Exercise Notice), \$10 per Trading Day (increasing to \$20 per Trading Day on the fifth Trading Day after such liquidated damages begin to accrue) for each Trading Day after such Warrant Share Delivery Date until such Warrant Shares are delivered or Holder rescinds such exercise.

(d) To the extent permitted by law, the Company’s obligations to issue and deliver Warrant Shares in accordance with and subject to the terms hereof (including the limitations set forth in Section 14 below) are absolute and unconditional, irrespective of any action or inaction by the Holder to enforce the same, any waiver or consent with respect to any provision hereof, the recovery of any judgment against any Person or any action to enforce the same, or any setoff, counterclaim, recoupment, limitation or termination, or any breach or alleged breach by the Holder or any other Person of any obligation to the Company or any violation or alleged violation of law by the Holder or any other Person, and irrespective of any other circumstance that might otherwise limit such obligation of the Company to the Holder in connection with the issuance of Warrant Shares. Nothing herein shall limit the Holder’s right to pursue any other remedies available to it hereunder, at law or in equity including, without limitation, a decree of specific performance and/or injunctive relief with respect to the Company’s failure to timely deliver certificates representing the Warrant Shares (or uncertificated Warrant Shares) as required pursuant to the terms hereof.

5. Charges, Taxes and Expenses. Issuance and delivery of certificates for Warrant Shares (or uncertificated Warrant Shares) issuable upon exercise of this Warrant shall be made without charge to the Holder for any issue or transfer tax, transfer agent fee or other incidental tax or expense in respect of the issuance of such certificates (or uncertificated shares of Common Stock), all of which taxes and expenses shall be paid by the Company; *provided, however*, that the Company shall not be required to pay any tax that may be payable in respect of any transfer involved in the registration of any certificates for Warrant Shares (or uncertificated Warrant Shares) or the Warrants in a name other than that of the Holder or an Affiliate thereof. The Holder shall be responsible for all other tax liability that may arise as a result of holding or transferring this Warrant or receiving Warrant Shares upon exercise hereof.

6. Replacement of Warrant. If this Warrant is mutilated, lost, stolen or destroyed, the Company shall issue or cause to be issued in exchange and substitution for and upon cancellation hereof, or in lieu of and substitution for this Warrant, a New Warrant, but only upon

receipt of evidence reasonably satisfactory to the Company of such loss, theft or destruction (in such case) and, in each case, a customary and reasonable indemnity, if requested by the Company, but without any requirement to post a surety bond. Applicants for a New Warrant under such circumstances shall also comply with such other reasonable regulations and procedures and pay such other reasonable third-party costs as the Company may prescribe. If a New Warrant is requested as a result of a mutilation of this Warrant, then the Holder shall deliver such mutilated Warrant to the Company as a condition precedent to the Company's obligation to issue the New Warrant.

7. Reservation of Warrant Shares. The Company covenants that it will at all times reserve and keep available out of the aggregate of its authorized but unissued and otherwise unreserved Common Stock, solely for the purpose of enabling it to issue Warrant Shares upon exercise of this Warrant as herein provided, the number of Warrant Shares that are initially issuable and deliverable upon the exercise of this entire Warrant, free from preemptive rights or any other contingent purchase rights of persons other than the Holder (taking into account the adjustments and restrictions of Section 8). The Company covenants that all Warrant Shares so issuable and deliverable shall, upon issuance and the payment of the applicable Exercise Price in accordance with the terms hereof, be duly and validly authorized, issued and fully paid and nonassessable. The Company will take all such action as may be reasonably necessary to assure that such shares of Common Stock may be issued as provided herein without violation of any applicable law or regulation, or of any requirements of any securities exchange or automated quotation system upon which the Common Stock may be listed.

8. Certain Adjustments. The Exercise Price and number of Warrant Shares issuable upon exercise of this Warrant are subject to adjustment from time to time as set forth in this Section 8.

(a) Stock Dividends and Splits. If the Company, at any time while this Warrant is outstanding, (i) pays a stock dividend on its Common Stock or otherwise makes a distribution on any class of capital stock that is payable in shares of Common Stock, (ii) subdivides its outstanding shares of Common Stock into a larger number of shares, (iii) combines its outstanding shares of Common Stock into a smaller number of shares or (iv) issues by reclassification of shares of Common Stock any shares of capital of the Company, then in each such case the Exercise Price shall be multiplied by a fraction, the numerator of which shall be the number of shares of Common Stock outstanding immediately before such event and the denominator of which shall be the number of shares of Common Stock outstanding immediately after such event. Any adjustment made pursuant to clause (i) of this paragraph shall become effective upon the record date for the determination of stockholders entitled to receive such dividend or distribution, and any adjustment pursuant to clause (ii), (iii) or (iv) of this paragraph shall become effective upon the effective date of such subdivision, combination or reclassification.

(b) Pro Rata Distributions. If the Company, at any time while this Warrant is outstanding, distributes to all holders of Common Stock for no consideration (i) evidences of its indebtedness, (ii) any security (other than a distribution of Common Stock covered by the preceding paragraph) or (iii) rights or warrants to subscribe for or purchase any security, or (iv) any other asset (in each case, "*Distributed Property*"), then, upon any exercise of this Warrant that occurs after the record date fixed for determination of stockholders entitled to receive such distribution, the Holder shall be entitled to receive, in addition to the Warrant Shares otherwise issuable upon such exercise (if applicable), the Distributed Property that such Holder would have been entitled to receive in respect of such number of Warrant Shares had the Holder been the record holder of such Warrant Shares on such record date without regard to any limitation on exercise contained therein.

(c) **Fundamental Transactions.** If, at any time while this Warrant is outstanding (i) the Company, directly or indirectly, in one or more related transactions, effects any merger or consolidation of the Company with or into another Person, in which the Company is not the survivor or the stockholders of the Company immediately prior to such merger or consolidation do not own, directly or indirectly, at least 50% of the voting securities of the surviving entity, (ii) the Company, directly or indirectly, effects any sale of all or substantially all of its assets or a majority of its Common Stock is acquired by a third party, in each case, in one or a series of related transactions, (iii) any direct or indirect purchase offer, tender offer or exchange offer (whether by the Company or another Person) is completed pursuant to which holders of Common Stock are permitted to sell, tender or exchange their shares for other securities, cash or property and has been accepted by holders of 50% or more of the outstanding Common Stock, or (iv) the Company, directly or indirectly, in one or more related transactions effects any reclassification, reorganization or recapitalization of the Common Stock or any compulsory share exchange pursuant to which the Common Stock is effectively converted into or exchanged for other securities, cash or property (other than as a result of a subdivision or combination of shares of Common Stock covered by Section 8(a) above) (in any such case, a “*Fundamental Transaction*”), then the Holder shall have the right thereafter to receive, upon exercise of this Warrant, the same amount and kind of securities, cash or property as it would have been entitled to receive upon the occurrence of such Fundamental Transaction if it had been, immediately prior to such Fundamental Transaction, the holder of the number of Warrant Shares then issuable upon exercise in full of this Warrant without regard to any limitations on exercise contained herein (the “*Alternate Consideration*”). The Company shall not effect any such Fundamental Transaction unless any successor to the Company, surviving entity or the corporation purchasing or otherwise acquiring such assets or other appropriate corporation or Person shall assume the obligation to deliver to the Holder, such Alternate Consideration as, in accordance with the foregoing provisions, the Holder may be entitled to receive, and the other obligations under this Warrant. Notwithstanding the foregoing, in the event of a Fundamental Transaction, other than one in which a Successor Entity that is a publicly traded corporation (whose stock is quoted or listed for trading on a national securities exchange, including, but not limited to, the New York Stock Exchange, the NYSE American, the Nasdaq Global Select Market, the Nasdaq Global Market or the Nasdaq Capital Market) assumes this Warrant such that the Warrant shall be exercisable for the publicly traded common stock of such Successor Entity, at the request of the Holder delivered before the thirtieth (30th) day after such Fundamental Transaction, the Company (or the Successor Entity) shall purchase this Warrant from the Holder by paying to the Holder, within five (5) Business Days after such request (or, if later, on the effective date of the Fundamental Transaction), an amount equal to the Black Scholes Value of the remaining unexercised portion of this Warrant on the effective date of such Fundamental Transaction, payable in cash; provided, however, that, if the Fundamental Transaction is not within the Company’s control, including not approved by the Company’s Board of Directors, Holder shall only be entitled to receive from the Company or any Successor Entity, as of the date of consummation of such Fundamental Transaction, the same type or form of consideration (and in the same proportion), at the Black Scholes Value of the unexercised portion of this Warrant, that is being offered and paid to the holders of Common Stock of the Company in connection with the Fundamental Transaction, whether that consideration be in the form of cash, stock or any combination thereof, or whether the holders of Common Stock are given the choice to receive from among alternative forms of consideration in connection with the Fundamental Transaction. The provisions of this paragraph (c) shall similarly apply to subsequent transactions analogous of a Fundamental Transaction type.

(d) Number of Warrant Shares. Simultaneously with any adjustment to the Exercise Price pursuant to paragraph (a) of this Section 8, the number of Warrant Shares that may be purchased upon exercise of this Warrant shall be increased or decreased proportionately, so that after such adjustment the aggregate Exercise Price payable hereunder for the increased or decreased number of Warrant Shares shall be the same as the aggregate Exercise Price in effect immediately prior to such adjustment.

(e) Calculations. All calculations under this Section 8 shall be made to the nearest cent or the nearest share, as applicable.

(f) Notice of Adjustments. Upon the occurrence of each adjustment pursuant to this Section 8, the Company at its expense will, at the written request of the Holder, promptly compute such adjustment, in good faith, in accordance with the terms of this Warrant and prepare a certificate setting forth such adjustment, including a statement of the adjusted Exercise Price and adjusted number or type of Warrant Shares or other securities issuable upon exercise of this Warrant (as applicable), describing the transactions giving rise to such adjustments and showing in detail the facts upon which such adjustment is based. Upon written request, the Company will promptly deliver a copy of each such certificate to the Holder and to the Company's transfer agent.

(g) Notice of Corporate Events. If, while this Warrant is outstanding, the Company (i) declares a dividend or any other distribution of cash, securities or other property in respect of its Common Stock, including, without limitation, any granting to its Common Stock holders of rights or warrants to subscribe for or purchase any capital stock of the Company or any subsidiary, (ii) authorizes or approves, enters into any agreement contemplating or solicits stockholder approval for any Fundamental Transaction or (iii) authorizes the voluntary dissolution, liquidation or winding up of the affairs of the Company, then, except if such notice and the contents thereof shall be deemed to constitute material non-public information, the Company shall deliver to the Holder a notice of such transaction at least ten (10) Trading Days prior to the applicable record or effective date on which a Person would need to hold Common Stock in order to participate in or vote with respect to such transaction; *provided, however*, that the failure to deliver such notice or any defect therein shall not affect the validity of the corporate action required to be described in such notice. To the extent that any notice provided hereunder constitutes, or contains, material, non-public information regarding the Company or any of its subsidiaries, the Company shall simultaneously file such notice with the Commission pursuant to a Current Report on Form 8-K.

9. Payment of Exercise Price. The Holder shall pay the Exercise Price in immediately available funds or, in its sole discretion, satisfy its obligation to pay the Exercise Price through a "cashless exercise" in accordance with this Section 9; *provided, however*, that if, on any Exercise Date there is not an effective registration statement registering, or no current prospectus available for, the issuance of the Warrant Shares or the resale of the Warrant Shares by the Holder, then the Holder may only exercise this Warrant through a "cashless exercise." If the Holder satisfies its obligation to pay the Exercise Price through a "cashless exercise," the Company shall issue to the Holder the number of Warrant Shares determined as follows:

$$X = Y [(A-B)/A]$$

where:

"X" equals the number of Warrant Shares to be issued to the Holder;

“Y” equals the total number of Warrant Shares with respect to which this Warrant is being exercised;

“A” equals the VWAP on the Trading Day immediately preceding the date of the applicable Exercise Notice; and

“B” equals the Exercise Price then in effect for the applicable Warrant Shares at the time of such exercise.

For purposes of this Warrant, “VWAP” means, for any date, the price determined by the first of the following clauses that applies: (a) if the Common Stock is then listed or quoted on a Trading Market, the daily volume weighted average price of the Common Stock for such date if a Trading Day (or, if not, the nearest preceding Trading Day) on such Trading Market as reported by Bloomberg L.P., (b) if the Common Stock is not then listed or quoted for trading on a Trading Market and if prices for the Common Stock are then reported in the “Pink Sheets” published by OTC Markets Group, Inc. (or a similar organization or agency succeeding to its functions of reporting prices), the most recent bid price per share of the Common Stock so reported, or (c) in all other cases, the fair market value of a share of Common Stock as determined by an independent appraiser selected in good faith by the purchasers of a majority in interest of the Warrant Shares then outstanding and reasonably acceptable to the Company, the fees and expenses of which shall be paid by the Company.

If Warrant Shares are issued in such a cashless exercise, the Company acknowledges and agrees that in accordance with Section 3(a)(9) of the Securities Act of 1933, as amended, the Warrant Shares shall take on the registered characteristics of the Warrants being exercised. In addition, for purposes of Rule 144 promulgated under the Securities Act, it is intended, understood and acknowledged that the Warrant Shares issued in a “cashless exercise” transaction shall be deemed to have been acquired by the Holder, and the holding period for the Warrant Shares shall be deemed to have commenced, on the original issuance date hereof (provided that the Commission continues to take the position that such treatment is proper at the time of such exercise).

