
**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): March 14, 2019

Bionano Genomics, Inc.
(Exact Name of Registrant as Specified in its Charter)

Delaware
(State or Other Jurisdiction
of Incorporation)

001-38613
(Commission
File Number)

26-1756290
(IRS Employer
Identification No.)

9640 Towne Centre Drive, Suite 100
San Diego, California
(Address of Principal Executive Offices)

92121
(Zip Code)

Registrant's telephone number, including area code: (858) 888-7600

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 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.

Aspire Common Stock Purchase Agreement and Registration Rights Agreement

On March 14, 2019, Bionano Genomics, Inc. (the “Company”), entered into a common stock purchase agreement (the “Purchase Agreement”) with Aspire Capital Fund, LLC, an Illinois limited liability company (“Aspire Capital”), which provides that, upon the terms and subject to the conditions and limitations set forth therein, Aspire Capital is committed to purchase up to an aggregate of \$10.0 million of shares of the Company’s common stock, par value \$0.0001 per share, at the Company’s request from time to time during a 30 month period. Upon execution of the Purchase Agreement, the Company agreed to sell to Aspire Capital 272,479 shares of common stock at \$3.67 per share for proceeds of \$1.0 million. Concurrently with entering into the Purchase Agreement, the Company also entered into a registration rights agreement with Aspire Capital (the “Registration Rights Agreement”), in which the Company agreed to file one or more registration statements, as permissible and necessary to register under the Securities Act of 1933, as amended (the “Securities Act”), registering the sale of the shares of the Company’s common stock that have been and may be issued to Aspire Capital under the Purchase Agreement.

Under the Purchase Agreement, after the Securities and Exchange Commission (the “SEC”) has declared effective the registration statement referred to above, on any trading day selected by the Company, the Company has the right, in its sole discretion, to present Aspire Capital with a purchase notice (each, a “Purchase Notice”), directing Aspire Capital (as principal) to purchase up to 60,000 shares of the Company’s common stock per business day, up to \$9.0 million of the Company’s common stock in the aggregate at a per share price (the “Purchase Price”) equal to the lesser of:

- the lowest sale price of the Company’s common stock on the purchase date; or
- the arithmetic average of the three (3) lowest closing sale prices for the Company’s common stock during the ten (10) consecutive trading days ending on the trading day immediately preceding the purchase date.

In addition, on any date on which the Company submits a Purchase Notice to Aspire Capital in an amount equal to 60,000 shares, the Company also has the right, in its sole discretion, to present Aspire Capital with a volume-weighted average price purchase notice (each, a “VWAP Purchase Notice”) directing Aspire Capital to purchase an amount of stock equal to up to 30% of the aggregate shares of the Company’s common stock traded on its principal market on the next trading day (the “VWAP Purchase Date”), subject to a maximum number of shares the Company may determine. The purchase price per share pursuant to such VWAP Purchase Notice is generally 97% of the volume-weighted average price for the Company’s common stock traded on its principal market on the VWAP Purchase Date.

The Purchase Agreement provides that the Company and Aspire Capital shall not effect any sales under the Purchase Agreement on any purchase date where the closing sale price of the Company’s common stock is less than \$0.25. There are no trading volume requirements or restrictions under the Purchase Agreement, and the Company will control the timing and amount of sales of the Company’s common stock to Aspire Capital. Aspire Capital has no right to require any sales by the Company, but is obligated to make purchases from the Company as directed by the Company in accordance with the Purchase Agreement. There are no limitations on use of proceeds, financial or business covenants, restrictions on future financing transactions, rights of first refusal, participation rights, penalties or liquidated damages in the Purchase Agreement. In consideration for entering into the Purchase Agreement, concurrently with the execution of the Purchase Agreement, the Company issued to Aspire Capital 69,444 shares of the Company’s common stock (the “Commitment Shares”). The Purchase Agreement may be terminated by the Company at any time, at its discretion, without any cost to the Company. Aspire Capital has agreed that neither it nor any of its agents, representatives and affiliates shall engage in any direct or indirect short-selling or hedging of the Company’s common stock during any time prior to the termination of the Purchase Agreement. Any proceeds the Company receives under the Purchase Agreement are expected to be used for working capital and general corporate purposes.

The foregoing is a summary description of certain terms of the Purchase Agreement and the Registration Rights Agreement and, by its nature, is incomplete. Copies of the Purchase Agreement and Registration Rights Agreement are filed herewith as Exhibits 10.1 and 4.1, respectively, to this Current Report on Form 8-K and are incorporated herein by reference. All readers are encouraged to read the entire text of the Purchase Agreement and the Registration Rights Agreement.

The issuance of the Commitment Shares and all other shares of the Company’s common stock that may be issued from time to time to Aspire Capital under the Purchase Agreement is exempt from registration under the

Innovatus Debt Facility

On March 14, 2019, the Company entered into a Loan and Security Agreement (the “Loan Agreement”) by and among Innovatus Life Sciences Lending Fund I, LP, a Delaware limited partnership (“Innovatus”), as collateral agent and the Lenders listed on Schedule 1.1 thereto, including East West Bank (the “Bank”, and together with the Lenders, the “Lenders”). Under the Loan Agreement, Innovatus, as a Lender, has agreed to make certain term loans to the Company in the aggregate principal amount of up to \$25,000,000 and Bank has agreed to make available to the Company a revolving line of credit in an amount not to exceed \$5,000,000 (the “Revolver”). Funding of the Term A-1 Loan of \$17,500,000 is expected to occur upon satisfaction of customary funding conditions as set forth in the Loan Agreement. The Company will be eligible to draw a Term A-2 Loan of \$2,500,000 and a Term B Loan of \$5,000,000 upon achievement of certain financial milestones. Availability under the Revolver is subject to customary limitations. The Company is required to make monthly interest payments for up to thirty-six (36) months, and at the end the interest-only period, the Company will be required to repay the term loans over a two-year period based on a twenty-four (24) month amortization schedule, with a final maturity date occurring on the fifth anniversary of the initial funding date.

The term loans bear interest at the floating per annum rate (based on a year of three hundred sixty five (365) days) equal to the sum of (a) the greater of (i) five and one-half percent (5.50%) and (ii) the variable rate of interest, per annum, most recently announced by Bank, as its “prime rate,” whether or not such announced rate is the lowest rate available from Bank, and (b) four and seventy-five hundredths percent (4.75%), of which 3.0% can be paid in-kind and added to the outstanding principal amount of the term loans until the second anniversary of the effective date. The term loans will be required to be repaid if the term loans are accelerated following an event of default. In addition, following the first anniversary of the effective date, the Company is permitted to prepay the term loans in full at any time upon seven (7) business days written notice to the Lenders, subject to the applicable Prepayment Fee (as defined below). Upon the earliest to occur of the maturity date, acceleration of the term loan, or prepayment of the term loan, the Company is required to make a final payment equal to the total term loan commitment multiplied by three and seventy-five hundredths percent (3.75%) (the “Final Fee”). Any prepayment of the term loans in full, whether mandatory or voluntary, must include an amount equal to the sum of (a) all outstanding principal of the loan plus accrued and unpaid interest thereon through the prepayment date, (b) the Final Fee, (c) the Lenders’ expenses and all other obligations that are due and payable to the Lenders, plus (d) a prepayment fee of (i) three percent (3%) if the term loans are paid in full on or before the first anniversary of the effective date, (ii) two percent (2%) if paid off after the first anniversary but on or before the second anniversary of the effective date and (iii) one percent (1%) if paid off after the second anniversary but on or before the third anniversary of the effective date (the “Prepayment Fee”). In connection with the funding of any of the Term Loans, the Company is obligated to make a facility fee payment equal to one and twenty-five hundredths of the funded amount of such term loan. In addition, the Company will issue warrants to Innovatus to purchase shares of the Company’s common stock. The warrants will be issued on the funding date of each tranche and will expire ten (10) years from such issue date. The warrant to be issued in connection with funding of the Term A-1 Loan will entitle the Lender to purchase up to 141,738 shares of the Company’s common stock and will have an exercise price of \$4.63 per share (the “Warrant Exercise Price”). The warrant to be issued in connection with funding of the Term A-2 Loan will entitle the Lender to purchase up to 20,248 shares of the Company’s common stock and will have an exercise price equal to the Warrant Exercise Price. The warrant to be issued in connection with funding of the Term B Loan will entitle the Lender to purchase up to 40,496 shares of the Company’s common stock and will have an exercise price equal to the Warrant Exercise Price.

The Company’s obligations under the Loan Agreement will be secured by a security interest in substantially all of the assets of the Company, including a security interest in the Company’s intellectual property. The Loan Agreement contains customary representations and covenants that, subject to exceptions and following funding of the Term A-1 Loan will restrict the Company’s ability to do the following things: declare dividends or redeem or repurchase equity interests; incur additional liens; make loans and investments; incur additional indebtedness; engage in mergers, acquisitions, and asset sales; transact with affiliates; undergo a change in control; add or change business locations; and engage in businesses that are not related to its existing business. Under the terms of the Loan Agreement, the Company is required to maintain minimum unrestricted cash in an account subject to a control agreement in favor of Innovatus, in an amount equal to (i) the greater of (a) three million dollars (\$3,000,000.00) or (b) the Company’s trailing three (3) months’ cash used to fund operating activities and investing activities, minus (ii) availability under

the Revolver; provided, however, that the cash balance in such aforementioned account shall not be less than two million dollars (\$2,000,000.00) at any given time.

The foregoing is a summary of the Loan Agreement and the warrants and is qualified in its entirety by reference to the complete text of the Loan Agreement and form of Warrant to Purchase Stock, which are filed as Exhibits 10.2 and 4.2, respectively, to this Current Report on Form 8-K and incorporated by reference herein.

Innovatus Common Stock Purchase Agreement and Registration Rights Agreement

In connection with the Loan Agreement, on March 14, 2019, the Company entered into a Common Stock Purchase Agreement (the “Innovatus Purchase Agreement”) with certain entities affiliated with Innovatus (the “Innovatus Investors”), pursuant to which the Company agreed to issue and sell 406,504 shares of common stock at \$3.69 per share for proceeds of \$1.5 million (the “Innovatus Shares”). There are no limitations on use of proceeds, financial or business covenants, restrictions on future financing transactions, rights of first refusal, participation rights, penalties or liquidated damages in the Innovatus Purchase Agreement. The issuance of the Innovatus Shares to the Innovatus Investors under the Innovatus Purchase Agreement is exempt from registration under the Securities Act, pursuant to the exemption for transactions by an issuer not involving any public offering under Section 4(a)(2) of the Securities Act.

Concurrently with entering into the Innovatus Purchase Agreement, the Company also entered into a registration rights agreement with the Innovatus Investors (the “Innovatus Registration Rights Agreement”), in which the Company agreed, upon written request from the Innovatus Investors at any time on or after October 1, 2019 (the “Registration Request”), to prepare and file with the SEC a registration statement to facilitate the sale and distribution of all or such portion of the Innovatus Shares as specified in the Registration Request. Notwithstanding the receipt of a Registration Request, the Company is not obligated to effect such registration statement (a) if within 30 days of receipt of the Registration Request, the Company gives the Innovatus Investors notice of the Company’s intention to make a public offering within 90 days, provided, however, that the Company shall not utilize this right more than once in any 12 month period and may not register other shares during such 90-day period; (b) if the Company furnishes to Holder a certificate signed by the Chairman of the Company’s Board of Directors (the “Board”) stating that in the good faith judgment of the Board, it would be seriously detrimental to the Company and its stockholders for such registration statement to be effected at such time, in which event the Company will have the right to defer the filing of the registration statement for a period of not more than 90 days after receipt of the Registration Request; provided, that such right to delay a request will be exercised by the Company not more than once in any 12-month period and provided that the Company shall not register any other of its shares during such 90-day period; (c) if the Company has, within the 12-month period preceding the date of the Registration Request, already effected one registration statement for the Innovatus Investors or (d) in any particular jurisdiction in which the Company would be required to qualify to do business or to execute a general consent to service of process in effecting such registration, qualification or compliance, unless the Company is already subject to service in such jurisdiction and except as may be required by the Securities Act. In addition, if at any time the foregoing registration statement is not effective and the Company proposes to file a registration statement under the Securities Act for sale to the public, the Innovatus Investors are entitled to notice of the registration and have the right to include their shares in the registration, subject to limitations that the underwriters may impose on the number of shares included in the offering.

The foregoing is a summary description of certain terms of the Innovatus Purchase Agreement and the Innovatus Registration Rights Agreement and, by its nature, is incomplete. Copies of the Innovatus Purchase Agreement and Innovatus Registration Rights Agreement are filed herewith as Exhibits 10.3 and 4.3, respectively, to this Current Report on Form 8-K and are incorporated herein by reference. All readers are encouraged to read the entire text of the Purchase Agreement and the Registration Rights Agreement.

Item 3.02 Unregistered Sales of Equity Securities.

Please see the disclosure set forth under Item 1.01, which is incorporated by reference into this Item 3.02.

Item 3.03 Material Modification to the Rights of Security Holders.

The Loan Agreement imposes restrictions on the Company's ability to declare dividends.

Item 9.01 Financial Statements and Exhibits.

(d) Exhibits

Exhibit No.	Description
4.1	<u>Registration Rights Agreement, dated March 14, 2019, between the Company and Aspire Capital Fund, LLC.</u>
4.2	<u>Form of Warrant to Purchase Common Stock for Innovatus.</u>
4.3	<u>Registration Rights Agreement, dated March 14, 2019, by and among the Company and the Innovatus Investors.</u>
10.1	<u>Common Stock Purchase Agreement, dated March 14, 2019, between the Company and Aspire Capital Fund, LLC.</u>
10.2	<u>Loan and Security Agreement, dated March 14, 2019, by and among the Company, Innovatus Life Sciences Lending Fund I, LP and the Lenders listed on Schedule 1.1 thereto.</u>
10.3	<u>Common Stock Purchase Agreement, dated March 14, 2019, by and among the Company and the Innovatus Investors.</u>

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.

Date: March 14, 2019

Bionano Genomics, Inc.

/s/ R. Erik Holmlin, Ph.D.

R. Erik Holmlin, Ph.D.

President and Chief Executive Officer
(Principal Executive Officer)

REGISTRATION RIGHTS AGREEMENT

REGISTRATION RIGHTS AGREEMENT (this “**Agreement**”), dated as of March 14, 2019, by and between **BIONANO GENOMICS, INC.**, a Delaware corporation (the “**Company**”), and **ASPIRE CAPITAL FUND, LLC**, an Illinois limited liability company (together with its permitted assigns, the “**Buyer**”). Capitalized terms used herein and not otherwise defined herein shall have the respective meanings set forth in the Common Stock Purchase Agreement by and between the parties hereto, dated as of the date hereof (as amended, restated, supplemented or otherwise modified from time to time, the “**Purchase Agreement**”).

WHEREAS:

A. Upon the terms and subject to the conditions of the Purchase Agreement, (i) the Company has agreed to issue to the Buyer, and the Buyer has agreed to purchase, up to Ten Million Dollars (\$10,000,000) of the Company’s common stock, par value \$0.0001 per share (the “**Common Stock**”), pursuant to Section 1 of the Purchase Agreement (such shares, the “**Purchase Shares**”), and (ii) the Company has agreed to issue to the Buyer such number of shares of Common Stock as is required pursuant to Section 4(e) of the Purchase Agreement (the “**Commitment Shares**”); and

B. To induce the Buyer to enter into the Purchase Agreement, the Company has agreed to provide certain registration rights under the Securities Act of 1933, as amended, and the rules and regulations thereunder, or any similar successor statute (collectively, the “**1933 Act**”), and applicable state securities laws.

NOW, THEREFORE, in consideration of the promises and the mutual covenants contained herein and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Company and the Buyer hereby agree as follows:

1. DEFINITIONS.

As used in this Agreement, the following terms shall have the following meanings:

a. “**Person**” means any person or entity including any corporation, a limited liability company, an association, a partnership, an organization, a business, an individual, a governmental or political subdivision thereof or a governmental agency.

b. “**Register**,” “**registered**,” and “**registration**” refer to a registration effected by preparing and filing one or more registration statements of the Company in compliance with the 1933 Act and pursuant to Rule 415 under the 1933 Act or any successor rule providing for offering securities on a continuous basis (“**Rule 415**”), and the declaration or ordering of effectiveness of such registration statement(s) by the U.S. Securities and Exchange Commission (the “**SEC**”).

c. “**Registrable Securities**” means (i) all of the Commitment Shares and Initial Purchase Shares and (ii) such number of additional Purchase Shares as reasonably determined by the Company, which may from time to time be, issued or issuable to the Buyer upon purchases of the Available Amount under the Purchase Agreement, and any shares of Common Stock issued or issuable with respect to the Purchase Shares, the Commitment Shares or the Purchase Agreement as a result of

any stock split, stock dividend, recapitalization, exchange or similar event, without regard to any limitation on purchases under the Purchase Agreement.

d. “**Registration Statement**” means a registration statement of the Company covering only the sale of the Registrable Securities.

2. REGISTRATION.

a. Mandatory Registration. The Company shall within fifteen (15) Business Days from the date hereof file with the SEC the Registration Statement. The Registration Statement shall register only the Registrable Securities and no other securities of the Company. Except as provided herein, the Buyer and its counsel shall have a reasonable opportunity to review and comment upon such Registration Statement or any amendment to such Registration Statement and any related prospectus prior to its filing with the SEC. The Buyer shall furnish all information reasonably requested by the Company for inclusion therein. The Company shall use its reasonable best efforts to have the Registration Statement or any amendment declared effective by the SEC as soon as reasonably practicable. Subject to Permitted Delays (as defined below) and Section 3(e), the Company shall use reasonable best efforts to keep the Registration Statement effective pursuant to Rule 415 promulgated under the 1933 Act and available for sales of all of the Registrable Securities at all times until the earlier of (i) the date as of which the Buyer may sell all of the Registrable Securities without restriction pursuant to Rule 144 promulgated under the 1933 Act (or successor thereto) or (ii) the date on which the Buyer shall have sold all the Registrable Securities and no Available Amount remains under the Purchase Agreement (the “**Registration Period**”). Except as contemplated in Section 3(e), and except with respect to the information furnished in writing to the Company by the Buyer expressly for use in connection with the preparation of the Registration Statement and any amendments or supplements thereto or prospectus contained therein (as to which the Company makes no representation or warranty), the Registration Statement (including any amendments or supplements thereto and prospectuses contained therein) shall not contain any 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 light of the circumstances under which they were made, not misleading.

b. Rule 424 Prospectus. The Company shall, to the extent required by applicable securities regulations, from time to time file with the SEC, pursuant to Rule 424 promulgated under the 1933 Act, a prospectus and prospectus supplements, if any, to be used in connection with sales of the Registrable Securities under the Registration Statement. The Buyer and its counsel shall have two (2) Business Days to review and comment upon such prospectus prior to its filing with the SEC. The Buyer shall use its reasonable best efforts to comment upon such prospectus within two (2) Business Days from the date the Buyer receives the final version of such prospectus.

c. Sufficient Number of Shares Registered. In the event the number of shares available under the Registration Statement is insufficient to cover the Registrable Securities, the Company shall, to the extent necessary and permissible, amend the Registration Statement or file a new registration statement (a “**New Registration Statement**”), so as to cover all such Registrable Securities as soon as reasonably practicable, but in any event not later than ten (10) Business Days after the necessity therefor arises. The Company shall use its reasonable best efforts to have such amendment and/or New Registration Statement become effective as soon as reasonably practicable following the filing thereof.

3. RELATED OBLIGATIONS.

With respect to the Registration Statement and whenever any Registrable Securities are to be registered pursuant to Sections 2(a) and (c), including on any New Registration Statement, the Company shall use its reasonable best efforts to effect the registration of the Registrable Securities in accordance with the intended method of disposition thereof and, pursuant thereto, the Company shall have the following obligations:

a. The Company shall prepare and file with the SEC such amendments (including post-effective amendments) and supplements to any Registration Statement and the prospectus used in connection with such Registration Statement, as may be necessary to keep the Registration Statement or any New Registration Statement effective at all times during the Registration Period, subject to Permitted Delays and Section 3(e) hereof and, during such period, comply with the provisions of the 1933 Act with respect to the disposition of all Registrable Securities of the Company covered by the Registration Statement or any New Registration Statement until such time as all of such Registrable Securities shall have been disposed of in accordance with the intended methods of disposition by the seller or sellers thereof as set forth in such Registration Statement. Should the Company file a post-effective amendment to the Registration Statement or a New Registration Statement, the Company will use its reasonable best efforts to have such filing declared effective by the SEC within thirty (30) consecutive Business Days following the date of filing, which such period shall be extended for an additional thirty (30) Business Days if the Company receives a comment letter from the SEC in connection therewith. If (i) there is material non-public information regarding the Company which the Company's Board of Directors reasonably determines not to be in the Company's best interest to disclose and which the Company is not otherwise required to disclose or (ii) there is a significant business opportunity (including, but not limited to, the acquisition or disposition of assets (other than in the ordinary course of business) or any merger, consolidation, tender offer or other similar transaction) available to the Company which the Company's Board of Directors reasonably determines not to be in the Company's best interest to disclose and which the Company would be required to disclose under a Registration Statement or a New Registration Statement, then the Company may postpone or suspend filing or effectiveness of such Registration Statement or New Registration Statement or use of the prospectus under the Registration Statement or New Registration Statement for a period not to exceed thirty (30) consecutive days, provided that the Company may not postpone or suspend its obligation under this Section 3(a) for more than sixty (60) days in the aggregate during any twelve (12) month period (each, a "**Permitted Delay**").

b. The Company shall submit to the Buyer for review and comment any disclosure in the Registration Statement, any New Registration Statement and all amendments and supplements thereto (other than prospectus supplements that consist only of a copy of a filed Form 10-K, Form 10-Q or a Current Report on Form 8-K or any amendment as a result of the Company's filing of a document that is incorporated by reference into the Registration Statement or New Registration Statement) containing information provided by the Buyer for inclusion in such document and any descriptions or disclosure regarding the Buyer, the Purchase Agreement, including the transaction contemplated thereby, or this Agreement at least two (2) Business Days prior to their filing with the SEC, and not file any document in a form to which Buyer reasonably and timely objects. Upon request of the Buyer, the Company shall provide to the Buyer all disclosure in the Registration Statement or any New Registration Statement and all amendments and supplements thereto (other than prospectus supplements that consist only of a copy of a filed Form 10-K, Form 10-Q or Current Report on Form 8-K or any amendment as a result of the Company's filing of a document that is incorporated by reference into the Registration

Statement or New Registration Statement) at least two (2) Business Days prior to their filing with the SEC, and not file any document in a form to which Buyer reasonably and timely objects. The Buyer shall use its reasonable best efforts to comment upon the Registration Statement or any New Registration Statement and any amendments or supplements thereto within two (2) Business Days from the date the Buyer receives the final version thereof. The Company shall furnish to the Buyer, without charge, any correspondence from the SEC or the staff of the SEC to the Company or its representatives relating to the Registration Statement or any New Registration Statement.

c. Upon request of the Buyer, the Company shall furnish to the Buyer, (i) promptly after the same is prepared and filed with the SEC, at least one copy of the Registration Statement and any amendment(s) thereto, including all financial statements and schedules, all documents incorporated therein by reference and all exhibits, (ii) upon the effectiveness of a Registration Statement, a copy of the prospectus included in such Registration Statement and all amendments and supplements thereto (or such other number of copies as the Buyer may reasonably request) and (iii) such other documents, including copies of any preliminary or final prospectus, as the Buyer may reasonably request from time to time in order to facilitate the disposition of the Registrable Securities owned by the Buyer.

d. The Company shall use reasonable best efforts to (i) register and qualify, unless an exemption from registration and qualification is available, the Registrable Securities covered by a Registration Statement under such other securities or "blue sky" laws of such jurisdictions in the United States as the Buyer reasonably requests, (ii) subject to Permitted Delays, prepare and file in those jurisdictions, such amendments (including post-effective amendments) and supplements to such registrations and qualifications as may be necessary to maintain the effectiveness thereof during the Registration Period, (iii) take such other actions as may be necessary to maintain such registrations and qualifications in effect at all times during the Registration Period, and (iv) take all other actions reasonably necessary or advisable to qualify the Registrable Securities for sale in such jurisdictions; provided, however, that the Company shall not be required in connection therewith or as a condition thereto to (x) qualify to do business in any jurisdiction where it would not otherwise be required to qualify but for this Section 3(d), (y) subject itself to general taxation in any such jurisdiction, or (z) file a general consent to service of process in any such jurisdiction. The Company shall promptly notify the Buyer who holds Registrable Securities of the receipt by the Company of any notification with respect to the suspension of the registration or qualification of any of the Registrable Securities for sale under the securities or "blue sky" laws of any jurisdiction in the United States or its receipt of actual notice of the initiation or threat of any proceeding for such purpose.