10. No Fractional Shares. No fractional Warrant Shares will be issued in connection with any exercise of this Warrant. In lieu of any fractional shares that would otherwise be issuable, the number of Warrant Shares to be issued shall be rounded down to the next whole number and the Company shall pay the Holder in cash the fair market value (based on the VWAP) for any such fractional shares.

11. Notices. Any and all notices or other communications or deliveries hereunder (including, without limitation, any Exercise Notice) shall be in writing and shall be deemed given and effective on the earliest of (i) the date of transmission, if such notice or communication is delivered via facsimile or email at the facsimile number or email address specified below prior to 5:30 P.M., New York City time, on a Trading Day, (ii) the next Trading Day after the date of transmission, if such notice or communication is delivered via facsimile on a day that is not a Trading Day or later than 5:30 P.M., New York City time, on any Trading Day, (iii) the Trading Day following the date of mailing, if sent by nationally recognized overnight courier service specifying next business day delivery, or (iv) upon actual receipt by the Person to whom such notice is required to be given, if by hand delivery. All such notices and/or communications shall be sent to the Company at the address, facsimile number or email address listed on the signature page hereto and to the Holder at the address, facsimile number or email address listed on the Company records, or at such other address, facsimile number or email address as the Company or Holder may designate by two (2) Trading Days’ prior notice to the other Persons in accordance with this Section 11.

12. Warrant Agent. The Company shall serve as warrant agent under this Warrant. Upon thirty (30) days' notice to the Holder, the Company may appoint a new warrant agent. Any corporation into which the Company or any new warrant agent may be merged, any corporation resulting from any consolidation to which the Company or any new warrant agent shall be a party, or any corporation to which the Company or any new warrant agent transfers substantially all of its corporate trust or shareholders services business, shall be a successor warrant agent under this Warrant without any further act; provided, that the use of a third-party warrant agent shall not change any terms hereof. Any such successor warrant agent shall promptly cause notice of its succession as warrant agent to be emailed and mailed (by first class mail, postage prepaid) to the Holder at the Holder's last address as shown on the Warrant Register.

13. Certain Definitions. In addition to the terms defined elsewhere in this Warrant, the following terms have the following meanings:

(a) "*Affiliate*" means, with respect to any Person, any other Person that, directly or indirectly through one or more intermediaries, Controls, is controlled by or is under common control with such Person, as such terms are used in and construed under Rule 405 under the Securities Act. With respect to a Holder, any investment fund or managed account that is managed on a discretionary basis by the same investment manager as such Holder will be deemed to be an Affiliate of such Holder.

(b) "*Black Scholes Value*" means the value of this Warrant based on the Black-Scholes Option Pricing Model obtained from the "OV" function on Bloomberg determined as of the day immediately following the first public announcement of the applicable Fundamental Transaction, or, if the Fundamental Transaction is not publicly announced, the date the Fundamental Transaction is consummated, for pricing purposes and reflecting (i) a risk-free interest rate corresponding to the U.S. Treasury rate for a period equal to the remaining term of this Warrant as of such date of request, (ii) an expected volatility equal to the greater of 100% and the 100 day volatility obtained from the HVT function on Bloomberg as of the Trading Day immediately following the public announcement of the applicable Fundamental Transaction, (iii) the underlying price per share used in such calculation shall be the greater of (a) the highest VWAP during the five (5) Trading Days prior to the closing of the Fundamental Transaction and (b) the sum of the price per share being offered in cash, if any, plus the value of any non-cash consideration, if any, being offered in such Fundamental Transaction, (iv) a zero cost of borrow and (v) a 360 day annualization factor.

(c) "*Commission*" means the United States Securities and Exchange Commission.

(d) "*Control*" (including the terms "controlling", "controlled by" or "under common control with") means the possession, direct or indirect, of the power to direct or cause the direction of the management and policies of a Person, whether through the ownership of voting securities, by contract or otherwise.

(e) "*Parent Entity*" of a Person means an entity that, directly or indirectly, controls the applicable Person, including such entity whose common stock or equivalent equity security is quoted or listed on a Trading Market (or, if so elected by the

Holder, any other market, exchange or quotation system), or, if there is more than one such Person or such entity, the Person or such entity designated by the Holder or in the absence of such designation, such Person or entity with the largest public market capitalization as of the date of consummation of the Fundamental Transaction.

(f) “*Person*” means an individual, corporation, partnership, limited liability company, trust, business trust, association, joint stock company, joint venture, sole proprietorship, unincorporated organization, governmental authority or any other form of entity not specifically listed herein.

(g) “*Principal Trading Market*” means the Trading Market on which the Common Stock is primarily listed on and quoted for trading, which, as of the date hereof is the Nasdaq Global Market.

(h) “*Successor Entity*” means one or more Person or Persons (or, if so elected by the Holder, the Company or Parent Entity) formed by, resulting from or surviving any Fundamental Transaction or one or more Person or Persons (or, if so elected by the Holder, the Company or the Parent Entity) with which such Fundamental Transaction shall have been entered into.

(i) “*Trading Day*” means any day on which the Common Stock is traded on the Principal Trading Market.

(j) “*Trading Market*” means whichever of the New York Stock Exchange, the NYSE American, the Nasdaq Global Select Market, the Nasdaq Global Market, the Nasdaq Capital Market or the OTC Bulletin Board on which the Common Stock is listed or quoted for trading on the date in question.

14. Limitations on Exercise. Notwithstanding anything to the contrary contained herein, the number of Warrant Shares that may be acquired by the Holder upon any exercise of this Warrant (or otherwise in respect hereof) shall be limited to the extent necessary to ensure that, coincident with or following such exercise (or other issuance), the total number of shares of Common Stock then beneficially owned by the Holder (together with any other Persons whose beneficial ownership of Common Stock would be aggregated with the Holder’s for purposes of Section 13(d) or Section 16 of the Securities Exchange Act of 1934, as amended, and the applicable regulations of the Commission, including any “group” of which the Holder is a member (the foregoing, “*Attribution Parties*”)) does not exceed the Beneficial Ownership Limitation percent of the total number of then issued and outstanding shares of Common Stock (including for such purpose the shares of Common Stock issuable upon such exercise but excluding the number of shares that cannot be issued due to the operation of the limitation in this Section 11 or any other similar limitation on exercise to the extent that it limits the right to acquire underlying securities), it being acknowledged by the Holder that the Company is not representing to the Holder that such calculation is in compliance with Section 13(d) of the Securities Exchange Act of 1934, as amended, and that such Holder is solely responsible for any schedules required to be filed in accordance therewith. For purposes of the foregoing sentence, the number of shares of Common Stock beneficially owned by such Holder and its Attribution Parties shall include the number of shares of Common Stock issuable upon exercise of this Warrant subject to the Exercise Notice with respect to which such determination is being made, but shall exclude the number of shares of Common Stock which are issuable upon (A) exercise of the remaining, unconverted shares of Warrants beneficially owned by such Holder or any of its Attribution Parties, and (B) exercise or conversion of the unexercised or unconverted portion of

any other securities of the Company beneficially owned by such Holder or any of its Attribution Parties that, in the case of both (A) and (B), are subject to a limitation on conversion or exercise similar to the limitation contained herein. A determination as to any group status as contemplated above shall be determined in accordance with Section 13(d) of the Securities Exchange Act of 1934, as amended, and the rules and regulations promulgated thereunder. For purposes of this Section 11, in determining the number of outstanding shares of Common Stock, the Holder may rely on the number of outstanding shares of Common Stock as reflected in (x) the Company's most recent Form 10-Q or Form 10-K, as the case may be, (y) a more recent public announcement by the Company or (z) any other notice by the Company or the Company's transfer agent setting forth the number of shares of Common Stock outstanding. Upon the written request of the Holder, the Company shall within one Trading Day confirm orally and in writing to such Holder the number of shares of Common Stock then outstanding. [The Holder may not increase or decrease its Beneficial Ownership Limitation.]¹ [By written notice to the Company, which will not be effective until the sixty-first (61st) day after such notice is delivered to the Company, the Holder may increase or decrease the Beneficial Ownership Limitation to an amount not to exceed 9.99% of the number of shares of the Common Stock then outstanding.]²

The "*Beneficial Ownership Limitation*" shall initially be [4.99%]³ of the number of shares of the Common Stock then outstanding. Any purported delivery to any Holder or the Attribution Parties of a number of shares of Common Stock or any other security upon exercise of the Warrants shall be void and have no effect to the extent, but only to the extent, that before or after such delivery, the Holder and the Attribution Parties would have beneficial ownership of Common Stock or any other such class in excess of the Beneficial Ownership Limitation.

15. Miscellaneous.

No Rights as a Stockholder. The Holder, solely in such Person's capacity as a holder of this Warrant, shall not be entitled to vote or receive dividends or be deemed the holder of share capital of the Company for any purpose, nor shall anything contained in this Warrant be construed to confer upon the Holder, solely in such Person's capacity as the Holder of this Warrant, any of the rights of a stockholder of the Company or any right to vote, give or withhold consent to any corporate action (whether any reorganization, issue of stock, reclassification of stock, consolidation, merger, amalgamation, conveyance or otherwise), receive notice of meetings, receive dividends or subscription rights, or otherwise, prior to the issuance to the Holder of the Warrant Shares which such Person is then entitled to receive upon the due exercise of this Warrant. In addition, nothing contained in this Warrant shall be construed as imposing any liabilities on the Holder to purchase any securities (upon exercise of this Warrant or otherwise) or as a stockholder of the Company, whether such liabilities are asserted by the Company or by creditors of the Company.

Authorized Shares. (i) The Company covenants that during the period the Warrant is outstanding, it will reserve from its authorized and unissued Common Stock a sufficient number of shares to provide for the issuance of the Warrant Shares upon the exercise of any purchase rights under this Warrant. The Company further covenants that its issuance of this Warrant shall constitute full authority to its officers who are charged with the duty of executing stock

¹ *Insert if elected by the Holder prior to issuance of the Warrant.*

² *Insert unless the Holder elects not to have included prior to issuance of the Warrant.*

³ *Insert 4.99% unless the Holder elects a different percentage prior to issuance of the Warrant.*

certificates to execute and issue the applicable certificates for the Warrant Shares (or uncertificated Warrant Shares) upon the exercise of the purchase rights under this Warrant. The Company will take all such reasonable action as may be necessary to assure that such Warrant Shares may be issued as provided herein without violation of any applicable law or regulation, or of any requirements of the Principal Trading Market and such shares shall be listed for trading thereon. The Company covenants that all Warrant Shares which may be issued upon the exercise of the purchase rights represented by this Warrant will, upon exercise of the purchase rights represented by this Warrant, be duly authorized, validly issued, fully paid and nonassessable and free from all taxes, liens and charges created by the Company in respect of the issue thereof (other than taxes in respect of any transfer occurring contemporaneously with such issue).

(ii) Except and to the extent as waived or consented to by the Holder, the Company shall not by any action, including, without limitation, amend its certificate of incorporation or through any reorganization, transfer of assets, consolidation, merger, dissolution, issue or sale of securities or any other voluntary action, avoid or seek to avoid the observance or performance of any of the terms of this Warrant, but will at all times in good faith assist in the carrying out of all such terms and in the taking of all such actions as may be necessary or appropriate to protect the rights of Holder as set forth in this Warrant against impairment. Without limiting the generality of the foregoing, the Company will (a) not increase the par value of any Warrant Shares above the amount payable therefor upon such exercise immediately prior to such increase in par value, (b) take all such action as may be necessary or appropriate in order that the Company may validly and legally issue fully paid and nonassessable Warrant Shares upon the exercise of this Warrant, and (c) use commercially reasonable efforts to obtain all such authorizations, exemptions or consents from any public regulatory body having jurisdiction thereof as may be necessary to enable the Company to perform its obligations under this Warrant.

(iii) Before taking any action which would result in an adjustment in the number of Warrant Shares for which this Warrant is exercisable or in the Exercise Price, the Company shall obtain all such authorizations or exemptions thereof, or consents thereto, as may be necessary from any public regulatory body or bodies having jurisdiction thereof.

Successors and Assigns. Subject to applicable securities laws, this Warrant may be assigned by the Holder. This Warrant may not be assigned by the Company without the written consent of the Holder except to a successor in the event of a Fundamental Transaction. This Warrant shall be binding on and inure to the benefit of the Company and the Holder and their respective successors and assigns. Subject to the preceding sentence, nothing in this Warrant shall be construed to give to any Person other than the Company and the Holder any legal or equitable right, remedy or cause of action under this Warrant.

Amendment and Waiver. Except as otherwise provided herein, this Warrant may be amended only (i) in writing signed by the Company and the Holder, or their respective successors and assigns, or (ii) if the Company has obtained the written consent of the Holders of Warrants representing no less than a majority of the Warrant Shares obtainable upon exercise of the Warrants then outstanding, and in either case the Company may thereafter take any action herein prohibited, or omit to perform any act herein required to be performed by it, pursuant to the terms of any such amendment. Notwithstanding the foregoing, the number of Warrant Shares subject to this Warrant, the Expiration Date of this Warrant and the Exercise Price of this Warrant may not be amended, and the right to exercise this Warrant, and the exercise procedures set forth herein, may not be amended or waived, without the written consent of the Holder. Further, if any amendment to, or waiver of, this Warrant results in a disproportionate adverse effect to the

Holder or any group of holders of warrants, the written consent of the Holder, or group of holders, as the case may be, shall be required to effect such amendment or waiver. The Company shall give prompt written notice to the Holder of any amendment hereto or waiver hereunder that was effected without the Holder's written consent. No consideration shall be offered or paid to any Person to amend or consent to a waiver or modification of any provision of any Warrant unless the same consideration (other than the reimbursement of legal fees) also is offered to all other holders of Warrants.