e. Subject to Permitted Delays, as promptly as reasonably practicable after becoming aware of such event or facts, the Company shall notify the Buyer in writing if the Company has determined that the prospectus included in any Registration Statement, as then in effect, includes an untrue statement of a material fact or omits to state a material fact required to be stated therein or necessary to make the statements therein, in light of the circumstances under which they were made, not misleading, and as promptly as reasonably practical (taking into account the Company's good faith assessment of any adverse consequences to the Company and its stockholders of premature disclosure of such event or facts) prepare a prospectus supplement or amendment to such Registration Statement to correct such untrue statement or omission, and, upon the Buyer's request, deliver a copy of such prospectus supplement or amendment to the Buyer. In providing this notice to the Buyer, the Company shall not include any other information about the facts underlying the Company's determination and shall not in any way communicate any material nonpublic information about the Company or the Common Stock to the Buyer. The Company shall also promptly notify the Buyer in writing (i) when a

prospectus or any prospectus supplement or post-effective amendment has been filed, and when a Registration Statement or any post-effective amendment has become effective (notification of such effectiveness shall be delivered to the Buyer by facsimile or e-mail on the same day of such effectiveness), (ii) of any request by the SEC for amendments or supplements to any Registration Statement or related prospectus or related information, and (iii) of the Company's reasonable determination that a post-effective amendment to a Registration Statement would be appropriate. In no event shall the delivery of a notice under this Section 3(e), or the resulting unavailability of a Registration Statement, without regard to its duration, for disposition of securities by Buyer be considered a breach by the Company of its obligations under this Agreement. The preceding sentence in this Section 3(e) does not limit whether an event of default has occurred as set forth in Section 9(a) of the Purchase Agreement.

f. The Company shall use its reasonable best efforts to prevent the issuance of any stop order or other suspension of effectiveness of any Registration Statement, or the suspension of the qualification of any Registrable Securities for sale in any jurisdiction and, if such an order or suspension is issued, to obtain the withdrawal of such order or suspension at the earliest practical time and to notify the Buyer of the issuance of such order and the resolution thereof or its receipt of actual notice of the initiation or threat of any proceeding for such purpose.

g. The Company shall (i) cause all the Registrable Securities to be listed on each securities exchange on which securities of the same class or series issued by the Company are then listed, if any, if the listing of such Registrable Securities is then permitted under the rules of such exchange, or (ii) secure designation and quotation of all the Registrable Securities if the Principal Market (as such term is defined in the Purchase Agreement) is an automated quotation system. The Company shall pay all fees and expenses in connection with satisfying its obligation under this Section.

h. The Company shall cooperate with the Buyer to facilitate the timely preparation and delivery of certificates (not bearing any restrictive legend) representing the Registrable Securities to be offered pursuant to any Registration Statement and enable such certificates to be in such denominations or amounts as the Buyer may reasonably request and registered in such names as the Buyer may request.

i. The Company shall at all times provide a transfer agent and registrar with respect to its Common Stock.

j. If reasonably requested by the Buyer, the Company shall (i) promptly incorporate in a prospectus supplement or post-effective amendment to the Registration Statement such information as the Buyer believes should be included therein relating to the sale and distribution of Registrable Securities, including, without limitation, information with respect to the number of Registrable Securities being sold, the purchase price being paid therefor and any other terms of the offering of the Registrable Securities; (ii) make all required filings of such prospectus supplement or post-effective amendment as promptly as practicable once notified of the matters to be incorporated in such prospectus supplement or post-effective amendment; and (iii) supplement or make amendments to any Registration Statement (including by means of any document incorporated therein by reference).

k. The Company shall use its reasonable best efforts to cause the Registrable Securities covered by any Registration Statement to be registered with or approved by such other

governmental agencies or authorities in the United States as may be necessary to consummate the disposition of such Registrable Securities.

l. Within two (2) Business Days after any Registration Statement is ordered effective by the SEC, the Company shall deliver to the Transfer Agent for such Registrable Securities (with copies to the Buyer) confirmation that such Registration Statement has been declared effective by the SEC in the form attached hereto as Exhibit A. Thereafter, if reasonably requested by the Buyer at any time, the Company shall deliver to the Buyer a written confirmation of whether or not the effectiveness of such Registration Statement has lapsed at any time for any reason (including, without limitation, the issuance of a stop order) and whether or not the Registration Statement is currently effective and available to the Buyer for sale of all of the Registrable Securities.

m. The Company agrees to take all other reasonable actions as necessary and reasonably requested by the Buyer to expedite and facilitate disposition by the Buyer of Registrable Securities pursuant to any Registration Statement.

4. OBLIGATIONS OF THE BUYER.

a. The Buyer has furnished to the Company in Exhibit B hereto such information regarding itself, the Registrable Securities held by it and the intended method of disposition of the Registrable Securities held by it as required to effect the registration of such Registrable Securities and shall execute such documents in connection with such registration as the Company may reasonably request. The Company shall notify the Buyer in writing of any other information the Company reasonably requires from the Buyer in connection with any Registration Statement hereunder. The Buyer will as promptly as practicable notify the Company of any material change in the information set forth in Exhibit B, other than changes in its ownership of the Common Stock.

b. The Buyer agrees to cooperate with the Company as reasonably requested by the Company in connection with the preparation and filing of any amendments and supplements to any Registration Statement hereunder.

c. The Buyer agrees that, upon receipt of any notice from the Company of the happening of any event or existence of facts of the kind described in Section 3(f) or any notice of the kind described in the first sentence of Section 3(e), the Buyer will immediately discontinue disposition of Registrable Securities pursuant to any registration statement(s) covering such Registrable Securities until the Buyer's receipt (which may be accomplished through electronic delivery) of the copies of the filed supplemented or amended registration statement and/or prospectus contemplated by Section 3(f) or the first sentence of Section 3(e). In addition, upon receipt of any notice from the Company of the kind described in the first sentence of Section 3(e), the Buyer will immediately discontinue purchases or sales of any securities of the Company unless such purchases or sales are in compliance with applicable U.S. securities laws. Notwithstanding anything to the contrary, the Company shall cause its Transfer Agent to deliver as promptly as practicable shares of Common Stock without any restrictive legend in accordance with the terms of the Purchase Agreement in connection with any sale of Registrable Securities with respect to which the Buyer has received a Purchase Notice or VWAP Purchase Notice (both as defined in the Purchase Agreement) prior to the Buyer's receipt of a notice from the Company of the happening of any event of the kind described in Section 3(f) or the first sentence of Section 3(e) and for which the Buyer has not yet settled.

5. EXPENSES OF REGISTRATION.

All reasonable expenses of the Company, other than sales or brokerage commissions and fees and disbursements of counsel for the Buyer, incurred in connection with registrations, filings or qualifications pursuant to Sections 2 and 3, including, without limitation, all registration, listing and qualifications fees, printers and accounting fees, and fees and disbursements of counsel for the Company, shall be paid by the Company.

6. INDEMNIFICATION.

a. To the fullest extent permitted by law, the Company will, and hereby does, indemnify, hold harmless and defend the Buyer, each Person, if any, who controls the Buyer, the members, the directors, officers, partners, employees, agents, representatives of the Buyer and each Person, if any, who controls the Buyer within the meaning of the 1933 Act or the Securities Exchange Act of 1934, as amended (the “**1934 Act**”) (each, an “**Indemnified Person**”), against any third party losses, claims, damages, liabilities, judgments, fines, penalties, charges, costs, reasonable attorneys’ fees, amounts paid in settlement (with the prior consent of the Company, such consent not to be unreasonably withheld) or reasonable expenses, (collectively, “**Claims**”) reasonably incurred in investigating, preparing or defending any action, claim, suit, inquiry, proceeding, investigation or appeal taken from the foregoing by or before any court or governmental, administrative or other regulatory agency or body or the SEC, whether pending or threatened, whether or not an indemnified party is or may be a party thereto (“**Indemnified Damages**”), to which any of them may become subject insofar as such Claims (or actions or proceedings, whether commenced or threatened, in respect thereof) arise out of or are based upon: (i) any untrue statement or alleged untrue statement of a material fact in the Registration Statement, any New Registration Statement or any post-effective amendment thereto or in any filing made in connection with the qualification of the offering under the securities or other “blue sky” laws of any jurisdiction in which Registrable Securities are offered (“**Blue Sky Filing**”), or the omission or alleged omission to state a material fact required to be stated therein or necessary to make the statements therein not misleading, (ii) any untrue statement or alleged untrue statement of a material fact contained in the final prospectus (as amended or supplemented, if the Company files any amendment thereof or supplement thereto with the SEC) or the omission or alleged omission to state therein any material fact necessary to make the statements made therein, in light of the circumstances under which the statements therein were made, not misleading, or (iii) any violation or alleged violation by the Company of the 1933 Act, the 1934 Act, any other law, including, without limitation, any state securities law, or any rule or regulation thereunder relating to the offer or sale of the Registrable Securities pursuant to the Registration Statement or any New Registration Statement (the matters in the foregoing clauses (i) through (iii) being, collectively, “**Violations**”). The Company shall reimburse each Indemnified Person promptly as such expenses are incurred and are due and payable, for any reasonable legal fees or other reasonable expenses incurred by them in connection with investigating or defending any such Claim. Notwithstanding anything to the contrary contained herein, the indemnification agreement contained in this Section 6(a): (A) shall not apply to a Claim by an Indemnified Person arising out of or based upon a Violation which occurs in reliance upon and in conformity with information furnished in writing to the Company by the Buyer or such Indemnified Person expressly for use in connection with the preparation of the Registration Statement, any New Registration Statement or any such amendment thereof or supplement thereto, if such prospectus was timely made available by the Company; (B) with respect to any superseded prospectus, shall not inure to the benefit of any such person from whom the person asserting any such Claim purchased the Registrable Securities that are the subject thereof (or to the benefit of any other Indemnified Person) if the untrue statement or omission

of material fact contained in the superseded prospectus was corrected in the revised prospectus, as then amended or supplemented, if such revised prospectus was timely made available by the Company pursuant to Section 3(c) or Section 3(e), and the Indemnified Person was promptly advised in writing not to use the incorrect prospectus prior to the use giving rise to a violation; (C) shall not be available to the extent such Claim is based on a failure of the Buyer to deliver, or to cause to be delivered, the prospectus made available by the Company, if such prospectus was theretofore made available by the Company pursuant to Section 3(c) or Section 3(e); and (D) shall not apply to amounts paid in settlement of any Claim if such settlement is effected without the prior written consent of the Company, which consent shall not be unreasonably withheld. Such indemnity shall remain in full force and effect regardless of any investigation made by or on behalf of the Indemnified Person and shall survive the transfer of the Registrable Securities by the Buyer pursuant to Section 9.

b. In connection with the Registration Statement or any New Registration Statement or prospectus, the Buyer agrees to indemnify, hold harmless and defend, to the same extent and in the same manner as is set forth in Section 6(a), the Company, each of its directors, each of its officers who signs the Registration Statement or any New Registration Statement, each Person, if any, who controls the Company within the meaning of the 1933 Act or the 1934 Act (collectively and together with an Indemnified Person, an “**Indemnified Party**”), against any Claim or Indemnified Damages to which any of them may become subject, under the 1933 Act, the 1934 Act or otherwise, insofar as such Claim or Indemnified Damages arise out of or are based upon any Violation, in each case to the extent, and only to the extent, that such Violation occurs in reliance upon and in conformity with written information about the Buyer set forth on Exhibit B attached hereto or updated from time to time in writing by the Buyer and furnished to the Company by the Buyer expressly for use in the Registration Statement or any New Registration Statement or from the failure of the Buyer to deliver or to cause to be delivered the prospectus made available by the Company, if such prospectus was timely made available by the Company pursuant to Section 3(c) or Section 3(e); and, subject to Section 6(d), the Buyer will reimburse any legal or other expenses reasonably incurred by them in connection with investigating or defending any such Claim; provided, however, that the indemnity agreement contained in this Section 6(b) and the agreement with respect to contribution contained in Section 7 shall not apply to amounts paid in settlement of any Claim if such settlement is effected without the prior written consent of the Buyer, which consent shall not be unreasonably withheld; provided, further, however, that the Buyer shall be liable under this Section 6(b) for only that amount of a Claim or Indemnified Damages as does not exceed the net proceeds to the Buyer as a result of the sale of Registrable Securities pursuant to such registration statement. Such indemnity shall remain in full force and effect regardless of any investigation made by or on behalf of such Indemnified Party and shall survive the transfer of the Registrable Securities by the Buyer pursuant to Section 9.