Acceptance. Receipt of this Warrant by the Holder shall constitute acceptance of and agreement to all of the terms and conditions contained herein.

Governing Law: Jurisdiction. ALL QUESTIONS CONCERNING THE CONSTRUCTION, VALIDITY, ENFORCEMENT AND INTERPRETATION OF THIS WARRANT SHALL BE GOVERNED BY AND CONSTRUED AND ENFORCED IN ACCORDANCE WITH THE LAWS OF THE STATE OF NEW YORK WITHOUT REGARD TO THE PRINCIPLES OF CONFLICTS OF LAW THEREOF (OTHER THAN SECTIONS 5-1401 AND 5-1402 OF THE GENERAL OBLIGATIONS LAW). EACH OF THE COMPANY AND THE HOLDER HEREBY IRREVOCABLY SUBMITS TO THE EXCLUSIVE JURISDICTION OF THE STATE AND FEDERAL COURTS SITTING IN THE CITY OF NEW YORK, BOROUGH OF MANHATTAN, FOR THE ADJUDICATION OF ANY DISPUTE HEREUNDER OR IN CONNECTION HERewith OR WITH ANY TRANSACTION CONTEMPLATED HEREBY OR DISCUSSED HEREIN (INCLUDING WITH RESPECT TO THE ENFORCEMENT OF ANY OF THE TRANSACTION DOCUMENTS), AND HEREBY IRREVOCABLY WAIVES, AND AGREES NOT TO ASSERT IN ANY SUIT, ACTION OR PROCEEDING, ANY CLAIM THAT IT IS NOT PERSONALLY SUBJECT TO THE JURISDICTION OF ANY SUCH COURT. EACH OF THE COMPANY AND THE HOLDER HEREBY IRREVOCABLY WAIVES PERSONAL SERVICE OF PROCESS AND CONSENTS TO PROCESS BEING SERVED IN ANY SUCH SUIT, ACTION OR PROCEEDING BY MAILING A COPY THEREOF VIA REGISTERED OR CERTIFIED MAIL OR OVERNIGHT DELIVERY (WITH EVIDENCE OF DELIVERY) TO SUCH PERSON, IN THE CASE OF THE HOLDER, AT THE ADDRESS ON THE COMPANY RECORDS, AND FOR THE COMPANY, AT THE ADDRESS ON THE SIGNATURE PAGE HERETO, AND AGREES THAT SUCH SERVICE SHALL CONSTITUTE GOOD AND SUFFICIENT SERVICE OF PROCESS AND NOTICE THEREOF. NOTHING CONTAINED HEREIN SHALL BE DEEMED TO LIMIT IN ANY WAY ANY RIGHT TO SERVE PROCESS IN ANY MANNER PERMITTED BY LAW. EACH OF THE COMPANY AND THE HOLDER HEREBY WAIVES ALL RIGHTS TO A TRIAL BY JURY.

(g) Headings. The headings herein are for convenience only, do not constitute a part of this Warrant and shall not be deemed to limit or affect any of the provisions hereof.

(h) Severability. In case any one or more of the provisions of this Warrant shall be invalid or unenforceable in any respect, the validity and enforceability of the remaining terms and provisions of this Warrant shall not in any way be affected or impaired

thereby, and the Company and the Holder will attempt in good faith to agree upon a valid and enforceable provision which shall be a commercially reasonable substitute therefor, and upon so agreeing, shall incorporate such substitute provision in this Warrant.

[REMAINDER OF PAGE INTENTIONALLY LEFT BLANK]

IN WITNESS WHEREOF, the Company has caused this Warrant to be duly executed by its authorized officer as of the date first indicated above.

NOVAN, INC.

By: _____
Name:
Title:

Address:

4105 Hopson Rd
Morrisville, North Carolina 27560

Ex. II

SCHEDULE 1

FORM OF EXERCISE NOTICE

[To be executed by the Holder to purchase shares of Common Stock under the Warrant]

Ladies and Gentlemen:

(1) The undersigned is the Holder of Warrant No. _____ (the "*Warrant*") issued by Novan, Inc., a Delaware corporation (the "*Company*"). Capitalized terms used herein and not otherwise defined herein have the respective meanings set forth in the Warrant.

(2) The undersigned hereby exercises its right to purchase _____ Warrant Shares pursuant to the Warrant.

(3) The Holder intends that payment of the Exercise Price shall be made as (check one):

Cash Exercise

"Cashless Exercise" under Section 9 of the Warrant

(4) If the Holder has elected a Cash Exercise, the Holder shall pay the sum of \$ _____ in immediately available funds to the Company in accordance with the terms of the Warrant.

(5) Pursuant to this Exercise Notice, the Company shall deliver to the Holder Warrant Shares determined in accordance with the terms of the Warrant.

Dated: _____

Name of Holder: _____

By: _____

Name: _____

Title: _____

(Signature must conform in all respects to name of Holder as specified on the face of the Warrant)

Ex. II

SCHEDULE 2

FORM OF ASSIGNMENT

[To assign the foregoing Warrant, execute this form and supply the required information. Do not use this form to purchase shares.]

FOR VALUE RECEIVED, the foregoing Warrant and all rights evidenced thereby are hereby assigned to:

Name: _____ (Please print)

Address: _____ (Please print)

Phone Number: _____

E-mail Address: _____

Dated: _____

(Signature must conform in all respects to name of holder as specified on the face of the Warrant)

Address of Transferee

In the presence of:

WARRANT AGREEMENT

NOVAN, INC.

AND

AMERICAN STOCK TRANSFER & TRUST COMPANY, LLC,
AS WARRANT AGENT

THIS WARRANT AGREEMENT (this "*Agreement*"), dated as of January 9, 2018, is by and between NOVAN, INC., a Delaware corporation (the "*Company*"), and AMERICAN STOCK TRANSFER & TRUST COMPANY, LLC, a New York limited liability trust company, as Warrant Agent (the "*Warrant Agent*").

WHEREAS, the Company is engaged in a public offering (the "*Offering*") of shares (the "*Shares*," and each a "*Share*") of common stock, \$0.0001 par value per share (the "*Common Stock*"), of the Company, and accompanying warrants to purchase an aggregate of up to 10,000,000 shares of Common Stock at an exercise price of \$4.66 per share, subject to adjustment as described herein (the "*Warrants*," and each a "*Warrant*");

WHEREAS, the Company has filed with the Securities and Exchange Commission (the "*Commission*") a registration statement on Form S-3, No. 333-220761 (the "*Registration Statement*"), as well as a preliminary prospectus supplement filed with the Commission on January 4, 2018 (the "*Prospectus*"), for the registration, under the Securities Act of 1933, as amended (the "*Securities Act*"), of the offer and sale of the Shares, the accompanying Warrants and the Common Stock issuable upon exercise of the Warrants (the "*Warrant Shares*");

WHEREAS, the Company desires the Warrant Agent to act on behalf of the Company, and the Warrant Agent is willing to so act, in connection with the issuance, registration, transfer, exchange and exercise of the Warrants;

WHEREAS, the Company desires to provide for the form and provisions of the Warrants, the terms upon which they shall be issued and exercised, and the respective rights, limitation of rights, and immunities of the Company, the Warrant Agent, and the holders of the Warrants (each a "*Holder*"); and

WHEREAS, all acts and things have been done and performed which are necessary to make the Warrants, when executed on behalf of the Company and countersigned by or on behalf of the Warrant Agent, as provided herein, the valid, binding and legal obligations of the Company, and to authorize the execution and delivery of this Agreement.

NOW, THEREFORE, in consideration of the mutual agreements herein contained, the parties hereto agree as follows:

1. APPOINTMENT OF WARRANT AGENT. The Company hereby appoints the Warrant Agent to act as agent for the Company for the Warrants, and the Warrant Agent hereby accepts such appointment and agrees to perform the same in accordance with the terms and conditions set forth in this Agreement, including with respect to the issuance of shares of Common Stock upon proper exercise of the Warrants in accordance with the terms of this Agreement and the Form of Warrant.

2. WARRANTS.

2.1 Form of Warrants. Each Warrant shall be issued in registered form only and shall be in substantially the form attached hereto as **Exhibit A** (the “**Form of Warrant**”), the provisions of which are incorporated herein. Each Warrant shall be signed by, or bear the facsimile signature of, the President, Chief Executive Officer or Chief Financial Officer of the Company. In the event the person whose facsimile signature has been placed upon any Warrant shall have ceased to serve in the capacity in which such person signed the Warrant before such Warrant is issued, it may be issued with the same effect as if he or she had not ceased to be such at the date of issuance. To the extent of any inconsistency or conflict between the terms of the Form of Warrant and this Agreement, the terms of the Form of Warrant shall control.

2.2 Effect of Countersignature. Unless and until countersigned by the Warrant Agent pursuant to this Agreement, a Warrant shall be invalid and of no effect and may not be exercised by the Holder thereof.

2.3 Registration.

2.3.1 Warrant Register. The Warrant Agent shall maintain books (the “**Warrant Register**”), for the registration of original issuance and the registration of transfer of the Warrants. Upon the initial issuance of the Warrants, the Warrant Agent shall issue and register the Warrants in the names of the respective Holders thereof in such denominations and otherwise in accordance with instructions delivered to the Warrant Agent by the Company. The Warrant Agent shall register the transfer of all or any portion of this Warrant in the Warrant Register, upon surrender of the Warrant, with the Form of Assignment attached thereto as Schedule 2 hereto duly completed and signed, to it at the address listed on the signature page thereto. Upon any such registration or transfer, a new warrant to purchase Common Stock in substantially the form of a Warrant (any such new warrant, a “**New Warrant**”) evidencing the portion of this Warrant so transferred shall be issued to the transferee, and a New Warrant evidencing the remaining portion of this Warrant not so transferred, if any, shall be issued to the transferring Holder. The acceptance of the New Warrant by the transferee thereof shall be deemed the acceptance by such transferee of all of the rights and obligations in respect of the New Warrant that the Holder has in respect of this Warrant.

2.3.2 Registered Holder. Prior to due presentment for registration of transfer of any Warrant, the Company and the Warrant Agent may deem and treat the person in whose name such Warrant is registered in the Warrant Register (the “**Registered Holder**”) as the absolute owner of such Warrant and of each Warrant represented, for the purpose of any exercise thereof, and for all other purposes, absent actual notice to the contrary, which Registered Holder shall initially be Cede & Co., a nominee of the Depository Trust Company (“**DTC**”).

3. TERMS AND EXERCISE OF WARRANTS.

3.1 Exercise Price. Each Warrant shall, when countersigned by the Warrant Agent, entitle the Registered Holder thereof, subject to the provisions of such Warrant and of this Agreement, to purchase from the Company the number of shares of Common Stock of the Company stated therein, at the price of \$4.66 per share, subject to the adjustments provided therein.

3.2 Duration of Warrants.

3.2.1 Each Warrant may be exercised, in whole or in part, at any time during the period commencing on the date of issuance and ending at 5:30pm New York City time on January 9, 2022 (the “**Expiration Date**”).

3.2.2 Any Warrant not exercised on or before the applicable Expiration Date shall become void, and all rights thereunder and all rights in respect thereof under this Agreement shall cease at 5:30 p.m. New York City time on such Expiration Date.

3.3 Exercise of Warrants.

3.3.1 Payment. Subject to the provisions of the Warrant and this Agreement, a Warrant, when countersigned by the Warrant Agent, may be exercised by the Registered Holder thereof by submitting a duly executed election to purchase attached to the applicable Warrant, at the office of the Warrant Agent in the Borough of Brooklyn, City and State of New York or at the office of its successor as Warrant Agent, in the Borough of Brooklyn, City and State of New York, which may be done, upon submission of such election to purchase, by paying in full the Exercise Price for each whole share of Common Stock as to which the Warrant is exercised, in lawful money of the United States of America, by wire transfer or in good certified check or good bank draft payable to the order of the Warrant Agent or by Cashless Exercise solely in accordance with **Section 3.3.2** hereof. The Registered Holder shall not be required to deliver the original Warrant being exercised in order to effect an exercise hereunder. Upon delivery of an exercise notice, and provided that the full Exercise Price has been delivered as provided herein, the Holder shall be deemed for all corporate purposes to have become the holder of record of the Common Stock with respect to which such Warrant has been exercised, irrespective of the date such shares of Common Stock are credited to the Holder's DTC account or the date of delivery of the certificates evidencing such shares of Common Stock (as the case may be).

3.3.2 Cashless Exercise. The Registered Holder may, in accordance with Section 9 of the Form of Warrant, specify in the election notice that in lieu of making cash payment of the aggregate Exercise Price, it elects instead to receive upon such exercise the number of shares of Common Stock determined according to the formula set forth in Section 9 of the Form of Warrant attached hereto (a "**Cashless Exercise**"). Upon receipt of an exercise notice for a Cashless Exercise, the Warrant Agent shall deliver a copy of the exercise notice to the Company and request from the Company and the Company shall promptly calculate and transmit to the Warrant Agent in writing the number of Warrant Shares issuable in connection with such Cashless Exercise. The Warrant Agent shall have no obligation under this Agreement to calculate the number of Warrant Shares issuable in connection with a Cashless Exercise nor shall the Warrant agent have any duty or obligation to investigate or confirm whether the Company's determination of the number of Warrant Shares issuable upon such exercise, pursuant to this Section 3, is accurate or correct.

3.3.3 Issuance of Common Stock on Exercise. Assuming funds for exercise are paid on or before the date of receipt by the Warrant Agent of an exercise notice, then on or before the second trading day following the date upon which the Company has received an exercise notice for a Warrant, the Company shall cause its transfer agent to (i) provided that the transfer agent is participating in The Depository Trust Company ("**DTC**") Fast Automated Securities Transfer Program, credit such aggregate number of shares of Common Stock to which the Holder is entitled pursuant to such exercise to the Holder's or its designee's balance account with DTC through its Deposit/Withdrawal at Custodian System, or (ii) if the transfer agent is not participating in the DTC Fast Automated Securities Transfer Program, or if the Warrant is being exercised via cashless exercise, issue and deliver to the Holder, or at the Holder's instruction pursuant to the delivered exercise notice, the Holder's agent or designee, in each case pursuant to this clause (ii), sent by reputable overnight courier to the address specified in the applicable exercise notice, a certificate, registered in the Company's share register in the name of the Holder or its designee (as indicated in the applicable exercise notice), for the number of shares of Common Stock to which the Holder is entitled pursuant to such exercise.

3.3.4 Valid Issuance. All shares of Common Stock issued or issuable upon the proper exercise of a Warrant in conformity with this Agreement shall be validly issued, fully paid and nonassessable.

3.3.5 Share Delivery Failure. In the event that the Company shall fail, for any reason or for no reason, to issue to the Holder by the Warrant Share Delivery Date (as defined in the Form of Warrant) a certificate for the number of shares of Common Stock to which the Holder is entitled upon Holder's exercise of a Warrant, or credit the Holder's balance account with DTC for such number of shares of Common Stock to which the Holder is entitled upon the Holder's exercise of a Warrant (as the case may be) the Company and such Holder will be subject to the provisions set forth in Sections 4(b), (c) and (d) of the Form of Warrant.

3.4 Beneficial Ownership Limitation on Exercises. The Holder's right to exercise a Warrant, and the Warrant Agent and the Company's obligation to affect the exercise of any portion of a Warrant, shall be subject to the limitations set forth in Section 14 of the Form of Warrant. The Warrant Agent will not be responsible for calculating or reviewing any amount with respect to such limitation.

4. ADJUSTMENTS.

4.1 Stock Dividends.

4.1.1 Share Dividends and Splits. The number of shares of Common Stock issuable on exercise of each Warrant and the Exercise Price shall be subject to the provisions of Section 8(a) of the Form of Warrant.

4.1.2 Other Distributions. In the event the Company shall declare any distribution as contemplated in Section 8(b) of the Form of Warrant, the rights of the Holders and the obligations of the Company shall be governed in accordance with Section 8(b) of the Form of Warrants.

4.2 [Reserved].

4.3 [Reserved].

4.4 Fundamental Transactions. Warrants outstanding in the event of any Fundamental Transaction (as defined in the Form of Warrant) shall be governed in accordance with Section 4.4 of the Form of Warrant.

4.5 Calculations. All calculations under this **Section 4** shall be made in accordance with the provisions of the Form of Warrants. The Company shall make all calculations under this Agreement and shall direct the Warrant Agent accordingly. The Warrant Agent shall have no obligation under this Agreement to effect any calculations nor shall the Warrant Agent have any duty or obligation to investigate or confirm whether the Company's calculations are accurate or correct.

4.6 Notices of Changes in Warrant. Upon every adjustment of the Exercise Price or the number of shares issuable upon exercise of a Warrant, the Company shall give written notice thereof to the Warrant Agent, which notice shall state the Exercise Price resulting from such adjustment and the increase or decrease, if any, in the number of shares purchasable at such price upon the exercise of a Warrant, setting forth in reasonable detail the method of calculation and the facts upon which such calculation is based. Upon occurrence of any event specified in **Section 4.4**, the Company shall give written notice of the occurrence of such event to each Warrant holder, as provided in the Form of Warrant. Failure to give such notice, or any defect therein, shall not affect the legality or validity of such event.

4.7 No Fractional Shares. If, by reason of any adjustment made pursuant to this **Section 4**, the holder of any whole Warrant would be entitled, upon the exercise of such Warrant, to receive a fractional interest in a share, the Company shall, upon such exercise, rounded down to the nearest whole number, the number of shares of Common Stock to be issued to such holder in accordance with Section 10 of the Form of Warrant.

4.8 Form of Warrant. The Form of Warrant need not be changed because of any adjustment pursuant to this **Section 4**, and Warrants issued after such adjustment may state the same Exercise Price and the same number of shares as is stated in the Warrants initially issued pursuant to this Agreement.

5. TRANSFER AND EXCHANGE OF WARRANTS.

5.1 Registration of Transfer. The Warrant Agent shall register the transfer, from time to time, of any outstanding Warrant upon the Warrant Register, upon surrender of such Warrant for transfer, properly endorsed with signatures properly guaranteed and accompanied by appropriate instructions for transfer. Upon any such transfer, a new Warrant representing an equal aggregate number of Warrants shall be issued and the old Warrant shall be cancelled by the Warrant Agent. The Warrants so cancelled shall be delivered by the Warrant Agent to the Company from time to time upon request.

5.2 Procedure for Surrender of Warrants. Warrants may be surrendered to the Warrant Agent, together with a written request for exchange or transfer, and thereupon the Warrant Agent shall issue in exchange therefor one or more new Warrants as requested by the Registered Holder of the Warrants so surrendered, representing an equal aggregate number of Warrants.

5.3 Warrant Execution and Countersignature. The Warrant Agent is hereby authorized to countersign and to deliver, in accordance with the terms of this Agreement, the Warrants required to be issued pursuant to the provisions of this **Section 5**.

6. OTHER PROVISIONS RELATING TO RIGHTS OF HOLDERS OF WARRANTS.

6.1 No Rights as Stockholder. A Warrant does not entitle the Registered Holder thereof to any of the rights of a stockholder of the Company, including, without limitation, except as otherwise set forth herein or in any Warrant, the right to receive dividends, or other distributions, exercise any preemptive rights to vote or to consent or to receive notice as stockholders in respect of the meetings of stockholders or the election of directors of the Company or any other matter.

6.2 Lost, Stolen, Mutilated, or Destroyed Warrants. If any Warrant is lost, stolen, mutilated, or destroyed, the Warrant Agent may issue a new Warrant of like denomination, tenor, and date as the Warrant so lost, stolen, mutilated, or destroyed in accordance with Section 6 of the Form of Warrant.

6.3 Reservation of Common Stock. The Company shall at all times reserve and keep available a number of its authorized but unissued shares of Common Stock that shall be sufficient to permit the exercise in full of all outstanding Warrants issued pursuant to this Agreement.

7. CONCERNING THE WARRANT AGENT AND OTHER MATTERS.

7.1 Resignation, Consolidation, or Merger of Warrant Agent.

7.1.1 Appointment of Successor Warrant Agent. The Warrant Agent, or any successor hereafter appointed, may resign its duties and be discharged from all further duties and liabilities hereunder after giving sixty (60) days' notice in writing to the Company. If the office of the Warrant Agent becomes vacant by resignation or incapacity to act or otherwise, the Company shall appoint in writing a successor Warrant Agent in place of the Warrant Agent. If the Company shall fail to make such appointment within a period of thirty (30) days after it has been notified in writing of such resignation or incapacity by the Warrant Agent or by the holder of a Warrant (who shall, with such notice, submit his Warrant for inspection by the Company), then the holder of any Warrant may apply to the Supreme Court of the State of New York for the County of New York for the appointment of a successor Warrant Agent at the Company's cost. Any successor Warrant Agent, whether appointed by the Company or by such court, shall be a corporation in good standing in the State of New York and having its principal office in the Borough of Brooklyn, City and State of New York, and authorized under such laws to exercise corporate trust powers and subject to supervision or examination by federal or state authority. After appointment, any successor Warrant Agent shall be vested with all the authority, powers, rights, immunities, duties, and obligations of its predecessor Warrant Agent with like effect as if originally named as Warrant Agent hereunder, without any further act or deed; but if for any reason it becomes necessary

or appropriate, the predecessor Warrant Agent shall execute and deliver, at the expense of the Company, an instrument transferring to such successor Warrant Agent all the authority, powers, and rights of such predecessor Warrant Agent hereunder; and upon request of any successor Warrant Agent the Company shall make, execute, acknowledge, and deliver any and all instruments in writing for more fully and effectually vesting in and confirming to such successor Warrant Agent all such authority, powers, rights, immunities, duties, and obligations.

7.1.2 Notice of Successor Warrant Agent. In the event a successor Warrant Agent shall be appointed, the Company shall give notice thereof to the predecessor Warrant Agent and the transfer agent for the Common Stock not later than the effective date of any such appointment.

7.1.3 Merger or Consolidation of Warrant Agent. Any company into which the Warrant Agent may be merged or with which it may be consolidated or any corporation resulting from any merger or consolidation to which the Warrant Agent shall be a party shall be the successor Warrant Agent under this Agreement without any further act.

7.2 Fees and Expenses of Warrant Agent.

7.2.1 Remuneration. The Company agrees to pay the Warrant Agent remuneration for its services as such Warrant Agent hereunder, as the Company and the Warrant Agent may agree from time to time, and to reimburse the Warrant Agent upon demand for all expenditures that the Warrant Agent may reasonably incur in the execution of its duties hereunder.

7.2.2 Further Assurances. The Company agrees to perform, execute, acknowledge, and deliver or cause to be performed, executed, acknowledged, and delivered all such further and other acts, instruments, and assurances as may reasonably be required by the Warrant Agent for the carrying out or performing of the provisions of this Agreement.

7.3 Liability of Warrant Agent.

7.3.1 Reliance on Company Statement. Whenever in the performance of its duties under this Agreement, the Warrant Agent shall deem it necessary or desirable that any fact or matter be proved or established by the Company prior to taking or suffering any action hereunder, such fact or matter (unless other evidence in respect thereof be herein specifically prescribed) may be deemed to be conclusively proved and established by a statement signed by the President, Chief Executive Officer or Chief Financial Officer of the Company and delivered to the Warrant Agent. The Warrant Agent may rely upon such statement for any action taken or suffered in good faith by it pursuant to the provisions of this Agreement.

7.3.2 Indemnity. The Warrant Agent shall be liable hereunder only for its own gross negligence, willful misconduct or bad faith. The Company agrees to indemnify the Warrant Agent and save it harmless against any and all liabilities, including judgments, costs and reasonable counsel fees, for anything done or omitted by the Warrant Agent in the execution of this Agreement, except as a result of the Warrant Agent's gross negligence, willful misconduct or bad faith.

7.3.3 Exclusions. The Warrant Agent shall have no responsibility with respect to the validity of this Agreement or with respect to the validity or execution of any Warrant (except its countersignature thereof). The Warrant Agent shall not be responsible for any breach by the Company of any covenant or condition contained in this Agreement or in any Warrant. The Warrant Agent shall not be responsible to make any adjustments required under the provisions of **Section 4** hereof or responsible for the manner, method, or amount of any such adjustment or the ascertaining of the existence of facts that would require any such adjustment; nor shall it by any act hereunder be deemed to make any representation or warranty as to the authorization or reservation of any shares of Common Stock to be issued pursuant to this Agreement or any Warrant or as to whether any shares of Common Stock shall, when issued, be valid and fully paid and nonassessable.

7.4 Acceptance of Agency. The Warrant Agent hereby accepts the agency established by this Agreement and agrees to perform the same upon the terms and conditions herein set forth and among other things, shall account promptly (and in any event, by no later than 10:00 a.m. eastern time on the trading day following the Registered Holder's delivery of notice of exercise) to the Company with respect to Warrants exercised and concurrently account for, and shall promptly pay to the Company, all monies received by the Warrant Agent for the purchase of Common Stock through the exercise of the Warrants.

8. MISCELLANEOUS PROVISIONS.

8.1 Successors. All the covenants and provisions of this Agreement by or for the benefit of the Company or the Warrant Agent shall bind and inure to the benefit of their respective successors and assigns.

Notices. Any notice, statement or demand authorized by this Agreement to be given or made by the Warrant Agent or the Company shall be sufficiently given at the times specified in Section 11 of the Form of Warrant, addressed (until another address is filed in writing by the Company with the Warrant Agent), as follows:

Novan, Inc.
4105 Hopson Rd
Morrisville, North Carolina 27560
Attention: Chief Financial Officer

By Telefax (which constitutes notice): (919) 237-9212

with copies to (which shall not constitute notice):

Smith, Anderson, Blount, Dorsett, Mitchell & Jemigan, L.L.P.
150 Fayetteville Street, Suite 2300
Raleigh, NC 27601
Attention: Gerald Roach and Amy Batten

Any notice, statement or demand authorized by this Agreement to be given or made by the holder of any Warrant or by the Company to the Warrant Agent shall be sufficiently given at the times specified in Section 11 of the Form of Warrant, addressed as follows:

American Stock Transfer & Trust Company, LLC
6201 15th Avenue, 3rd Floor
Brooklyn, New York 11219
Attention: Corporate Actions

By Email (which shall not constitute notice): FRuggiero@amstock.com

8.2 Additional Rights. Notwithstanding the foregoing or anything else herein to the contrary, other than as expressly provided in **Section 3.3.5** hereof, if the Company is for any reason unable to issue and deliver the number of shares of Common Stock to which the Holder is entitled upon Holder's exercise of a Warrant, as required pursuant to the terms hereof, the Company shall have no obligation to pay to the Holder any cash or other consideration or otherwise net cash settle this Warrant.