c. Promptly after receipt by an Indemnified Person or Indemnified Party under this Section 6 of notice of the commencement of any action or proceeding (including any governmental action or proceeding) involving a Claim, such Indemnified Person or Indemnified Party shall, if a Claim in respect thereof is to be made against any indemnifying party under this Section 6, deliver to the indemnifying party a written notice of the commencement thereof, and the indemnifying party shall have the right to participate in, and, to the extent the indemnifying party so desires, jointly with any other indemnifying party similarly noticed, to assume control of the defense thereof with counsel mutually satisfactory to the indemnifying party and the Indemnified Person or the Indemnified Party, as the case may be, and upon such notice, the indemnifying party shall not be liable to the Indemnified Person or Indemnified Party for any legal or other expenses subsequently incurred by the Indemnified Person or Indemnified Party in connection with the defense thereof; provided, however, that an

Indemnified Person or Indemnified Party (together with all other Indemnified Persons and Indemnified Parties that may be represented without conflict by one counsel) shall have the right to retain its own counsel with the fees and expenses to be paid by the indemnifying party, if, in the reasonable opinion of counsel retained by the indemnifying party, the representation by such counsel of the Indemnified Person or Indemnified Party and the indemnifying party would be inappropriate due to actual or potential differing interests between such Indemnified Person or Indemnified Party and any other party represented by such counsel in such proceeding. The Indemnified Party or Indemnified Person shall cooperate with the indemnifying party in connection with any negotiation or defense of any such action or claim by the indemnifying party and shall furnish to the indemnifying party all information reasonably available to the Indemnified Party or Indemnified Person which relates to such action or claim. The indemnifying party shall keep the Indemnified Party or Indemnified Person fully apprised as to the status of the defense or any settlement negotiations with respect thereto. No indemnifying party shall be liable for any settlement of any action, claim or proceeding effected without its written consent, provided, however, that the indemnifying party shall not unreasonably withhold, delay or condition its consent. No indemnifying party shall, without the consent of the Indemnified Party or Indemnified Person, consent to entry of any judgment or enter into any settlement or other compromise which does not include as an unconditional term thereof the giving by the claimant or plaintiff to such Indemnified Party or Indemnified Person of a release from all liability in respect to such claim or litigation. Following indemnification as provided for hereunder, the indemnifying party shall be subrogated to all rights of the Indemnified Party or Indemnified Person with respect to all third parties, firms or corporations relating to the matter for which indemnification has been made. The failure to deliver written notice to the indemnifying party within a reasonable time of the commencement of any such action shall not relieve such indemnifying party of any liability to the Indemnified Person or Indemnified Party under this Section 6, except to the extent that the indemnifying party is prejudiced in its ability to defend such action.

d. The indemnification required by this Section 6 shall be made by periodic payments of the amount thereof during the course of the investigation or defense, as and when bills are received or Indemnified Damages are incurred. Any person receiving a payment pursuant to this Section 6 which person is later determined to not be entitled to such payment shall return such payment (including reimbursement of expenses) to the person making it.

e. The indemnity agreements contained herein shall be in addition to (i) any cause of action or similar right of the Indemnified Party or Indemnified Person against the indemnifying party or others, and (ii) any liabilities the indemnifying party may be subject to pursuant to the law.

7. CONTRIBUTION.

To the extent any indemnification by an indemnifying party is prohibited or limited by law, the indemnifying party agrees to make the maximum contribution with respect to any amounts for which it would otherwise be liable under Section 6 to the fullest extent permitted by law; provided, however, that: (i) no seller of Registrable Securities guilty of fraudulent misrepresentation (within the meaning of Section 11(f) of the 1933 Act) shall be entitled to contribution from any party who was not guilty of fraudulent misrepresentation; and (ii) contribution by any seller of Registrable Securities shall be limited in amount to the net amount of proceeds received by such seller from the sale of such Registrable Securities.

8. REPORTS AND DISCLOSURE UNDER THE SECURITIES ACTS.

With a view to making available to the Buyer the benefits of Rule 144 promulgated under the 1933 Act or any other similar rule or regulation of the SEC that may at any time permit the Buyer to sell securities of the Company to the public without registration (“**Rule 144**”), the Company agrees, at the Company’s sole expense, to:

- a. use its reasonable best efforts to make and keep public information available, as those terms are understood and defined in Rule 144;
- b. use its reasonable best efforts to file with the SEC in a timely manner all reports and other documents required of the Company under the 1933 Act and the 1934 Act so long as the Company remains subject to such requirements and the filing of such reports and other documents is required to satisfy the current public information requirements of Rule 144;
- c. furnish to the Buyer so long as the Buyer owns Registrable Securities, as promptly as practicable at Buyer’s request, (i) a written statement by the Company that it has complied in all material respects with the requirements of Rule 144(c)(1)(i) and (ii), and (ii) such other information, if any, as may be reasonably requested to permit the Buyer to sell such securities pursuant to Rule 144 without registration; and
- d. take such additional action as is reasonably requested by the Buyer to enable the Buyer to sell the Registrable Securities pursuant to Rule 144, including, without limitation, delivering all such legal opinions, consents, certificates, resolutions and instructions to the Company’s Transfer Agent as may be reasonably requested from time to time by the Buyer and otherwise provide reasonable cooperation to the Buyer and the Buyer’s broker to effect such sale of securities pursuant to Rule 144.

The Company agrees that damages may be an inadequate remedy for any breach of the terms and provisions of this Section 8 and that Buyer shall, whether or not it is pursuing any remedies at law, be entitled to seek equitable relief in the form of a preliminary or permanent injunctions, without having to post any bond or other security, upon any breach or threatened breach of any such terms or provisions.

9. ASSIGNMENT OF REGISTRATION RIGHTS.

The Company shall not assign this Agreement or any rights or obligations hereunder without the prior written consent of the Buyer; provided, however, that any transaction, whether by merger, reorganization, restructuring, consolidation, financing or otherwise, whereby the Company remains the surviving entity immediately after such transaction shall not be deemed an assignment. The Buyer may not assign its rights under this Agreement without the prior written consent of the Company.

10. AMENDMENT OF REGISTRATION RIGHTS.

Provisions of this Agreement may be amended and the observance thereof may be waived (either generally or in a particular instance and either retroactively or prospectively) only with the written consent of the Company and the Buyer.

11. MISCELLANEOUS.

a. Any notices, consents, waivers or other communications required or permitted to be given under the terms of this Agreement must be in writing and will be deemed to have been delivered: (i) upon receipt, when delivered personally; (ii) upon receipt, when sent by facsimile (provided confirmation of transmission is mechanically or electronically generated and kept on file by the sending party); (iii) upon receipt, when sent by electronic message (provided the recipient responds to the message and confirmation of both electronic messages are kept on file by the sending party); or (iv) one (1) Business Day after timely deposit with a nationally recognized overnight delivery service, in each case properly addressed to the party to receive the same. The addresses and facsimile numbers for such communications shall be:

If to the Company:

Bionano Genomics, Inc.
9640 Towne Centre Drive, Suite 100
San Diego, CA 92121
Telephone:
Facsimile:
Attention: Mike Ward
Email:

With a copy (which shall not constitute notice) to:

Cooley LLP
4401 Eastgate Mall
San Diego, CA 92121
Telephone:
Facsimile:
Attention: James C. Pennington
Email:

If to the Buyer:

Aspire Capital Fund, LLC
155 North Wacker Drive, Suite 1600
Chicago, IL 60606
Telephone:
Facsimile:
Attention: Steven G. Martin
Email:

With a copy (which shall not constitute notice) to:

Morrison & Foerster LLP
2000 Pennsylvania Avenue, NW, Suite 6000
Washington, DC 20006
Telephone:

Facsimile:
Attention: Martin P. Dunn, Esq.
Email:

or at such other address and/or facsimile number and/or to the attention of such other person as the recipient party has specified by written notice given to each other party at least one (1) Business Day prior to the effectiveness of such change. Written confirmation of receipt (A) given by the recipient of such notice, consent, waiver or other communication, (B) mechanically or electronically generated by the sender's facsimile machine containing the time, date, and recipient facsimile number, (C) electronically generated by the sender's electronic mail containing the time, date and recipient email address or (D) provided by a nationally recognized overnight delivery service, shall be rebuttable evidence of receipt in accordance with clause (i), (ii), (iii) or (iv) above, respectively. Any party to this Agreement may give any notice or other communication hereunder using any other means (including messenger service, ordinary mail or electronic mail), but no such notice or other communication shall be deemed to have been duly given unless it actually is received by the party for whom it is intended.

b. No failure or delay in the exercise of any power, right or privilege hereunder shall operate as a waiver thereof, nor shall any single or partial exercise of any such power, right or privilege preclude other or further exercise thereof or of any other right, power or privilege.

c. The corporate laws of the State of Delaware shall govern all issues concerning the relative rights of the Company and its stockholders. All other questions concerning the construction, validity, enforcement and interpretation of this Agreement shall be governed by the internal laws of the State of Illinois, without giving effect to any choice of law or conflict of law provision or rule (whether of the State of Illinois or any other jurisdictions) that would cause the application of the laws of any jurisdictions other than the State of Illinois. Each party hereby irrevocably submits to the exclusive jurisdiction of the state and federal courts sitting in the City of Chicago for the adjudication of any dispute hereunder or in connection herewith or with any transaction contemplated hereby or discussed herein, 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, that such suit, action or proceeding is brought in an inconvenient forum or that the venue of such suit, action or proceeding is improper. Each party 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 to such party at the address for such notices to it under this Agreement 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. If any provision of this Agreement shall be invalid or unenforceable in any jurisdiction, such invalidity or unenforceability shall not affect the validity or enforceability of the remainder of this Agreement in that jurisdiction or the validity or enforceability of any provision of this Agreement in any other jurisdiction. **EACH PARTY HEREBY IRREVOCABLY WAIVES ANY RIGHT IT MAY HAVE, AND AGREES NOT TO REQUEST, A JURY TRIAL FOR THE ADJUDICATION OF ANY DISPUTE HEREUNDER OR IN CONNECTION HEREWITH OR ARISING OUT OF THIS AGREEMENT OR ANY TRANSACTION CONTEMPLATED HEREBY.**

d. This Agreement, the Purchase Agreement and the other Transaction Documents constitute the entire understanding among the parties hereto with respect to the subject matter hereof and thereof. There are no restrictions, promises, warranties or undertakings, other than those set forth or referred to herein and therein. This Agreement, the Purchase Agreement and the other Transaction

Documents supersede all other prior oral or written agreements between the Buyer, the Company, their affiliates and persons acting on their behalf with respect to the subject matter hereof and thereof.

e. Subject to the requirements of Section 9, this Agreement shall inure to the benefit of and be binding upon the permitted successors and assigns of each of the parties hereto.

f. The headings in this Agreement are for convenience of reference and shall not form part of, or affect the interpretation of, this Agreement.

g. This Agreement may be executed in two or more identical counterparts, all of which shall be considered one and the same agreement and shall become effective when counterparts have been signed by each party and delivered to the other party; provided that a facsimile or pdf (or other electronic reproduction of a) signature shall be considered due execution and shall be binding upon the signatory thereto with the same force and effect as if the signature were an original, not a facsimile or pdf (or other electronic reproduction of a) signature.

h. Each party shall do and perform, or cause to be done and performed, all such further acts and things, and shall execute and deliver all such other agreements, certificates, instruments and documents as the other party may reasonably request in order to carry out the intent and accomplish the purposes of this Agreement and the consummation of the transactions contemplated hereby.

i. The language used in this Agreement will be deemed to be the language chosen by the parties to express their mutual intent and no rules of strict construction will be applied against any party.

j. This Agreement is intended for the benefit of the parties hereto and their respective permitted successors and assigns, and is not for the benefit of, nor may any provision hereof be enforced by, any other Person.