8.3 Applicable Law. The validity, interpretation, and performance of this Agreement and of the Warrants shall be governed in all respects by the laws of the State of New York, without giving effect to conflicts of law principles that would result in the application of the substantive laws of another jurisdiction. The Company hereby agrees that any action, proceeding or claim against it arising out of or relating in any way to this Agreement shall be brought and enforced in the courts of the State of New York or the United States District Court for the Southern District of New York, and irrevocably submits to such jurisdiction, which jurisdiction shall be exclusive. The Company hereby waives any objection to such exclusive jurisdiction and that such courts represent an inconvenient forum.

8.4 Persons Having Rights under this Agreement. Nothing in this Agreement shall be construed to confer upon, or give to, any person or corporation other than the parties hereto and the Registered Holders of the Warrants any right, remedy, or claim under or by reason of this Agreement or of any covenant, condition, stipulation, promise, or agreement hereof. All covenants, conditions, stipulations, promises, and agreements contained in this Agreement shall be for the sole and exclusive benefit of the parties hereto and their successors and assigns and of the Registered Holders of the Warrants.

8.5 Examination of the Agreement. A copy of this Agreement shall be available at all reasonable times at the office of the Warrant Agent in the Borough of Brooklyn, City of New York and State of New York, for inspection by the Registered Holder of any Warrant. The Warrant Agent may require any such holder to submit his Warrant for inspection by it.

8.6 Counterparts. This Agreement may be executed in any number of original or facsimile counterparts and each of such counterparts shall for all purposes be deemed to be an original, and all such counterparts shall together constitute but one and the same instrument.

8.7 Effect of Headings. The section headings herein are for convenience only and are not part of this Agreement and shall not affect the interpretation thereof.

8.8 Amendments. This Agreement may be amended by the parties hereto without the consent of any Registered Holder for the purpose of curing any ambiguity, or curing, correcting or supplementing any defective provision contained herein or adding or changing any other provisions with respect to matters arising under this Agreement as the parties may deem necessary or desirable and that the parties deem shall not adversely affect the interest of the Registered Holders. All other modifications or amendments shall require the written consent of the Company and the Registered Holders as provided in the Form of Warrant. No consideration shall be offered by the Company to any Registered Holder in connection with a modification, amendment or waiver of this Agreement or any Warrant without also offering the same consideration to all Registered Holders.

8.9 Severability. This Agreement shall be deemed severable, and the invalidity or unenforceability of any term or provision hereof shall not affect the validity or enforceability of this Agreement or of any other term or provision hereof. Furthermore, in lieu of any such invalid or unenforceable term or provision, the parties hereto intend that there shall be added as a part of this Agreement a provision as similar in terms to such invalid or unenforceable provision as may be possible and be valid and enforceable.

[Signature page follows]

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be duly executed as of the date first above written.

COMPANY

NOVAN, INC.

By: /s/ William B. Hodges

Name: William B. Hodges

Title: CFO

WARRANT AGENT

AMERICAN STOCK TRANSFER & TRUST COMPANY, LLC

By: /s/ Michael Legregin

Name: Michael Legregin

Title: Senior Vice President

[SIGNATURE PAGE TO WARRANT AGREEMENT]

EXHIBIT A

[FORM OF WARRANT]

Warrant No. _____

Original Issue Date: _____, 2018

Novan, Inc., a Delaware corporation (the “*Company*”), hereby certifies that, for value received, _____ or its permitted registered assigns (the “*Holder*”), is entitled to purchase from the Company up to a total of _____ shares of common stock, \$0.0001 par value per share (the “*Common Stock*”), of the Company (each such share, a “*Warrant Share*” and all such shares, the “*Warrant Shares*”) at an exercise price per share equal to \$ _____ per share (as adjusted from time to time as provided in Section 8 herein, the “*Exercise Price*”), at any time and from time to time through and including 5:30 P.M., New York City time, on _____, 20__ (the “*Expiration Date*”), and subject to the following terms and conditions:

This Warrant (this “*Warrant*”) is one of a series of similar warrants issued pursuant to the Company’s Registration Statement on Form S-3 (No. 333-220761), as amended. All such Warrants are referred to herein, collectively, as the “*Warrants*.” American Stock Transfer & Trust Company, LLC shall serve as warrant agent (the “*Warrant Agent*”) under this Warrant.

1. Registration of Warrants. The Warrant Agent shall register this Warrant, upon records to be maintained by the Warrant Agent for that purpose (the “*Warrant Register*”), in the name of the record Holder (which shall be the initial Holder set forth above or, as the case may be, any registered assignee to which this Warrant is permissibly assigned hereunder) from time to time. The Company and the Warrant Agent may deem and treat the registered Holder of this Warrant as the absolute owner hereof for the purpose of any exercise hereof or any distribution to the Holder, and for all other purposes, absent actual notice to the contrary.

2. Registration of Transfers. The Warrant Agent shall register the transfer of all or any portion of this Warrant in the Warrant Register, upon surrender of this Warrant, with the Form of Assignment attached as Schedule 2 hereto duly completed and signed, to it at the address listed on the signature page hereto. Upon any such registration or transfer, a new warrant to purchase Common Stock in substantially the form of this Warrant (any such new warrant, a “*New Warrant*”) evidencing the portion of this Warrant so transferred shall be issued to the transferee, and a New Warrant evidencing the remaining portion of this Warrant not so transferred, if any, shall be issued to the transferring Holder. The acceptance of the New Warrant by the transferee thereof shall be deemed the acceptance by such transferee of all of the rights and obligations in respect of the New Warrant that the Holder has in respect of this Warrant.

3. Exercise and Duration of Warrants.

(a) All or any part of this Warrant shall be exercisable by the registered Holder in any manner permitted by Section 9 of this Warrant at any time and from time to time through and including 5:30 P.M. New York City time, on the Expiration Date. At 5:30 P.M., New York City time, on the Expiration Date, the portion of this Warrant not exercised prior thereto shall be and become void and of no value and this Warrant shall be terminated and no longer outstanding.

(b) The Holder may exercise this Warrant by delivering to the Warrant Agent, with a copy delivered concurrently to the Company, an exercise notice, in the form attached as Schedule 1 hereto (the “*Exercise Notice*”), completed and duly signed (the date on which the Exercise Notice is delivered (as determined in accordance with the notice provisions hereof), an “*Exercise Date*”). Upon delivery of the Exercise Notice, the Holder shall deliver to the Warrant Agent payment of the Exercise Price for the number of Warrant Shares as to which this Warrant is being exercised (which may take the form of a “cashless exercise” if so indicated in the Exercise Notice and if a “cashless exercise” may occur at such time pursuant to Section 9 below, in which case no cash payment shall be required) by wire transfer or in good certified check or good bank draft payable to the order of the Warrant Agent as provided on the Exercise Notice. The Holder shall not be required to deliver the original Warrant in order to effect an exercise hereunder. No ink original Exercise Notice shall be required, nor shall any medallion guarantee (or any other type of guarantee or notarization) of any Exercise Notice be required, except in the case of a transfer of ownership subject to Section 15(c) hereof. Execution and delivery of the Exercise Notice shall have the same effect as cancellation of the original Warrant and issuance of a New Warrant evidencing the right to purchase the remaining number of Warrant Shares (if any).

4. Delivery of Warrant Shares.

(a) The Company shall cause the Warrant Shares purchased hereunder to be transmitted by the Company’s transfer agent to the Holder by (i) provided that the Company’s transfer agent is participating in The Depository Trust Company (“DTC”) Fast Automated Securities Transfer Program, by crediting the Holder’s or its designee’s balance account with DTC through its Deposit/Withdrawal at Custodian system, or (ii) if the Company’s transfer agent is not participating in the DTC Fast Automated Securities Transfer Program, or if this Warrant is being exercised via cashless exercise, by issuing and delivering (via reputable overnight courier) to the address as specified in the Exercise Notice, a certificate, registered in the name of the Holder or its designee, in each case by the date that is two (2) Trading Days after the Exercise Date (the “*Warrant Share Delivery Date*”); provided, that the Holder delivers the payment to the Warrant Agent of the aggregate Exercise Price with respect to the Exercise Notice (other than in the case of a cashless exercise) on the Exercise Date; provided, further, that if the Holder fails to deliver such payment on the Exercise Date, such Warrant Share Delivery Date shall instead become the first Trading Day following the delivery of such payment. Upon the Exercise Date, the Holder shall be deemed for all corporate purposes to have become the holder of record of the Warrant Shares with respect to which this Warrant has been exercised, irrespective of the date of delivery of the Warrant Shares; provided payment of the aggregate Exercise Price (other than in the case of a cashless exercise) is received on the Exercise Date. While this Warrant remains outstanding, the Company shall use a transfer agent that participates in the DTC Fast Automated Securities Transfer Program.

(b) If by the close of the Warrant Share Delivery Date, the Company fails to deliver to the Holder a certificate representing the required number of Warrant Shares (or such number of uncertificated Warrant Shares) in the manner required pursuant to Section 4(a), and if after such second (2nd) Trading Day and prior to the receipt of such Warrant Shares, the Holder purchases (in an open market transaction or otherwise) shares of Common Stock to deliver in satisfaction of a sale by the Holder of the Warrant Shares which the Holder anticipated receiving upon such exercise (a “*Buy-In*”), then the Company shall, within two (2) Trading Days after the Holder’s request and in the Holder’s sole discretion, either (1) pay in cash to the Holder an amount equal to the Holder’s total purchase price (including brokerage commissions, if any) for the shares of Common Stock so purchased, at which point the Company’s obligation to deliver such Warrant Shares shall terminate or (2) promptly honor its obligation to deliver to the Holder a certificate or certificates representing such Warrant Shares (or such Warrant Shares in uncertificated form) and pay cash to the Holder in an amount equal to the excess (if any) of Holder’s total purchase price

(including brokerage commissions, if any) for the shares of Common Stock so purchased in the Buy-In over the product of (A) the number of shares of Common Stock purchased in the Buy-In, times (B) the closing bid price of a share of Common Stock on the Exercise Date.

(c) In addition to any other rights available to the Holder, if the Company fails for any reason to deliver to the Holder the Warrant Shares subject to an Exercise Notice by the Warrant Share Delivery Date, the Company shall pay to the Holder, in cash, as liquidated damages and not as a penalty, for each \$1,000 of Warrant Shares subject to such exercise (based on the VWAP of the Common Stock on the date of the applicable Exercise Notice), \$10 per Trading Day (increasing to \$20 per Trading Day on the fifth Trading Day after such liquidated damages begin to accrue) for each Trading Day after such Warrant Share Delivery Date until such Warrant Shares are delivered or Holder rescinds such exercise.

(d) To the extent permitted by law, the Company's obligations to issue and deliver Warrant Shares in accordance with and subject to the terms hereof (including the limitations set forth in Section 14 below) are absolute and unconditional, irrespective of any action or inaction by the Holder to enforce the same, any waiver or consent with respect to any provision hereof, the recovery of any judgment against any Person or any action to enforce the same, or any setoff, counterclaim, recoupment, limitation or termination, or any breach or alleged breach by the Holder or any other Person of any obligation to the Company or any violation or alleged violation of law by the Holder or any other Person, and irrespective of any other circumstance that might otherwise limit such obligation of the Company to the Holder in connection with the issuance of Warrant Shares. Nothing herein shall limit the Holder's right to pursue any other remedies available to it hereunder, at law or in equity including, without limitation, a decree of specific performance and/or injunctive relief with respect to the Company's failure to timely deliver certificates representing the Warrant Shares (or uncertificated Warrant Shares) as required pursuant to the terms hereof.

5. Charges, Taxes and Expenses. Issuance and delivery of certificates for Warrant Shares (or uncertificated Warrant Shares) issuable upon exercise of this Warrant shall be made without charge to the Holder for any issue or transfer tax, transfer agent fee or other incidental tax or expense in respect of the issuance of such certificates (or uncertificated shares of Common Stock), all of which taxes and expenses shall be paid by the Company; *provided, however*, that the Company shall not be required to pay any tax that may be payable in respect of any transfer involved in the registration of any certificates for Warrant Shares (or uncertificated Warrant Shares) or the Warrants in a name other than that of the Holder or an Affiliate thereof. The Holder shall be responsible for all other tax liability that may arise as a result of holding or transferring this Warrant or receiving Warrant Shares upon exercise hereof.

6. Replacement of Warrant. If this Warrant is mutilated, lost, stolen or destroyed, the Company shall instruct the Warrant Agent to issue or cause to be issued in exchange and substitution for and upon cancellation hereof, or in lieu of and substitution for this Warrant, a New Warrant, but only upon receipt of evidence reasonably satisfactory to the Company of such loss, theft or destruction (in such case) and, in each case, a customary and reasonable indemnity, if requested by the Company, but without any requirement to post a surety bond. Applicants for a New Warrant under such circumstances shall also comply with such other reasonable regulations and procedures and pay such other reasonable third-party costs as the Company may prescribe. If a New Warrant is requested as a result of a mutilation of this Warrant, then the Holder shall deliver such mutilated Warrant to the Company as a condition precedent to the Company's obligation to instruct the Warrant Agent to issue the New Warrant.

7. Reservation of Warrant Shares. The Company covenants that it will at all times reserve and keep available out of the aggregate of its authorized but unissued and otherwise unreserved Common Stock, solely for the purpose of enabling it to issue Warrant Shares upon exercise of this Warrant as herein provided, the number of Warrant Shares that are initially issuable and deliverable upon the exercise of this entire Warrant, free from preemptive rights or any other contingent purchase rights of persons other than the Holder (taking into account the adjustments and restrictions of Section 8). The Company covenants that all Warrant Shares so issuable and deliverable shall, upon issuance and the payment of the applicable Exercise Price in accordance with the terms hereof, be duly and validly authorized, issued and fully paid and nonassessable. The Company will take all such action as may be reasonably necessary to assure that such shares of Common Stock may be issued as provided herein without violation of any applicable law or regulation, or of any requirements of any securities exchange or automated quotation system upon which the Common Stock may be listed.

8. Certain Adjustments. The Exercise Price and number of Warrant Shares issuable upon exercise of this Warrant are subject to adjustment from time to time as set forth in this Section 8.

(a) Stock Dividends and Splits. If the Company, at any time while this Warrant is outstanding, (i) pays a stock dividend on its Common Stock or otherwise makes a distribution on any class of capital stock that is payable in shares of Common Stock, (ii) subdivides its outstanding shares of Common Stock into a larger number of shares, (iii) combines its outstanding shares of Common Stock into a smaller number of shares or (iv) issues by reclassification of shares of Common Stock any shares of capital of the Company, then in each such case the Exercise Price shall be multiplied by a fraction, the numerator of which shall be the number of shares of Common Stock outstanding immediately before such event and the denominator of which shall be the number of shares of Common Stock outstanding immediately after such event. Any adjustment made pursuant to clause (i) of this paragraph shall become effective upon the record date for the determination of stockholders entitled to receive such dividend or distribution, and any adjustment pursuant to clause (ii), (iii) or (iv) of this paragraph shall become effective upon the effective date of such subdivision, combination or reclassification.

(b) Pro Rata Distributions. If the Company, at any time while this Warrant is outstanding, distributes to all holders of Common Stock for no consideration (i) evidences of its indebtedness, (ii) any security (other than a distribution of Common Stock covered by the preceding paragraph) or (iii) rights or warrants to subscribe for or purchase any security, or (iv) any other asset (in each case, "*Distributed Property*"), then, upon any exercise of this Warrant that occurs after the record date fixed for determination of stockholders entitled to receive such distribution, the Holder shall be entitled to receive, in addition to the Warrant Shares otherwise issuable upon such exercise (if applicable), the Distributed Property that such Holder would have been entitled to receive in respect of such number of Warrant Shares had the Holder been the record holder of such Warrant Shares on such record date without regard to any limitation on exercise contained therein.

(c) Fundamental Transactions. If, at any time while this Warrant is outstanding (i) the Company, directly or indirectly, in one or more related transactions, effects any merger or consolidation of the Company with or into another Person, in which the Company is not the survivor or the stockholders of the Company immediately prior to such merger or consolidation do not own, directly or indirectly, at least 50% of the voting securities of the surviving entity, (ii) the Company, directly or indirectly, effects any sale of all or substantially all of its assets or a majority of its Common Stock is acquired by a third party, in each case, in one or a series of

related transactions, (iii) any direct or indirect purchase offer, tender offer or exchange offer (whether by the Company or another Person) is completed pursuant to which holders of Common Stock are permitted to sell, tender or exchange their shares for other securities, cash or property and has been accepted by holders of 50% or more of the outstanding Common Stock, or (iv) the Company, directly or indirectly, in one or more related transactions effects any reclassification, reorganization or recapitalization of the Common Stock or any compulsory share exchange pursuant to which the Common Stock is effectively converted into or exchanged for other securities, cash or property (other than as a result of a subdivision or combination of shares of Common Stock covered by Section 8(a) above) (in any such case, a “*Fundamental Transaction*”), then the Holder shall have the right thereafter to receive, upon exercise of this Warrant, the same amount and kind of securities, cash or property as it would have been entitled to receive upon the occurrence of such Fundamental Transaction if it had been, immediately prior to such Fundamental Transaction, the holder of the number of Warrant Shares then issuable upon exercise in full of this Warrant without regard to any limitations on exercise contained herein (the “*Alternate Consideration*”). The Company shall not effect any such Fundamental Transaction unless any successor to the Company, surviving entity or the corporation purchasing or otherwise acquiring such assets or other appropriate corporation or Person shall assume the obligation to deliver to the Holder, such Alternate Consideration as, in accordance with the foregoing provisions, the Holder may be entitled to receive, and the other obligations under this Warrant. Notwithstanding the foregoing, in the event of a Fundamental Transaction, other than one in which a Successor Entity that is a publicly traded corporation (whose stock is quoted or listed for trading on a national securities exchange, including, but not limited to, the New York Stock Exchange, the NYSE American, the Nasdaq Global Select Market, the Nasdaq Global Market or the Nasdaq Capital Market) assumes this Warrant such that the Warrant shall be exercisable for the publicly traded common stock of such Successor Entity, at the request of the Holder delivered before the thirtieth (30th) day after such Fundamental Transaction, the Company (or the Successor Entity) shall purchase this Warrant from the Holder by paying to the Holder, within five (5) Business Days after such request (or, if later, on the effective date of the Fundamental Transaction), an amount equal to the Black Scholes Value of the remaining unexercised portion of this Warrant on the effective date of such Fundamental Transaction, payable in cash; provided, however, that, if the Fundamental Transaction is not within the Company’s control, including not approved by the Company’s Board of Directors, Holder shall only be entitled to receive from the Company or any Successor Entity, as of the date of consummation of such Fundamental Transaction, the same type or form of consideration (and in the same proportion), at the Black Scholes Value of the unexercised portion of this Warrant, that is being offered and paid to the holders of Common Stock of the Company in connection with the Fundamental Transaction, whether that consideration be in the form of cash, stock or any combination thereof, or whether the holders of Common Stock are given the choice to receive from among alternative forms of consideration in connection with the Fundamental Transaction. The provisions of this paragraph (c) shall similarly apply to subsequent transactions analogous of a Fundamental Transaction type.

(d) Number of Warrant Shares. Simultaneously with any adjustment to the Exercise Price pursuant to paragraph (a) of this Section 8, the number of Warrant Shares that may be purchased upon exercise of this Warrant shall be increased or decreased proportionately, so that after such adjustment the aggregate Exercise Price payable hereunder for the increased or decreased number of Warrant Shares shall be the same as the aggregate Exercise Price in effect immediately prior to such adjustment.

(e) Calculations. All calculations under this Section 8 shall be made to the nearest cent or the nearest share, as applicable.

(f) Notice of Adjustments. Upon the occurrence of each adjustment pursuant to this Section 8, the Company will give written notice thereof to the Warrant Agent, which notice shall set forth such adjustment, including a statement of the adjusted Exercise Price and adjusted number or type of Warrant Shares or other securities issuable upon exercise of this Warrant (as applicable), describing the transactions giving rise to such adjustments and showing in detail the facts upon which such adjustment is based. The Company will promptly deliver a copy of each such notice to the Holder and to the Company's transfer agent.

(g) Notice of Corporate Events. If, while this Warrant is outstanding, the Company (i) declares a dividend or any other distribution of cash, securities or other property in respect of its Common Stock, including, without limitation, any granting to its Common Stock holders of rights or warrants to subscribe for or purchase any capital stock of the Company or any subsidiary, (ii) authorizes or approves, enters into any agreement contemplating or solicits stockholder approval for any Fundamental Transaction or (iii) authorizes the voluntary dissolution, liquidation or winding up of the affairs of the Company, then, except if such notice and the contents thereof shall be deemed to constitute material non-public information, the Company shall deliver to the Holder a notice of such transaction at least ten (10) Trading Days prior to the applicable record or effective date on which a Person would need to hold Common Stock in order to participate in or vote with respect to such transaction; *provided, however*, that the failure to deliver such notice or any defect therein shall not affect the validity of the corporate action required to be described in such notice. To the extent that any notice provided hereunder constitutes, or contains, material, non-public information regarding the Company or any of its subsidiaries, the Company shall simultaneously file such notice with the Commission pursuant to a Current Report on Form 8-K.

9. Payment of Exercise Price. The Holder shall pay the Exercise Price in immediately available funds or, in its sole discretion, satisfy its obligation to pay the Exercise Price through a "cashless exercise" in accordance with this Section 9; *provided, however*, that if, on any Exercise Date there is not an effective registration statement registering, or no current prospectus available for, the issuance of the Warrant Shares or the resale of the Warrant Shares by the Holder, then the Holder may only exercise this Warrant through a "cashless exercise." If the Holder satisfies its obligation to pay the Exercise Price through a "cashless exercise," the Company shall issue to the Holder the number of Warrant Shares determined as follows:

$$X = Y [(A-B)/A]$$

where:

"X" equals the number of Warrant Shares to be issued to the Holder;

"Y" equals the total number of Warrant Shares with respect to which this Warrant is being exercised;

"A" equals the VWAP on the Trading Day immediately preceding the date of the applicable Exercise Notice; and

"B" equals the Exercise Price then in effect for the applicable Warrant Shares at the time of such exercise.

For purposes of this Warrant, "VWAP" means, for any date, the price determined by the first of the following clauses that applies: (a) if the Common Stock is then listed or quoted on a Trading

Market, the daily volume weighted average price of the Common Stock for such date if a Trading Day (or, if not, the nearest preceding Trading Day) on such Trading Market as reported by Bloomberg L.P., (b) if the Common Stock is not then listed or quoted for trading on a Trading Market and if prices for the Common Stock are then reported in the "Pink Sheets" published by OTC Markets Group, Inc. (or a similar organization or agency succeeding to its functions of reporting prices), the most recent bid price per share of the Common Stock so reported, or (c) in all other cases, the fair market value of a share of Common Stock as determined by an independent appraiser selected in good faith by the purchasers of a majority in interest of the Warrant Shares then outstanding and reasonably acceptable to the Company, the fees and expenses of which shall be paid by the Company.

If Warrant Shares are issued in such a cashless exercise, the Company acknowledges and agrees that in accordance with Section 3(a)(9) of the Securities Act of 1933, as amended, the Warrant Shares shall take on the registered characteristics of the Warrants being exercised. In addition, for purposes of Rule 144 promulgated under the Securities Act, it is intended, understood and acknowledged that the Warrant Shares issued in a "cashless exercise" transaction shall be deemed to have been acquired by the Holder, and the holding period for the Warrant Shares shall be deemed to have commenced, on the original issuance date hereof (provided that the Commission continues to take the position that such treatment is proper at the time of such exercise).

10. No Fractional Shares. No fractional Warrant Shares will be issued in connection with any exercise of this Warrant. In lieu of any fractional shares that would otherwise be issuable, the number of Warrant Shares to be issued shall be rounded down to the next whole number and the Company shall pay the Holder in cash the fair market value (based on the VWAP) for any such fractional shares.

11. Notices. Any and all notices or other communications or deliveries hereunder (including, without limitation, any Exercise Notice) shall be in writing and shall be deemed given and effective on the earliest of (i) the date of transmission, if such notice or communication is delivered via facsimile at the facsimile number specified below prior to 5:30 P.M., New York City time, on a Trading Day, (ii) the next Trading Day after the date of transmission, if such notice or communication is delivered via facsimile on a day that is not a Trading Day or later than 5:30 P.M., New York City time, on any Trading Day, (iii) the Trading Day following the date of mailing, if sent by nationally recognized overnight courier service specifying next business day delivery, or (iv) upon actual receipt by the Person to whom such notice is required to be given, if by hand delivery. All such notices and/or communications shall be sent (i) to the Company at the address, facsimile number or email address listed on the signature page hereto, (ii) to the Holder at the address, facsimile number or email address listed on the Company records, or at such other address, facsimile number or email address as the Company or Holder may designate by two (2) Trading Days' prior notice to the other Persons in accordance with this Section 11, and (iii) to the Warrant Agent at American Stock Transfer & Trust Company, LLC, 6201 15th Avenue, 3rd Floor Brooklyn, New York 11219, Attention: Corporate Actions.

12. Warrant Agent. Upon thirty (30) days' notice to the Holder, the Company may appoint a new warrant agent. Any corporation into which the Company or any new warrant agent may be merged, any corporation resulting from any consolidation to which the Company or any new warrant agent shall be a party, or any corporation to which the Company or any new warrant agent transfers substantially all of its corporate trust or shareholders services business, shall be a successor warrant agent under this Warrant without any further act; provided, that the use of a third-party warrant agent shall not change any terms hereof. Any such successor warrant agent shall promptly cause notice of its succession as warrant agent to be emailed and mailed (by first class mail, postage prepaid) to the Holder at the Holder's last address as shown on the Warrant Register.

13. Certain Definitions. In addition to the terms defined elsewhere in this Warrant, the following terms have the following meanings:

(a) “*Affiliate*” means, with respect to any Person, any other Person that, directly or indirectly through one or more intermediaries, Controls, is controlled by or is under common control with such Person, as such terms are used in and construed under Rule 405 under the Securities Act. With respect to a Holder, any investment fund or managed account that is managed on a discretionary basis by the same investment manager as such Holder will be deemed to be an Affiliate of such Holder.