* * * * *

IN WITNESS WHEREOF, the parties have caused this Registration Rights Agreement to be duly executed as of day and year first above written.

THE COMPANY:

BIONANO GENOMICS, INC.

By: /s/ R. Erik Holmlin, Ph.D.

Name: R. Erik Holmlin, Ph.D.

Title: Chief Executive Officer

BUYER:

ASPIRE CAPITAL FUND, LLC

BY: ASPIRE CAPITAL PARTNERS, LLC

BY: SGM HOLDINGS CORP.

By: /s/ Steven G. Martin

Name: Steven G. Martin

Title: President

EXHIBIT A

FORM OF NOTICE OF EFFECTIVENESS OF REGISTRATION STATEMENT

[Date]

American Stock Transfer & Trust Company, LLC
6201 15th Avenue
Brooklyn, NY 11219
Attention: Jacqueline I. Kretzu

RE: BIONANO GENOMICS, INC.

Ladies and Gentlemen:

We refer to that certain Common Stock Purchase Agreement, dated as of March 14, 2019 (the "**Purchase Agreement**"), entered into by and between **BIONANO GENOMICS, INC.**, a Delaware corporation (the "**Company**") and **ASPIRE CAPITAL FUND, LLC** (the "**Buyer**") pursuant to which the Company has agreed to issue to the Buyer shares of the Company's Common Stock, par value \$0.0001 per share (the "**Common Stock**"), in an amount up to Ten Million Dollars (\$10,000,000), in accordance with the terms of the Purchase Agreement. In connection with the transactions contemplated by the Purchase Agreement, the Company has registered with the U.S. Securities and Exchange Commission (the "**SEC**") the sale by the Buyer of the following shares of Common Stock:

- (1) up to [Total # of Purchase Shares, including Initial Purchase Shares] shares of Common Stock to be issued upon purchase from the Company by the Buyer from time to time (the "**Purchase Shares**"); and
- (2) 69,444 shares of Common Stock which have been issued to the Buyer as a commitment fee (the "**Commitment Shares**").

In connection with the transactions contemplated by the Purchase Agreement, the Company has filed a registration statement on Form S-1 (File No. 333_____) (the "**Registration Statement**") with the SEC relating to the sale by the Buyer of the Purchase Shares and the Commitment Shares. Accordingly, we advise you that (i) the SEC has entered an order declaring the Registration Statement effective under the Securities Act of 1933 Act (the "1933 Act") at ____ [A./P.]M. on _____, 201_, (ii) we have no knowledge, after review of the stop order notification website maintained by the SEC, that any stop order suspending its effectiveness has been issued or that any proceedings for that purpose are pending before, or threatened by, the SEC and (iii) the Purchase Shares and the Commitment Shares are available for sale under the 1933 Act pursuant to the Registration Statement. Accordingly, and in reliance on certain covenants made by the Buyer regarding the manner of sale of the Shares, certificates representing the Shares may be issued without any restrictive legend.

Very truly yours,

By: _____
[Company Counsel]

CC: Aspire Capital Fund, LLC

EXHIBIT B

Information About The Buyer Furnished To The Company By The Buyer Expressly For Use In Connection With The Registration Statement and Prospectus

Aspire Capital Partners LLC (“Aspire Partners”) is the Managing Member of Aspire Capital Fund LLC (“Aspire Fund”). SGM Holdings Corp (“SGM”) is the Managing Member of Aspire Partners. Mr. Steven G. Martin (“Mr. Martin”) is the president and sole shareholder of SGM, as well as a principal of Aspire Partners. Mr. Erik J. Brown (“Mr. Brown”) is the president and sole shareholder of Red Cedar Capital Corp (“Red Cedar”), which is a principal of Aspire Partners. Mr. Christos Komissopoulos (“Mr. Komissopoulos”) is president and sole shareholder of Chrisko Investors Inc. (“Chrisko”), which is a principal of Aspire Partners. Mr. William F. Blank, III (“Mr. Blank”) is president and sole shareholder of WML Ventures Corp. (“WML Ventures”), which is a principal of Aspire Partners. Each of Aspire Partners, SGM, Red Cedar, Chrisko, WML Ventures, Mr. Martin, Mr. Brown, Mr. Komissopoulos and Mr. Blank may be deemed to be a beneficial owner of common stock held by Aspire Fund. Each of Aspire Partners, SGM, Red Cedar, Chrisko, WML Ventures, Mr. Martin, Mr. Brown, Mr. Komissopoulos and Mr. Blank disclaims beneficial ownership of the common stock held by Aspire Fund.

Plan of Distribution

The common stock may be sold or distributed from time to time by the selling stockholder directly to one or more purchasers or through brokers, dealers, or underwriters who may act solely as agents at market prices prevailing at the time of sale, at prices related to the prevailing market prices, at negotiated prices, or at fixed prices, which may be changed. The sale of the common stock offered by this prospectus may be effected in one or more of the following methods:

- ordinary brokers’ transactions;
- transactions involving cross or block trades;
- through brokers, dealers, or underwriters who may act solely as agents;
- “at the market” into an existing market for the common stock;
- in other ways not involving market makers or established business markets, including direct sales to purchasers or sales effected through agents;
- in privately negotiated transactions; or
- any combination of the foregoing.

In order to comply with the securities laws of certain states, if applicable, the shares may be sold only through registered or licensed brokers or dealers. In addition, in certain states, the shares may not be sold unless they have been registered or qualified for sale in the state or an exemption from the registration or qualification requirement is available and complied with.

The selling stockholder may transfer the shares of common stock by other means not described in this prospectus.

Brokers, dealers, underwriters, or agents participating in the distribution of the shares as agents may receive compensation in the form of commissions, discounts, or concessions from the selling

stockholder and/or purchasers of the common stock for whom the broker-dealers may act as agent. Aspire Capital has informed us that each such broker-dealer will receive commissions from Aspire Capital which will not exceed customary brokerage commissions.

The selling stockholder and its affiliates have agreed not to engage in any direct or indirect short selling or hedging of our common stock during the term of the Purchase Agreement.

The selling stockholder is an “underwriter” within the meaning of the Securities Act. We have agreed to provide indemnification and contribution to the selling stockholder against certain civil liabilities, including liabilities under the Securities Act.

We have advised the selling stockholder that while it is engaged in a distribution of the shares included in this prospectus, it is required to comply with Regulation M promulgated under the Securities Exchange Act of 1934, as amended. With certain exceptions, Regulation M precludes the selling stockholder, any affiliated purchasers, and any broker-dealer or other person who participates in the distribution from bidding for or purchasing, or attempting to induce any person to bid for or purchase any security which is the subject of the distribution until the entire distribution is complete. Regulation M also prohibits any bids or purchases made in order to stabilize the price of a security in connection with the distribution of that security. All of the foregoing may affect the marketability of the shares offered hereby this prospectus.

We may suspend the sale of shares by the selling stockholder pursuant to this prospectus for certain periods of time for certain reasons, including if the prospectus is required to be supplemented or amended to include additional material information.

This offering as it relates to Aspire Capital will terminate on the date that all shares offered by this prospectus have been sold by Aspire Capital.

THIS WARRANT AND THE SHARES ISSUABLE HEREUNDER HAVE NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933, AS AMENDED (THE “ACT”), OR THE SECURITIES LAWS OF ANY STATE AND, EXCEPT AS SET FORTH IN SECTIONS 5.3 AND 5.4 BELOW, MAY NOT BE OFFERED, SOLD, PLEDGED OR OTHERWISE TRANSFERRED (I) UNLESS AND UNTIL REGISTERED UNDER SAID ACT AND LAWS OR (II) WITHOUT AN OPINION OF COUNSEL, IN FORM AND SUBSTANCE REASONABLY SATISFACTORY TO THE COMPANY, THAT SUCH OFFER, SALE, PLEDGE OR OTHER TRANSFER IS EXEMPT FROM SUCH REGISTRATION.

WARRANT TO PURCHASE STOCK 1

<i>Company</i>	BIONANO GENOMICS, INC.
<i>Number of Shares</i>	[] [Note: Number of shares to equal 3.75% of the applicable Term Loan funding amount, divided by the Warrant Price]
<i>Type/Series of Stock</i>	Common Stock, par value \$0.0001 per share, of the Company (“Common Stock”)
<i>Warrant Price</i>	\$4.63 per share
<i>Issue Date</i>	[]
<i>Expiration Date</i>	[] [Note: Expires 10 years after issuance date] (See also Section 5.1(b))
<i>Credit Facility</i>	This Warrant to Purchase Stock (“ <u>Warrant</u> ”) is issued in connection with that certain Loan and Security Agreement, dated March 14, 2019, among Innovatus Life Sciences Lending Fund I, LP, as Lender and Collateral Agent, the Lenders from time to time party thereto, including East West Bank, and the Company (as modified, amended and/or restated from time to time, the “ <u>Loan Agreement</u> ”).

THIS WARRANT CERTIFIES THAT, for good and valuable consideration, INNOVATUS LIFE SCIENCES LENDING FUND I, LP (“Innovatus”), a Delaware limited partnership with an office located at 777 Third Avenue, 25th Floor, New York, NY 10017 (together with any successor or permitted assignee or transferee of this Warrant or of any shares issued upon exercise hereof, “Holder”) is entitled to purchase the number of fully paid and non-assessable shares (the “Shares”) of the above-stated Type/Series of Stock (the “Class”) of the above-named company (the “Company”) at the above-stated Warrant Price, all as set forth above and as adjusted pursuant to Section 2 of this Warrant, subject to the provisions and upon the terms and conditions set forth in this Warrant.

SECTION 1. EXERCISE.

1.1 Method of Exercise. Holder may at any time and from time to time exercise this Warrant, in whole or in part, by delivering to the Company the original of this Warrant together with a

- 1 The Company acknowledges and agrees that this Warrant is issued in connection with the Term A1 Loan under, and as defined in, the Loan Agreement, and that, in the event the Company draws the Term A2 Loan and/or the Term B Loan, each as defined therein, the Company shall issue the Holder additional Warrants to purchase shares of the Common Stock, in each case for a number of shares equal to 3.75% of the funded amount of such Term A2 and Term B Loans, respectively, divided by the Warrant Price as defined in this Warrant, and with an exercise price equal to such Warrant Price, subject to any adjustments to the shares and/or price, on substantially the terms and conditions set forth in this Warrant.

duly executed Notice of Exercise in substantially the form attached hereto as Appendix 1 and, unless Holder is exercising this Warrant pursuant to a cashless exercise set forth in Section 1.2, a check, wire transfer of same-day funds (to an account designated by the Company), or other form of payment acceptable to the Company for the aggregate Warrant Price for the Shares being purchased.

1.2 Cashless Exercise. On any exercise of this Warrant, in lieu of payment of the aggregate Warrant Price in the manner as specified in Section 1.1 above, but otherwise in accordance with the requirements of Section 1.1, Holder may elect to receive Shares equal to the value of this Warrant, or portion hereof as to which this Warrant is being exercised. Thereupon, the Company shall issue to the Holder such number of fully paid and non-assessable Shares as are computed using the following formula:

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

where:

X = the number of Shares to be issued to the Holder;

Y = the number of Shares with respect to which this Warrant is being exercised (inclusive of the Shares surrendered to the Company in payment of the aggregate Warrant Price);

A = the Fair Market Value (as determined pursuant to Section 1.3 below) of one Share; and

B = the Warrant Price.

1.3 Fair Market Value. If the Common Stock is then traded or quoted on a nationally recognized securities exchange, inter-dealer quotation system or over-the-counter market (a "Trading Market"), the fair market value of a Share shall be the closing price of a share of Common Stock reported for the Business Day immediately before the date on which Holder delivers this Warrant together with its Notice of Exercise to the Company. If the Common Stock is not traded in a Trading Market, the Board of Directors of the Company shall determine the fair market value of a Share in its reasonable good faith judgment.

1.4 Delivery of Certificate and New Warrant. Promptly after Holder exercises this Warrant in the manner set forth in Section 1.1 or 1.2 above, the Company shall deliver to Holder a certificate (via an electronic shares program, if applicable) representing the Shares issued to Holder upon such exercise and, if this Warrant has not been fully exercised and has not expired, a new warrant of like tenor representing the Shares not so acquired.