(b) “*Black Scholes Value*” means the value of this Warrant based on the Black-Scholes Option Pricing Model obtained from the “OV” function on Bloomberg determined as of the day immediately following the first public announcement of the applicable Fundamental Transaction, or, if the Fundamental Transaction is not publicly announced, the date the Fundamental Transaction is consummated, for pricing purposes and reflecting (i) a risk-free interest rate corresponding to the U.S. Treasury rate for a period equal to the remaining term of this Warrant as of such date of request, (ii) an expected volatility equal to the greater of 100% and the 100 day volatility obtained from the HVT function on Bloomberg as of the Trading Day immediately following the public announcement of the applicable Fundamental Transaction, (iii) the underlying price per share used in such calculation shall be the greater of (a) the highest VWAP during the five (5) Trading Days prior to the closing of the Fundamental Transaction and (b) the sum of the price per share being offered in cash, if any, plus the value of any non-cash consideration, if any, being offered in such Fundamental Transaction, (iv) a zero cost of borrow and (v) a 360 day annualization factor.

(c) “*Commission*” means the United States Securities and Exchange Commission.

(d) “*Control*” (including the terms “controlling”, “controlled by” or “under common control with”) means the possession, direct or indirect, of the power to direct or cause the direction of the management and policies of a Person, whether through the ownership of voting securities, by contract or otherwise.

(e) “*Parent Entity*” of a Person means an entity that, directly or indirectly, controls the applicable Person, including such entity whose common stock or equivalent equity security is quoted or listed on a Trading Market (or, if so elected by the Holder, any other market, exchange or quotation system), or, if there is more than one such Person or such entity, the Person or such entity designated by the Holder or in the absence of such designation, such Person or entity with the largest public market capitalization as of the date of consummation of the Fundamental Transaction.

(f) “*Person*” means an individual, corporation, partnership, limited liability company, trust, business trust, association, joint stock company, joint venture, sole proprietorship, unincorporated organization, governmental authority or any other form of entity not specifically listed herein.

(g) “*Principal Trading Market*” means the Trading Market on which the Common Stock is primarily listed on and quoted for trading, which, as of the date hereof is the Nasdaq Global Market.

(h) “*Successor Entity*” means one or more Person or Persons (or, if so elected by the Holder, the Company or Parent Entity) formed by, resulting from or surviving any Fundamental Transaction or one or more Person or Persons (or, if so elected by the Holder, the Company or the Parent Entity) with which such Fundamental Transaction shall have been entered into.

(i) “*Trading Day*” means any day on which the Common Stock is traded on the Principal Trading Market.

(j) “*Trading Market*” means whichever of the New York Stock Exchange, the NYSE American, the Nasdaq Global Select Market, the Nasdaq Global Market, the Nasdaq Capital Market or the OTC Bulletin Board on which the Common Stock is listed or quoted for trading on the date in question.

14. Limitations on Exercise. Notwithstanding anything to the contrary contained herein, the number of Warrant Shares that may be acquired by the Holder upon any exercise of this Warrant (or otherwise in respect hereof) shall be limited to the extent necessary to ensure that, coincident with or following such exercise (or other issuance), the total number of shares of Common Stock then beneficially owned by the Holder (together with any other Persons whose beneficial ownership of Common Stock would be aggregated with the Holder’s for purposes of Section 13(d) or Section 16 of the Securities Exchange Act of 1934, as amended, and the applicable regulations of the Commission, including any “group” of which the Holder is a member (the foregoing, “*Attribution Parties*”)) does not exceed the Beneficial Ownership Limitation percent of the total number of then issued and outstanding shares of Common Stock (including for such purpose the shares of Common Stock issuable upon such exercise but excluding the number of shares that cannot be issued due to the operation of the limitation in this Section 11 or any other similar limitation on exercise to the extent that it limits the right to acquire underlying securities), it being acknowledged by the Holder that the Company is not representing to the Holder that such calculation is in compliance with Section 13(d) of the Securities Exchange Act of 1934, as amended, and that such Holder is solely responsible for any schedules required to be filed in accordance therewith; provided, that this limitation on exercise shall not be applicable to any Person that beneficially owns 10.0% or more of the Company’s outstanding Common Stock immediately following the issuance of this Warrant, excluding DTC or its nominee. For purposes of the foregoing sentence, the number of shares of Common Stock beneficially owned by such Holder and its Attribution Parties shall include the number of shares of Common Stock issuable upon exercise of this Warrant subject to the Exercise Notice with respect to which such determination is being made, but shall exclude the number of shares of Common Stock which are issuable upon (A) exercise of the remaining, unconverted shares of Warrants beneficially owned by such Holder or any of its Attribution Parties, and (B) exercise or conversion of the unexercised or unconverted portion of any other securities of the Company beneficially owned by such Holder or any of its Attribution Parties that, in the case of both (A) and (B), are subject to a limitation on conversion or exercise similar to the limitation contained herein. A determination as to any group status as contemplated above shall be determined in accordance with Section 13(d) of the Securities Exchange Act of 1934, as amended, and the rules and regulations promulgated thereunder. For purposes of this Section 11, in determining the number of outstanding shares of Common Stock, the Holder may rely on the number of outstanding shares of Common Stock as reflected in (x) the Company’s most recent Form 10-Q or Form 10-K, as the case may be, (y) a

more recent public announcement by the Company or (z) any other notice by the Company or the Company's transfer agent setting forth the number of shares of Common Stock outstanding. Upon the written request of the Holder, the Company shall within one Trading Day confirm orally and in writing to such Holder the number of shares of Common Stock then outstanding. By written notice to the Company, which will not be effective until the sixty-first (61st) day after such notice is delivered to the Company, the Holder may increase or decrease the Beneficial Ownership Limitation to an amount not to exceed 9.99% of the number of shares of the Common Stock then outstanding.

The "*Beneficial Ownership Limitation*" shall initially be 4.99% of the number of shares of the Common Stock then outstanding. Any purported delivery to any Holder or the Attribution Parties of a number of shares of Common Stock or any other security upon exercise of the Warrants shall be void and have no effect to the extent, but only to the extent, that before or after such delivery, the Holder and the Attribution Parties would have beneficial ownership of Common Stock or any other such class in excess of the Beneficial Ownership Limitation.

15. Miscellaneous.

(a) No Rights as a Stockholder. The Holder, solely in such Person's capacity as a holder of this Warrant, shall not be entitled to vote or receive dividends or be deemed the holder of share capital of the Company for any purpose, nor shall anything contained in this Warrant be construed to confer upon the Holder, solely in such Person's capacity as the Holder of this Warrant, any of the rights of a stockholder of the Company or any right to vote, give or withhold consent to any corporate action (whether any reorganization, issue of stock, reclassification of stock, consolidation, merger, amalgamation, conveyance or otherwise), receive notice of meetings, receive dividends or subscription rights, or otherwise, prior to the issuance to the Holder of the Warrant Shares which such Person is then entitled to receive upon the due exercise of this Warrant. In addition, nothing contained in this Warrant shall be construed as imposing any liabilities on the Holder to purchase any securities (upon exercise of this Warrant or otherwise) or as a stockholder of the Company, whether such liabilities are asserted by the Company or by creditors of the Company.

(b) Authorized Shares. (i) The Company covenants that during the period the Warrant is outstanding, it will reserve from its authorized and unissued Common Stock a sufficient number of shares to provide for the issuance of the Warrant Shares upon the exercise of any purchase rights under this Warrant. The Company further covenants that its issuance of this Warrant shall constitute full authority to its officers who are charged with the duty of executing stock certificates to execute and issue the applicable certificates for the Warrant Shares (or uncertificated Warrant Shares) upon the exercise of the purchase rights under this Warrant. The Company will take all such reasonable action as may be necessary to assure that such Warrant Shares may be issued as provided herein without violation of any applicable law or regulation, or of any requirements of the Principal Trading Market and such shares shall be listed for trading thereon. The Company covenants that all Warrant Shares which may be issued upon the exercise of the purchase rights represented by this Warrant will, upon exercise of the purchase rights represented by this Warrant, be duly authorized, validly issued, fully paid and nonassessable and free from all taxes, liens and charges created by the Company in respect of the issue thereof (other than taxes in respect of any transfer occurring contemporaneously with such issue).

(ii) Except and to the extent as waived or consented to by the Holder, the Company shall not by any action, including, without limitation, amend its certificate of incorporation or through any reorganization, transfer of assets, consolidation, merger, dissolution,

issue or sale of securities or any other voluntary action, avoid or seek to avoid the observance or performance of any of the terms of this Warrant, but will at all times in good faith assist in the carrying out of all such terms and in the taking of all such actions as may be necessary or appropriate to protect the rights of Holder as set forth in this Warrant against impairment. Without limiting the generality of the foregoing, the Company will (a) not increase the par value of any Warrant Shares above the amount payable therefor upon such exercise immediately prior to such increase in par value, (b) take all such action as may be necessary or appropriate in order that the Company may validly and legally issue fully paid and nonassessable Warrant Shares upon the exercise of this Warrant, and (c) use commercially reasonable efforts to obtain all such authorizations, exemptions or consents from any public regulatory body having jurisdiction thereof as may be necessary to enable the Company to perform its obligations under this Warrant.

(iii) Before taking any action which would result in an adjustment in the number of Warrant Shares for which this Warrant is exercisable or in the Exercise Price, the Company shall obtain all such authorizations or exemptions thereof, or consents thereto, as may be necessary from any public regulatory body or bodies having jurisdiction thereof.

(c) Successors and Assigns. Subject to applicable securities laws, this Warrant may be assigned by the Holder. This Warrant may not be assigned by the Company without the written consent of the Holder except to a successor in the event of a Fundamental Transaction. This Warrant shall be binding on and inure to the benefit of the Company and the Holder and their respective successors and assigns. Subject to the preceding sentence, nothing in this Warrant shall be construed to give to any Person other than the Company and the Holder any legal or equitable right, remedy or cause of action under this Warrant.

(d) Amendment and Waiver. Except as otherwise provided herein, this Warrant may be amended only (i) in writing signed by the Company and the Holder, or their respective successors and assigns, or (ii) if the Company has obtained the written consent of the Holders of Warrants representing no less than a majority of the Warrant Shares obtainable upon exercise of the Warrants then outstanding, and in either case the Company may thereafter take any action herein prohibited, or omit to perform any act herein required to be performed by it, pursuant to the terms of any such amendment. Notwithstanding the foregoing, the number of Warrant Shares subject to this Warrant, the Expiration Date of this Warrant and the Exercise Price of this Warrant may not be amended, and the right to exercise this Warrant, and the exercise procedures set forth herein, may not be amended or waived, without the written consent of the Holder. Further, if any amendment to, or waiver of, this Warrant results in a disproportionate adverse effect to the Holder or any group of holders of warrants, the written consent of the Holder, or group of holders, as the case may be, shall be required to effect such amendment or waiver. The Company shall give prompt written notice to the Holder of any amendment hereto or waiver hereunder that was effected without the Holder's written consent. No consideration shall be offered or paid to any Person to amend or consent to a waiver or modification of any provision of any Warrant unless the same consideration (other than the reimbursement of legal fees) also is offered to all other holders of Warrants.

(e) Acceptance. Receipt of this Warrant by the Holder shall constitute acceptance of and agreement to all of the terms and conditions contained herein.

(f) Governing Law: Jurisdiction. ALL QUESTIONS CONCERNING THE CONSTRUCTION, VALIDITY, ENFORCEMENT AND INTERPRETATION OF THIS WARRANT SHALL BE GOVERNED BY AND CONSTRUED AND ENFORCED IN ACCORDANCE WITH THE LAWS OF THE STATE OF NEW YORK WITHOUT REGARD TO THE PRINCIPLES OF CONFLICTS OF LAW THEREOF (OTHER THAN SECTIONS 5-1401 AND 5-1402 OF THE GENERAL OBLIGATIONS LAW). EACH OF THE COMPANY AND THE HOLDER HEREBY IRREVOCABLY SUBMITS TO THE EXCLUSIVE JURISDICTION OF THE STATE AND FEDERAL COURTS SITTING IN THE CITY OF NEW YORK, BOROUGH OF MANHATTAN, FOR THE ADJUDICATION OF ANY DISPUTE HEREUNDER OR IN CONNECTION HERewith OR WITH ANY TRANSACTION CONTEMPLATED HEREBY OR DISCUSSED HEREIN (INCLUDING WITH RESPECT TO THE ENFORCEMENT OF ANY OF THE TRANSACTION DOCUMENTS), AND HEREBY IRREVOCABLY WAIVES, AND AGREES NOT TO ASSERT IN ANY SUIT, ACTION OR PROCEEDING, ANY CLAIM THAT IT IS NOT PERSONALLY SUBJECT TO THE JURISDICTION OF ANY SUCH COURT. EACH OF THE COMPANY AND THE HOLDER HEREBY IRREVOCABLY WAIVES PERSONAL SERVICE OF PROCESS AND CONSENTS TO PROCESS BEING SERVED IN ANY SUCH SUIT, ACTION OR PROCEEDING BY MAILING A COPY THEREOF VIA REGISTERED OR CERTIFIED MAIL OR OVERNIGHT DELIVERY (WITH EVIDENCE OF DELIVERY) TO SUCH PERSON, IN THE CASE OF THE HOLDER, AT THE ADDRESS ON THE COMPANY RECORDS, AND FOR THE COMPANY, AT THE ADDRESS ON THE SIGNATURE PAGE HERETO, AND AGREES THAT SUCH SERVICE SHALL CONSTITUTE GOOD AND SUFFICIENT SERVICE OF PROCESS AND NOTICE THEREOF. NOTHING CONTAINED HEREIN SHALL BE DEEMED TO LIMIT IN ANY WAY ANY RIGHT TO SERVE PROCESS IN ANY MANNER PERMITTED BY LAW. EACH OF THE COMPANY AND THE HOLDER HEREBY WAIVES ALL RIGHTS TO A TRIAL BY JURY.