1.5 Replacement of Warrant. On receipt of evidence reasonably satisfactory to the Company of the loss, theft, destruction or mutilation of this Warrant and, in the case of loss, theft or destruction, on delivery of an indemnity agreement reasonably satisfactory in form, substance and amount to the Company or, in the case of mutilation, on surrender of this Warrant to the Company for cancellation, the Company shall, within a reasonable time, execute and deliver to Holder, in lieu of this Warrant, a new warrant of like tenor and amount.

1.6 Treatment of Warrant Upon Acquisition of Company.

(a) Acquisition. For the purpose of this Warrant, "Acquisition" means any transaction or series of related transactions involving:
(i) the sale, lease, exclusive license or other

disposition of all or substantially all of the assets of the Company; (ii) any merger or consolidation of the Company into or with another person or entity (other than a merger or consolidation effected exclusively to change the Company's domicile), or any other corporate reorganization, in which the stockholders of the Company in their capacity as such immediately prior to such merger, consolidation or reorganization, own less than a majority of the Company's (or the surviving or successor entity's) outstanding voting power immediately after such merger, consolidation or reorganization; or (iii) any sale or other transfer by the stockholders of the Company of shares representing a majority of the Company's then-total outstanding combined voting power. For the avoidance of doubt, "Acquisition" shall exclude any sale and issuance by the Company of shares of its capital stock, or securities or instruments exercisable for or convertible into or otherwise representing the right to acquire shares of capital stock, to one or more investors in a transaction or series of related transactions the primary purpose of which is a bona fide equity financing of the Company.

(b) Treatment of Warrant at Acquisition. In the event of an Acquisition in which the consideration to be received by the Company's stockholders consists solely of cash, solely of Marketable Securities or a combination of cash and Marketable Securities (a "Cash/Public Acquisition"), either (i) Holder shall exercise this Warrant pursuant to Section 1.1 and/or 1.2 and such exercise will be deemed effective immediately prior to and contingent upon the consummation of such Acquisition or (ii) if Holder elects not to exercise the Warrant, this Warrant will expire immediately prior to the consummation of such Acquisition.

(c) The Company shall provide Holder with written notice of its request relating to the Cash/Public Acquisition (together with such reasonable information as Holder may reasonably require regarding the treatment of this Warrant in connection with such contemplated Cash/Public Acquisition giving rise to such notice), which is to be delivered to Holder not less than seven (7) Business Days prior to the closing of the proposed Cash/Public Acquisition. Notwithstanding the foregoing, if, immediately prior to the Cash/Public Acquisition, the fair market value of one Share (or other security issuable upon the exercise hereof) as determined in accordance with Section 1.3 above would be greater than the Warrant Price in effect on such date, then this Warrant shall automatically be deemed on and as of such date to be exercised pursuant to Section 1.2 above as to all Shares (or such other securities) for which it shall not previously have been exercised, and the Company shall promptly notify the Holder of the number of Shares (or such other securities) issued upon such exercise to the Holder.

(d) Upon the closing of any Acquisition other than a Cash/Public Acquisition defined above, the acquiring, surviving or successor entity shall assume the obligations of this Warrant, and this Warrant shall thereafter be exercisable for the same securities and/or other property as would have been paid for the Shares issuable upon exercise of the unexercised portion of this Warrant as if such Shares were outstanding on and as of the closing of such Acquisition, subject to further adjustment from time to time in accordance with the provisions of this Warrant.

(e) As used in this Warrant, "Marketable Securities" means securities meeting all of the following requirements: (i) the issuer thereof is then subject to the reporting requirements of Section 13 or Section 15(d) of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), and is then current in its filing of all required reports and other information under the Act and the Exchange Act; (ii) the class and series of shares or other security of the issuer that would be received by Holder in connection with the Acquisition were Holder to exercise this Warrant on or prior to the closing thereof is then traded in Trading Market; and (iii) Holder would be able to publicly re-sell, within six (6) months following the closing of such Acquisition, all of the issuer's shares and/or other

securities that would be received by Holder in such Acquisition were Holder to exercise this Warrant in full on or prior to the closing of such Acquisition.

1.7 Beneficial Ownership Limitation. The Company shall not issue any shares of Common Stock under this Warrant to Holder if such shares, when aggregated with all other shares of Common Stock then beneficially owned (as calculated pursuant to Section 13(d) of the Exchange Act and Rule 13d-3 promulgated thereunder) by the Holder and its affiliates would result in the beneficial ownership by the Holder and its affiliates of more than 19.99% of the then issued and outstanding shares of Common Stock.

SECTION 2. ADJUSTMENTS TO THE SHARES AND WARRANT PRICE.

2.1 Stock Dividends, Splits, Etc. If the Company declares or pays a dividend or distribution on the outstanding shares of the Class payable in common stock or other securities or property (other than cash), then upon exercise of this Warrant, for each Share acquired, Holder shall receive, without additional cost to Holder, the total number and kind of securities and property which Holder would have received had Holder owned the Shares of record as of the date the dividend or distribution occurred. If the Company subdivides the outstanding shares of the Class by reclassification or otherwise into a greater number of shares, the number of Shares purchasable hereunder shall be proportionately increased and the Warrant Price shall be proportionately decreased. If the outstanding shares of the Class are combined or consolidated, by reclassification or otherwise, into a lesser number of shares, the Warrant Price shall be proportionately increased and the number of Shares shall be proportionately decreased.

2.2 Reclassification, Exchange, Combinations or Substitution. Upon any event whereby all of the outstanding shares of the Class are reclassified, exchanged, combined, substituted, or replaced for, into, with or by Company securities of a different class and/or series, then from and after the consummation of such event, this Warrant will be exercisable for the number, class and series of Company securities that Holder would have received had the Shares been outstanding on and as of the consummation of such event, and subject to further adjustment thereafter from time to time in accordance with the provisions of this Warrant. The provisions of this Section 2.2 shall similarly apply to successive reclassifications, exchanges, combinations substitutions, replacements or other similar events.

2.3 Intentionally Omitted.

2.4 Intentionally Omitted.

2.5 No Fractional Share. No fractional Share shall be issuable upon exercise of this Warrant and the number of Shares to be issued shall be rounded down to the nearest whole Share. If a fractional Share interest arises upon any exercise of the Warrant, the Company shall eliminate such fractional Share interest by paying Holder in cash the amount computed by multiplying the fractional interest by (a) the fair market value (as determined in accordance with Section 1.3 above) of a full Share, less (b) the then-effective Warrant Price.

2.6 Notice/Certificate as to Adjustments. Upon each adjustment of the Warrant Price, Class and/or number of Shares, the Company, at the Company's expense, shall notify Holder in writing within a reasonable time setting forth the adjustments to the Warrant Price, Class and/or number of Shares and facts upon which such adjustment is based. The Company shall, upon written request from Holder, furnish Holder with a certificate of its Chief Financial Officer, including computations of such

adjustment and the Warrant Price, Class and number of Shares in effect upon the date of such adjustment.

SECTION 3. REPRESENTATIONS AND COVENANTS OF THE COMPANY.

3.1 Representations and Warranties. The Company represents and warrants to, and agrees with, the Holder as follows:

(a) The initial Warrant Price referenced on the first page of this Warrant is not greater than the price per share at which shares of the Class were last sold and issued prior to the Issue Date hereof in an arms-length transaction in which at least \$500,000 of such shares were sold.

(b) All Shares which may be issued upon the exercise of this Warrant, and all securities, if any, issuable upon conversion of the Shares, shall, upon issuance, be duly authorized, validly issued, fully paid and non-assessable, and free of any liens and encumbrances except for restrictions on transfer provided for herein or under applicable federal and state securities laws. The Company covenants that it shall at all times cause to be reserved and kept available out of its authorized and unissued capital stock such number of shares of the Class as will be sufficient to permit the exercise in full of this Warrant.

(c) The Company's capitalization table attached hereto as Schedule 1 is true and complete, in all material respects, as of the Issue Date.

3.2 Notice of Certain Events. If the Company proposes at any time to:

(a) declare any dividend or distribution upon the outstanding shares of the Class, whether in cash, property, stock, or other securities and whether or not a regular cash dividend;

(b) offer for subscription or sale pro rata to the holders of the outstanding shares of the Class any additional shares of any class or series of the Company's stock (other than pursuant to contractual pre-emptive rights);

(c) effect any reclassification, exchange, combination, substitution, reorganization or recapitalization of the outstanding shares of the Class; or

(d) effect an Acquisition or to liquidate, dissolve or wind up;

then, in connection with each such event, the Company shall give Holder:

(1) at least seven (7) Business Days prior written notice of the date on which a record will be taken for such dividend, distribution, or subscription rights (and specifying the date on which the holders of outstanding shares of the Class will be entitled thereto) or for determining rights to vote, if any, in respect of the matters referred to in (a) and (b) above; and

(2) in the case of the matters referred to in (c) and (d) above at least seven (7) Business Days prior written notice of the date when the same will take place (and specifying the date on which the holders of outstanding shares of the Class will be entitled to exchange their shares for the securities or other property deliverable upon the occurrence of such event).

Reference is made to Section 1.6(c) whereby this Warrant will be deemed to be exercised pursuant to Section 1.2 hereof if the Company does not give written notice to Holder of a Cash/Public Acquisition as required by the terms hereof. Company will also provide information requested by Holder that is reasonably necessary to enable Holder to comply with Holder's accounting or reporting requirements.

3.3 Registration Rights. The Company agrees that the Holder shall have the "Piggyback" and S-3 registration rights pursuant to and as set forth in the Company's Fifth Amended and Restated Investors' Rights Agreement, dated as of August 5, 2016, as amended (the "Rights Agreement"), on a pari passu basis with the holders of outstanding shares of the Company's convertible preferred stock who are parties thereto. The provisions set forth in the Rights Agreement or similar agreement relating to such registration rights in effect as of the Issue Date may not be amended, modified or waived without the prior written consent of the Holder unless such amendment, modification or waiver affects the rights associated with the Shares issued and issuable upon exercise hereof (and the shares of the Common Stock issued and issuable upon conversion of the Shares) in the same manner as such amendment, modification or waiver affects the rights associated with all outstanding shares of the Company's convertible preferred stock whose holders are parties thereto.

SECTION 4. REPRESENTATIONS, WARRANTIES OF THE HOLDER.

The Holder represents and warrants to the Company as follows:

4.1 Purchase for Own Account. This Warrant and the securities to be acquired upon exercise of this Warrant by Holder are being acquired for investment for Holder's account, not as a nominee or agent, and not with a view to the public resale or distribution within the meaning of the Act. Holder also represents that it has not been formed for the specific purpose of acquiring this Warrant or the Shares.

4.2 Disclosure of Information. Holder is aware of the Company's business affairs and financial condition and has received or has had full access to all the information it considers necessary or appropriate to make an informed investment decision with respect to the acquisition of this Warrant and its underlying securities. Holder further has had an opportunity to ask questions and receive answers from the Company regarding the terms and conditions of the offering of this Warrant and its underlying securities and to obtain additional information (to the extent the Company possessed such information or could acquire it without unreasonable effort or expense) necessary to verify any information furnished to Holder or to which Holder has access.

4.3 Investment Experience. Holder understands that the purchase of this Warrant and its underlying securities involves substantial risk. Holder has experience as an investor in securities of companies in the development stage and acknowledges that Holder can bear the economic risk of such Holder's investment in this Warrant and its underlying securities and has such knowledge and experience in financial or business matters that Holder is capable of evaluating the merits and risks of its investment in this Warrant and its underlying securities and/or has a preexisting personal or business relationship with the Company and certain of its officers, directors or controlling persons of a nature and duration that enables Holder to be aware of the character, business acumen and financial circumstances of such persons.

4.4 Accredited Investor Status. Holder is an "accredited investor" within the meaning of Regulation D promulgated under the Act.

reasonably satisfactory to the Company, as reasonably requested by the Company). The Company shall not require Holder to provide an opinion of counsel if the transfer is to an affiliate of Holder. Additionally, the Company shall also not require an opinion of counsel if there is no material question as to the availability of Rule 144 promulgated under the Act.

5.4 Transfer Procedure. Subject to the provisions of Section 5.3 and upon providing the Company with written notice, Holder may transfer all or part of this Warrant or the Shares issuable upon exercise of this Warrant (or the securities issuable directly or indirectly, upon conversion of the Shares, if any) to any transferee, provided, however, in connection with any such transfer, Holder will give the Company notice of the portion of the Warrant being transferred with the name, address and taxpayer identification number of the transferee and Holder will surrender this Warrant to the Company for reissuance to the transferee(s) (and Holder if applicable); and provided further, that any subsequent transferee shall agree in writing with the Company to be bound by all of the terms and conditions of this Warrant.

5.5 Notices. All notices and other communications hereunder from the Company to the Holder, or vice versa, shall be deemed delivered and effective (i) when given personally, (ii) on the third (3rd) Business Day after being mailed by first-class registered or certified mail, postage prepaid, (iii) upon actual receipt if given by facsimile or electronic mail and such receipt is confirmed in writing by the recipient, or (iv) on the first Business Day following delivery to a reliable overnight courier service, courier fee prepaid, in any case at such address as may have been furnished to the Company or Holder, as the case may be, in writing by the Company or such Holder from time to time in accordance with the provisions of this Section 5.5. All notices to Holder shall be addressed as follows until the Company receives notice of a change of address in connection with a transfer or otherwise:

INNOVATUS LIFE SCIENCES LENDING FUND I, LP
777 Third Avenue, 25th Floor
New York, NY 10017
Attention: Claes Ekstrom
Email: cekstrom@innovatuscp.com

Notice to the Company shall be addressed as follows until Holder receives notice of a change in address:

BIONANO GENOMICS, INC.
9540 Towne Centre Drive
Suite 100
Attn: Chief Financial Officer
Email: mward@bionanogenomics.com

With a copy (which shall not constitute notice) to:

Cooley LLP
[4401 Eastgate Mall](#)
[San Diego, CA 92121](#)
Attn: [Thomas A. Coll](#)
Facsimile No.: [\(858\) 550-6420](#)
Email: collta@cooley.com

5.6 Waiver. This Warrant and any term hereof may be changed, waived, discharged or terminated (either generally or in a particular instance and either retroactively or prospectively) only by an instrument in writing signed by the party against which enforcement of such change, waiver, discharge or termination is sought.

5.7 Attorneys' Fees. In the event of any dispute between the parties concerning the terms and provisions of this Warrant, the party prevailing in such dispute shall be entitled to collect from the other party all costs incurred in such dispute, including reasonable attorneys' fees.

5.8 Counterparts; Facsimile/Electronic Signatures. This Warrant may be executed in counterparts, all of which together shall constitute one and the same agreement. Any signature page delivered electronically or by facsimile shall be binding to the same extent as an original signature page with regards to any agreement subject to the terms hereof or any amendment thereto.

5.9 Governing Law. This Warrant shall be governed by and construed in accordance with the laws of the State of New York, without giving effect to its principles regarding conflicts of law.

5.10 Headings. The headings in this Warrant are for purposes of reference only and shall not limit or otherwise affect the meaning of any provision of this Warrant.

5.11 Business Days. "Business Day" is any day that is not a Saturday, Sunday or a day on which banks in New York, New York are closed.

[Signature page follows]

IN WITNESS WHEREOF, the parties have caused this Warrant to Purchase Stock to be executed by their duly authorized representatives effective as of the Issue Date written above.

“COMPANY”

BIONANO GENOMICS, INC.

By: _____
Name: _____
(Print)
Title: _____

“HOLDER”

INNOVATUS LIFE SCIENCES LENDING FUND I, LP

By: _____
Name: _____
(Print)
Title: _____

APPENDIX 1
NOTICE OF EXERCISE

1. The undersigned Holder hereby exercises its right purchase _____ shares of the Common Stock of BIONANO GENOMICS, INC. (the "Company") in accordance with the attached Warrant To Purchase Stock, and tenders payment of the aggregate Warrant Price for such shares as follows:

- check in the amount of \$_____ payable to order of the Company enclosed herewith
- Wire transfer of immediately available funds to the Company's account
- Cashless Exercise pursuant to Section 1.2 of the Warrant
- Other [Describe] _____

2. Please issue a certificate or certificates representing the Shares in the name specified below:

Holder's Name

(Address)

3. By its execution below and for the benefit of the Company, Holder hereby restates each of the representations and warranties in Section 4 of the Warrant to Purchase Stock as of the date hereof.

HOLDER:

By: _____

Name: _____

Title: _____

(Date): _____

SCHEDULE 1

Company Capitalization Table

[see attached]

Schedule 1

BIONANO GENOMICS, INC.

REGISTRATION RIGHTS AGREEMENT

THIS REGISTRATION RIGHTS AGREEMENT (this "*Agreement*") is entered into as of March 14, 2019, by and among BIONANO GENOMICS, INC., a Delaware corporation (the "*Company*"), INNOVATUS LIFE SCIENCES LENDING FUND I, LP and INNOVATUS LIFE SCIENCES OFFSHORE FUND I, LP (collectively, "*Investor*"). The Company and Investor may be referred to hereinafter collectively as the "*Parties*" and each individually as a "*Party*."

RECITALS

WHEREAS, in connection with the purchase of shares of the Common Stock of the Company by Investor pursuant to that certain Common Stock Purchase Agreement dated as of the date hereof (the "*Purchase Agreement*"), the parties desire to enter into this Agreement in order to grant registration rights to Investor as set forth below.

NOW, THEREFORE, in consideration of these premises and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties hereto agree as follows:

SECTION 1. DEFINITIONS.

Capitalized terms used herein and not defined elsewhere herein have the meanings set forth in **Exhibit A**.

SECTION 2. REGISTRATION RIGHTS.

2.1 Resale Registration. At any time on or after October 1, 2019, Holder may make a written request that the Company register the resale of the Registrable Securities under the Securities Act on Form S-3 (or any successor to Form S-3) or any similar short-form registration statement. Upon receipt of such notice, the Company will (i) as soon as practicable, and no later than sixty (60) days following receipt of such notice, file such registration statement, and any qualifications and compliances as may be so requested as would permit or facilitate the sale and distribution of all or such portion of Holder's Registrable Securities as are specified in such request and (ii) use its commercially reasonable efforts to cause such registration statement to be declared effective by the SEC as soon as practicable and no later than the Effectiveness Deadline, and shall use its commercially reasonable efforts to keep such registration statement continuously effective under the Securities Act until the earlier of (1) such time as all of the Registrable Securities covered by such registration statement have been publicly sold by the

Holder, or (2) four (4) years from the date hereof; *provided, however*, that the Company will not be obligated to effect any such registration, qualification or compliance pursuant to this Section 2.1:

(a) if within thirty (30) days of receipt of a written request from Holder pursuant to this Section 2.1, the Company gives notice to Holder of the Company's intention to make a public offering within ninety (90) days, other than pursuant to a Special Registration Statement; provided, however, that the Company shall not utilize this right more than once in any twelve (12) month period, and provided further, that the Company shall not register any other of its shares during such ninety (90)-day period other than pursuant to a Special Registration Statement;

(b) if the Company will furnish to Holder a certificate signed by the Chairman of the Board stating that in the good faith judgment of the Company's Board of Directors, it would be seriously detrimental to the Company and its stockholders for such Form S-3 registration to be effected at such time, in which event the Company will have the right to defer the filing of the Form S-3 registration statement for a period of not more than ninety (90) days after receipt of the request of Holder under this Section 2.1; *provided*, that such right to delay a request will be exercised by the Company not more than once in any twelve (12)-month period and provided that the Company shall not register any other of its shares during such ninety (90)-day period other than pursuant to a Special Registration Statement;

(c) if the Company has, within the twelve (12)-month period preceding the date of such request, already effected one (1) registration on Form S-3 for Holder pursuant to this Section 2.1, or

(d) in any particular jurisdiction in which the Company would be required to qualify to do business or to execute a general consent to service of process in effecting such registration, qualification or compliance, unless the Company is already subject to service in such jurisdiction and except as may be required by the Securities Act.

If the Company is ineligible for any reason to register the resale of the Registrable Securities on Form S-3, then such registration shall be on such other form then available to the Company (including a Form S-1) to register for resale of the Registrable Securities as a secondary offering.

2.2 Piggyback Registration. If the Company at any time that the Registrable Securities are not registered pursuant to a registration statement required to be filed pursuant to Section 2.1, proposes to register any of its securities under the Securities Act for sale to the public, whether for its own account or for the account of other security holders or both (except with respect to a Special Registration Statement or a registration statement required to be filed pursuant to Section 2.1), each such time it will give written notice to all Holders of outstanding Registrable Securities of its intention so to do. Upon the written request of any such Holder, received by the Company within thirty (30) days after the giving of any such notice by the

Company, to register any of its Registrable Securities, the Company will use its reasonable best efforts to cause the Registrable Securities as to which registration shall have been so requested to be included in the securities to be covered by the registration statement proposed to be filed by the Company, all to the extent requisite to permit the sale or other disposition by the holder of such Registrable Securities so registered. Notwithstanding any other provision of this Agreement, in the event that any registration pursuant to this Section 2.2 shall be, in whole or in part, an underwritten public offering of Common Stock, if the underwriter determines in good faith that marketing factors require a limitation of the number of shares to be underwritten, the number of shares that may be included in the underwriting will be allocated, first, to the Company; second, to the "Investors" under that certain Fifth Amended and Restated Investors' Rights Agreement dated August 5, 2016, as amended, by and among the Company and the Investors named therein; and third, to Investor. If Investor disapproves of the terms of any such underwriting, Investor may elect to withdraw therefrom by written notice to the Company and the underwriter, delivered at least ten (10) business days prior to the effective date of the registration statement. Any Registrable Securities excluded or withdrawn from such underwriting will be excluded and withdrawn from the registration. Notwithstanding the foregoing, the Company may withdraw any registration statement referred to in this Section 2.2 without thereby incurring any liability to the holders of Registrable Securities.

2.3 Expenses of Registration. Except as specifically provided herein, all Registration Expenses incurred in connection with any registration, qualification or compliance pursuant to Section 2.1 or Section 2.2 will be borne by the Company. All Selling Expenses incurred in connection with any registrations hereunder will be borne by the holders of the securities so registered *pro rata* on the basis of the number of shares so registered. The Company will not, however, be required to pay for expenses of any registration statement filed pursuant to Section 2.1 the request of which has been subsequently withdrawn by Holder unless (a) the withdrawal is based upon material adverse information concerning the Company of which Holder was not aware at the time of such request or (b) Holder agrees to deem such registration to have been effected as of the date of such withdrawal for purposes of determining whether the Company will be obligated pursuant to Section 2.1(c), to undertake any subsequent registration, in which event such right will be forfeited by Holder. If Holder is required to pay the Registration Expenses, such expenses will be borne by the holders of securities (including Registrable Securities) requesting such registration in proportion to the number of shares for which registration was requested. If the Company is required to pay the Registration Expenses of a withdrawn offering pursuant to clause (a) above, then such registration will not be deemed to have been effected for purposes of determining whether the Company will be obligated pursuant to Section 2.1(c) to undertake any subsequent registration.

2.4 Obligations of the Company. Whenever required to effect the registration of any Registrable Securities, the Company will, as expeditiously as reasonably possible:

(a) prepare and file with the SEC a registration statement with respect to such Registrable Securities and use all commercially reasonable efforts to cause such registration statement to become effective;

(b) at any time, upon written notice to Holder and for a period not to exceed sixty (60) days thereafter (the "***Suspension Period***"), the Company may suspend the use of any registration statement (and Holder hereby agrees not to offer or sell any Registrable Securities pursuant to such registration statement during the Suspension Period) if the Company reasonably believes that there is or may be in existence material nonpublic information or events involving the Company, the failure of which to be disclosed in the prospectus included in the registration statement could result in a Violation (as defined below). In the event that the Company will exercise its right to suspend the use of a registration statement hereunder, the applicable time period during which the registration statement is to remain effective will be extended by a period of time equal to the duration of the Suspension Period. The Company may extend the Suspension Period for an additional consecutive sixty (60) days with the consent of Holder, which consent will not be unreasonably withheld. If so directed by the Company, Holder will (i) not offer to sell any Registrable Securities pursuant to the registration statement during the period in which the suspension is in effect after receiving notice of such suspension; and (ii) use its commercially reasonable efforts to deliver to the Company (at the Company's expense) all copies, other than permanent file copies then in Holder's possession, of the prospectus relating to such Registrable Securities current at the time of receipt of such notice.