(g) Headings. The headings herein are for convenience only, do not constitute a part of this Warrant and shall not be deemed to limit or affect any of the provisions hereof.

(h) Severability. In case any one or more of the provisions of this Warrant shall be invalid or unenforceable in any respect, the validity and enforceability of the remaining terms and provisions of this Warrant shall not in any way be affected or impaired thereby, and the Company and the Holder will attempt in good faith to agree upon a valid and enforceable provision which shall be a commercially reasonable substitute therefor, and upon so agreeing, shall incorporate such substitute provision in this Warrant.

[REMAINDER OF PAGE INTENTIONALLY LEFT BLANK]

IN WITNESS WHEREOF, the Company has caused this Warrant to be duly executed by its authorized officer as of the date first indicated above.

NOVAN, INC.

By: _____
Name:
Title:

Address:
4105 Hopson Rd
Morrisville, North Carolina 27560

WARRANT AGENT

AMERICAN STOCK TRANSFER & TRUST COMPANY, LLC

By: _____
Name:
Title:

SCHEDULE 1

FORM OF EXERCISE NOTICE

[To be executed by the Holder to purchase shares of Common Stock under the Warrant]

Ladies and Gentlemen:

(1) The undersigned is the Holder of Warrant No. _____ (the "*Warrant*") issued by Novan, Inc., a Delaware corporation (the "*Company*"). Capitalized terms used herein and not otherwise defined herein have the respective meanings set forth in the Warrant.

(2) The undersigned hereby exercises its right to purchase _____ Warrant Shares pursuant to the Warrant.

(3) The Holder intends that payment of the Exercise Price shall be made as (check one):

Cash Exercise

"Cashless Exercise" under Section 9 of the Warrant

(4) If the Holder has elected a Cash Exercise, the Holder shall pay the sum of \$_____ in immediately available funds to the Company in accordance with the terms of the Warrant.

(5) Pursuant to this Exercise Notice, the Company shall deliver to the Holder Warrant Shares determined in accordance with the terms of the Warrant.

***Checks should be payable to American Stock Transfer & Trust Company, LLC. Originals need to be mailed to American Stock Transfer & Trust Company, LLC, Attention: Corporate Actions. Wired funds for exercise should be wired to:

JPMORGAN CHASE BANK
ABA # 021000021
ACCT #530354616
ACCT NAME: AMERICAN STOCK TRANSFER & TRUST CO
AS AGENT FOR WARRANTS

ATTN: Corporate Action

Dated: _____

Name of Holder: _____

By: _____

Name: _____

Title: _____

(Signature must conform in all respects to name of Holder as specified on the face of the Warrant)

SCHEDULE 2

FORM OF ASSIGNMENT

[To assign the foregoing Warrant, execute this form and supply the required information. Do not use this form to purchase shares.]

FOR VALUE RECEIVED, the foregoing Warrant and all rights evidenced thereby are hereby assigned to:

Name: _____
(Please print)

Address: _____
(Please print)

Phone Number: _____

E-mail Address: _____

Dated: _____
(Signature must conform in all respects to name of holder as specified on the face of the Warrant)

Address of Transferee

In the presence of: _____

Smith, Anderson, Blount,
Dorsett, Mitchell & Jernigan, L.L.P.

OFFICES
Wells Fargo Capitol Center
150 Fayetteville Street, Suite 2300
Raleigh, North Carolina 27601

January 9, 2018

MAILING ADDRESS
P.O. Box 2611
Raleigh, North Carolina
27602-2611

TELEPHONE: (919) 821-1220
FACSIMILE: (919) 821-6800

Novan, Inc.
4105 Hopson Road
Morrisville, North Carolina 27560

Re: Novan, Inc.

Ladies and Gentlemen:

We have acted as counsel for Novan, Inc., a Delaware corporation (the "Company"), in connection with the sale and issuance by the Company of up to 10,000,000 shares of the Company's common stock, par value \$0.0001 (the "Shares"), and warrants (the "Warrants") to purchase up to an additional 10,000,000 shares of the Company's common stock (the "Warrant Shares") pursuant to the Registration Statement on Form S-3 (File No. 333-220761) (the "Registration Statement"), declared effective by the Securities and Exchange Commission (the "Commission") under the Securities Act of 1933, as amended (the "Act"), on October 10, 2017, including the related prospectus included in the Registration Statement (the "Base Prospectus"), a prospectus supplement dated January 4, 2018, filed with the Commission pursuant to Rule 424(b) promulgated under the Act (together with the Base Prospectus, the "Preliminary Prospectus"), and a prospectus supplement dated January 5, 2018, filed with the Commission pursuant to Rule 424(b) promulgated under the Act (together with the Base Prospectus, the "Prospectus"). The Shares and Warrants are being sold pursuant to an underwriting agreement dated January 5, 2018 by and between Piper Jaffray & Co., the representative of the underwriters named therein, and the Company (the "Underwriting Agreement").

This opinion is being furnished in accordance with the requirements of Item 601(b)(5)(i) of Regulation S-K.

We have examined the Registration Statement and the Prospectus, the Underwriting Agreement, the form of the Warrant, the Restated Certificate of Incorporation of the Company (the "Certificate of Incorporation"), the Amended and Restated Bylaws of the Company (the "Bylaws"), and such other documents and matters of law and fact as we, in our professional judgment, have deemed appropriate to render the opinions contained herein. In our examination, we have assumed the legal capacity of natural persons, the genuineness of all signatures, the authenticity of all documents submitted to us as originals, the conforming to originals of all documents submitted to us as certified copies or photocopies, and the authenticity of originals of such latter documents. With respect to certain facts, we have considered it appropriate to rely upon certificates or other comparable documents of public officials and officers or other appropriate representatives of the Company, without investigation or analysis of any underlying data contained therein.

In rendering the opinions set forth in paragraphs 2 and 3 below, (i) we have assumed that the exercise price of the Warrants at the time of exercise is equal to or greater than the par value of the Common Stock, and (ii) we express no opinion as to the extent that, notwithstanding the Company's current reservation of shares of Common Stock, future issuances of securities, including the Warrant Shares, of the Company and/or antidilution adjustments to outstanding securities of the Company, including the Warrants, may cause the Warrants to be exercisable for more shares of Common Stock than then remain authorized but unissued.

Based upon and subject to the foregoing and the further assumptions, limitations and qualifications hereinafter expressed, it is our opinion that:

1. With respect to the Shares to be issued by the Company, when the Company receives payment of the consideration specified in the Underwriting Agreement, and upon either (i) the countersigning of certificates representing the shares of Common Stock by a duly authorized signatory of the Company's registrar for Common Stock or (ii) the book entry of such shares by the transfer agent for the Company's Common Stock, the Shares will be validly issued, fully paid and nonassessable.

2. With respect to the Warrants to be issued by the Company, when (i) the Warrants have been duly executed and delivered by the Company or duly registered on the books of the warrant agent and registrar therefor in the name or on behalf of the holders, (ii) the Warrants have been issued in accordance with the terms of the Underwriting Agreement, and (iii) the Company receives payment of the consideration specified in the Underwriting Agreement, the Warrants will constitute valid and binding obligations of the Company, enforceable against the Company in accordance with their respective terms.

3. With respect to the Warrant Shares, when issued and paid for in accordance with the terms of the Warrants, and upon either (i) the countersigning of certificates representing the shares of Common Stock by a duly authorized signatory of the Company's registrar for Common Stock or (ii) the book entry of such shares by the transfer agent for the Company's Common Stock, the Warrant Shares will be validly issued, fully paid and nonassessable.

We express no opinion as to any matter other than as expressly set forth above, and no opinion, other than the opinions given herein, may be inferred or implied herefrom. Our opinions expressed herein are subject to (i) the effect of applicable bankruptcy, insolvency, reorganization, fraudulent conveyance, moratorium and similar laws affecting the enforcement of creditors' rights generally, (ii) the effect of general principles of equity (regardless of whether considered in a proceeding in equity or at law), which may, among other things, deny rights of specific performance, and (iii) public policy considerations that may limit the rights of parties to obtain certain remedies. We express no opinion with respect to (a) any provision for economic remedies to the extent deemed to constitute a penalty, (b) any provision of the Warrant requiring

or relating to an adjustment of the exercise price thereof in an amount that a court would determine in the circumstance and under applicable law to be commercially unreasonable or to the extent deemed a penalty or forfeiture, (c) any provision for exclusivity, election or cumulation of rights or remedies, (d) any provision purporting to authorize a party to act in its sole discretion, (e) any waiver of claims, defenses, rights granted by law, notice, opportunity for hearing or other procedural rights, (f) any provision requiring payment of attorneys' fees, (g) any provision requiring waivers or amendments to be made only in writing, (h) any consent to, or restriction upon, governing law, jurisdiction of courts or means of service of process, and (i) any provision regarding severability.

The opinions expressed herein are limited to matters governed by the Delaware General Corporation Law and, with respect to paragraph 2 above, the laws of the State of New York, and no opinion is expressed herein as to the laws of any other jurisdiction. Opinions involving matters arising under the laws of the State of New York are given by lawyers in our firm who are licensed to practice in that jurisdiction. The opinions expressed herein do not extend to compliance with federal or state securities laws relating to the offer or sale of the Shares, Warrants and Warrant Shares, and we express no opinion with respect to any law, rule or regulation that is applicable to any party to the Warrants or to the transactions contemplated thereby, solely because such law, rule or regulation is part of a regulatory regime applicable as a result of the specific assets or business operations of any such party.

We hereby consent to the reference to our firm under the caption "Legal Matters" in the Prospectus, and to the filing of this opinion letter as an exhibit to a current report of the Company on Form 8-K and thereby incorporated by reference in the Registration Statement. Such consent shall not be deemed to be an admission that our firm is within the category of persons whose consent is required under Section 7 of the Act or the regulations promulgated pursuant to the Act.

Our opinions herein are expressed as of the date hereof, and we undertake no obligation to advise you of any changes in applicable law or any other matters that may come to our attention after the date hereof that may affect our opinions expressed herein.

Sincerely yours,

SMITH, ANDERSON, BLOUNT, DORSETT,
MITCHELL & JERNIGAN, L.L.P.

/s/ Smith, Anderson, Blount, Dorsett, Mitchell & Jernigan, L.L.P.

Novan Announces Pricing of \$38.0 Million Offering of Common Stock and Warrants

MORRISVILLE, N.C. – January 5, 2018 – Novan, Inc. (“the Company” or “Novan”) (NASDAQ:NOVN) today announced the pricing of the Company’s underwritten offering of 10 million shares of its common stock and accompanying warrants to purchase up to 10 million shares of common stock with an exercise price of \$4.66. The shares and warrants are being sold at a public offering price of \$3.80 per share and accompanying warrant. The gross proceeds from this offering to Novan are expected to be approximately \$38.0 million, before deducting underwriting discounts and commissions and other estimated offering expenses payable by Novan, and excluding the exercise of any warrants. The offering is expected to close on or about January 9, 2018, subject to customary closing conditions.

Piper Jaffray & Co. is acting as the sole manager for the offering.

The securities described above are being offered by Novan pursuant to a shelf registration statement filed by Novan with the Securities and Exchange Commission (“SEC”) that became effective on October 10, 2017. A preliminary prospectus supplement related to the offering was filed with the SEC and is available on, and a final prospectus supplement will be filed with the SEC and available on, the SEC’s website located at <http://www.sec.gov>. Copies of the final prospectus supplement and the accompanying prospectus related to this offering, when available, may be obtained from Piper Jaffray & Co., by mail at Attention: Prospectus Department, 800 Nicollet Mall, J12S03, Minneapolis, MN 55402, by telephone at (800) 747-3924 or by email at prospectus@pjc.com.

This press release shall not constitute an offer to sell or the solicitation of an offer to buy these securities, nor shall there be any sale of these securities in any state or other jurisdiction in which such offer, solicitation or sale would be unlawful prior to the registration or qualification under the securities laws of any such state or other jurisdiction.

About Novan

Novan, Inc. is a clinical-stage biotechnology company focused on leveraging nitric oxide’s natural antiviral and immunomodulatory mechanisms of action to treat dermatological and oncovirus-mediated diseases. We believe that our ability to conveniently deploy nitric oxide in a solid form, on demand and in localized formulations allows us the potential to significantly improve patient outcomes in a variety of diseases.

Forward-Looking Statements

This press release contains forward-looking statements including, but not limited to, statements related to expectations about the completion of and proceeds from a public offering. Forward-looking statements are subject to a number of risks and uncertainties that could cause actual results to differ materially from our expectations, including, but not limited to, risks and uncertainties related to the satisfaction of customary closing conditions for the offering and other risks and uncertainties described in our annual report filed with the SEC on Form 10-K for the twelve months ended Dec. 31, 2016, and in our subsequent filings with the SEC. These forward-looking statements speak only as of the date of this press release, and Novan disclaims any intent or obligation to update these forward-looking statements to reflect events or circumstances after the date of such statements, except as may be required by law.

CONTACT:

(Investors)
Novan, Inc.
investors@novan.com

(Media)
Cari Green
Director, Corporate Communications and Administration
cgreen@novan.com

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