(c) Prepare and file with the SEC such amendments and supplements to such registration statement and the prospectus used in connection with such registration statement as may be necessary to comply with the provisions of the Securities Act with respect to the disposition of all securities covered by such registration statement.

(d) Furnish to Holder such number of copies of a prospectus, including a preliminary prospectus, in conformity with the requirements of the Securities Act, and such other documents as it may reasonably request in order to facilitate the disposition of Registrable Securities owned by it.

(e) Use its commercially reasonable efforts to register and qualify the securities covered by such registration statement under such other securities or Blue Sky laws of such jurisdictions as will be reasonably requested by Holder; *provided* that the Company will not be required in connection therewith or as a condition thereto to qualify to do business or to file a general consent to service of process in any such states or jurisdictions, unless the Company is already subject to service in such jurisdiction and except as may be required by the Securities Act.

(f) Notify Holder at any time when a prospectus relating to Holder's Registrable Securities is required to be delivered under the Securities Act of the happening of

any event as a result of which the prospectus included in such registration statement, as then in effect, includes an untrue statement of a material fact or omits to state a material fact required to be stated therein or necessary to make the statements therein not misleading in the light of the circumstances then existing. The Company will use commercially reasonable efforts to amend or supplement such prospectus in order to cause such prospectus not to include any 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 not misleading in the light of the circumstances then existing.

2.5 Delay of Registration; Furnishing Information.

(a) Holder will not have any right to obtain or seek an injunction restraining or otherwise delaying any such registration as the result of any controversy that might arise with respect to the interpretation or implementation of this Section 2.

(b) It will be a condition precedent to the obligations of the Company to take any action pursuant to Section 2.1 that Holder will furnish to the Company such information regarding Holder, the Registrable Securities held by it and the intended method of disposition of such securities as will be required to effect the registration of their Registrable Securities.

2.6 Indemnification. In the event any Registrable Securities are included in a registration statement under Section 2.1 or 2.2:

(a) To the extent permitted by law, the Company will indemnify and hold harmless Holder, the partners, members, stockholders, officers, advisers and directors of Holder, as applicable, any underwriter (as defined in the Securities Act) for Holder and each person, if any, who controls Holder or underwriter within the meaning of the Securities Act or the Exchange Act, and against any losses, claims, damages, or liabilities (joint or several) to which they may become subject under the Securities Act, the Exchange Act or other federal or state law, insofar as such losses, claims, damages or liabilities (or actions in respect thereof) arise out of or are based upon any of the following statements, omissions or violations (collectively a "**Violation**") by the Company: (i) any untrue statement or alleged untrue statement of a material fact contained in such registration statement or incorporated by reference therein, including any preliminary prospectus or final prospectus contained therein or any amendments or supplements thereto, (ii) the omission or alleged omission to state therein a material fact required to be stated therein, or necessary to make the statements therein not misleading, or (iii) any violation or alleged violation by the Company of the Securities Act, the Exchange Act, any state securities law or any rule or regulation promulgated under the Securities Act, the Exchange Act or any state securities law in connection with the offering covered by such registration statement; and the Company will reimburse Holder and each such partner, member, stockholder, officer, director, underwriter or controlling person for any legal or other expenses reasonably incurred by them in connection with investigating or defending any such loss, claim, damage, liability or

action; *provided however*, that the indemnity agreement contained in this Section 2.6(a) will not apply to amounts paid in settlement of any such loss, claim, damage, liability or action if such settlement is effected without the consent of the Company, which consent will not be unreasonably withheld, nor will the Company be liable in any such case for any such loss, claim, damage, liability or action to the extent that it arises out of or is based upon a Violation which occurs in reliance upon and in conformity with written information furnished expressly for use in connection with such registration by Holder or any partner, member, officer, director, underwriter or controlling person of Holder.

(b) To the extent permitted by law, Holder will, if Registrable Securities held by Holder are included in the securities as to which such registration qualifications or compliance is being effected, indemnify and hold harmless the Company, each of its directors, its officers and each person, if any, who controls the Company within the meaning of the Securities Act, and any underwriter against any losses, claims, damages or liabilities (joint or several) to which the Company or any such director, officer, controlling person, underwriter, partner, director, officer or controlling person of Holder may become subject under the Securities Act, the Exchange Act or other federal or state law, insofar as such losses, claims, damages or liabilities (or actions in respect thereto) arise out of or are based upon any of the following statements: (i) any untrue statement or alleged untrue statement of a material fact contained in such registration statement or incorporated reference therein, including any preliminary prospectus or final prospectus contained therein or any amendments or supplements thereto, (ii) the omission or alleged omission to state therein a material fact required to be stated therein, or necessary to make the statements therein not misleading, or (iii) any violation or alleged violation by the Company of the Securities Act (collectively, a "**Holder Violation**"), in each case to the extent (and only to the extent) that such Holder Violation occurs in reliance upon and in conformity with written information furnished by Holder under an instrument duly executed by Holder and stated to be specifically for use in connection with such registration; and Holder will reimburse any legal or other expenses reasonably incurred by the Company or any such director, officer, controlling person, or underwriter in connection with investigating or defending any such loss, claim, damage, liability or action if it is judicially determined that there was such a Holder Violation; *provided, however*, that the indemnity agreement contained in this Section 2.5(b) will not apply to amounts paid in settlement of any such loss, claim, damage, liability or action if such settlement is effected without the consent of Holder, which consent will not be unreasonably withheld; *provided further*, that in no event will any indemnity under this Section 2.5 exceed the net proceeds from the offering actually received by Holder.

(c) Promptly after receipt by an indemnified party under this Section 2.6 of notice of the commencement of any action (including any governmental action), such indemnified party will, if a claim in respect thereof is to be made against any indemnifying party under this Section 2.6, deliver to the indemnifying party a written notice of the commencement thereof and the indemnifying party will have the right to participate in, and, to the extent the indemnifying party so desires, jointly with any other indemnifying party similarly noticed, to

assume the defense thereof with counsel mutually satisfactory to the parties; *provided, however*; that an indemnified party will have the right to retain its own counsel, with the fees and expenses thereof to be paid by the indemnifying party, if representation of such indemnified party by the counsel retained by the indemnifying party would be inappropriate due to actual or potential differing interests between such indemnified party and any other party represented by such counsel in such proceeding. The failure to deliver written notice to the indemnifying party within a reasonable time of the commencement of any such action will relieve such indemnifying party of any liability to the indemnified party under this Section 2.6 to the extent, and only to the extent, prejudicial to its ability to defend such action, but the omission so to deliver written notice to the indemnifying party will not relieve it of any liability that it may have to any indemnified party otherwise than under this Section 2.6.

(d) If the indemnification provided for in this Section 2.6 is held by a court of competent jurisdiction to be unavailable to an indemnified party with respect to any losses, claims, damages or liabilities referred to herein, the indemnifying party, in lieu of indemnifying such indemnified party thereunder, will to the extent permitted by applicable law contribute to the amount paid or payable by such indemnified party as a result of such loss, claim, damage or liability in such proportion as is appropriate to reflect the relative fault of the indemnifying party on the one hand and of the indemnified party on the other in connection with the Violation(s) or Holder Violation(s) that resulted in such loss, claim, damage or liability, as well as any other relevant equitable considerations. The relative fault of the indemnifying party and of the indemnified party will be determined by a court of law by reference to, among other things, whether the untrue or alleged untrue statement of a material fact or the omission to state a material fact relates to information supplied by the indemnifying party or by the indemnified party and the parties' relative intent, knowledge, access to information and opportunity to correct or prevent such statement or omission; *provided, that* in no event will any contribution by Holder hereunder exceed the net proceeds from the offering received by Holder.

(e) The obligations of the Company and Holder under this Section 2.6 will survive completion of any offering of Registrable Securities in a registration statement and, with respect to liability arising from an offering to which this Section 2.6 would apply that is covered by a registration filed before termination of this Agreement, such termination. No indemnifying party, in the defense of any such claim or litigation, will, except with the consent of each indemnified party, consent to entry of any judgment or enter into any settlement which does not include as an unconditional term thereof the giving by the claimant or plaintiff to such indemnified party of a release from all liability in respect to such claim or litigation.

2.7 Agreement to Furnish Information. Holder hereby agrees to execute and deliver such other agreements as may be reasonably requested by the Company that are consistent with Holder's obligations under this Agreement or that are necessary to give further effect thereto.

2.8 Rule 144 Reporting. With a view to making available to Holder the benefits of certain rules and regulations of the SEC which may permit the sale of the Registrable Securities to the public without registration, the Company agrees to use its best efforts to:

(a) Make and keep public information available, as those terms are understood and defined in Rule 144 or any similar or analogous rule promulgated under the Securities Act, at all times after the effective date of the first registration filed by the Company for an offering of its securities to the general public;

(b) File with the SEC, in a timely manner, all reports and other documents required of the Company under the Exchange Act; and

(c) So long as Holder owns any Registrable Securities, as applicable, furnish to Holder forthwith upon request: a written statement by the Company as to its compliance with the reporting requirements of said Rule 144, and of the Exchange Act (at any time after it has become subject to such reporting requirements); a copy of the most recent annual or quarterly report of the Company filed with the SEC; and such other reports and documents as Holder may reasonably request in connection with availing itself of any rule or regulation of the SEC allowing it to sell any such securities without registration.

2.9 Assignment of Registration Rights. The rights to cause the Company to register Registrable Securities pursuant to this Section 2 may be assigned by Holder to a transferee or assignee of Registrable Securities (for so long as such shares remain Registrable Securities) that is a subsidiary, Affiliate, parent, general partner, limited partner, retired partner, member, stockholder or retired member, of a Holder that is a corporation, partnership or limited liability company; *provided, however*, (i) the transferor shall, within ten (10) days after such transfer, furnish to the Company written notice of the name and address of such transferee or assignee and the securities with respect to which such registration rights are being assigned and (ii) such transferee shall agree to be subject to all restrictions set forth in this Agreement.

2.10 Termination of Registration Rights. The right of Holder to request registration or inclusion of Registrable Securities in any registration pursuant to Section 2.1 or Section 2.2 will terminate upon the date that is four (4) years following the date hereof. Upon such termination, such shares will cease to be "Registrable Securities" hereunder for all purposes.

SECTION 3. MISCELLANEOUS.

3.1 Governing Law. This Agreement will in all respects be governed by and construed in accordance with the substantive laws of the State of New York, without regard to its choice of law rules.

3.2 Successors and Assigns. Except as otherwise expressly provided herein, the provisions hereof will inure to the benefit of, and be binding upon, the parties hereto and their

respective successors, permitted assigns, heirs, executors, and administrators and shall inure to the benefit of and be enforceable by each person who shall be a holder of Registrable Securities from time to time. Investor may directly or indirectly assign this Agreement to its parent, Affiliate or subsidiary in connection with a direct or indirect transfer of Registrable Securities to such assignee but may not otherwise assign this Agreement or, other than pursuant to Section 2.9, its rights under this Agreement without the express prior written consent of the Company. Any attempted assignment by Investor of any rights under this Agreement other than in accordance with the terms of this Agreement will be null and void.

3.3 Entire Agreement. This Agreement, including the exhibits and schedules hereto, constitutes the entire agreement between the Company and Investor with respect to the specific subject matter hereof, and supersedes all prior and contemporaneous agreements, representations, and understandings of the parties with respect to such specific subject matter. No party hereto will be liable or bound to the other in any manner by any warranties, representations or covenants with respect to the subject matter hereof except as specifically set forth herein.

3.4 Severability. If one or more provisions of this Agreement are held by a proper court or arbitral tribunal to be unenforceable under applicable law, the unenforceable portions of such provisions, or such provisions in their entirety, to the extent necessary and permitted by law, will be severed herefrom, and the balance of this Agreement will be enforceable in accordance with its terms.

3.5 Amendment and Waiver. Except as otherwise expressly provided, this Agreement may be amended or modified, and the rights and obligations under this Agreement may be waived, only upon the written consent of the Company and Investor.

3.6 Delays or Omissions. It is agreed that no delay or omission to exercise any right, power, or remedy accruing to any party, upon any breach, default or noncompliance by another party under this Agreement will impair any such right, power, or remedy, nor will it be construed to be a waiver of any such breach, default or noncompliance, or any acquiescence therein, or of any similar breach, default or noncompliance thereafter occurring. It is further agreed that any waiver, permit, consent, or approval of any kind or character on any party's part of any breach, default or noncompliance under this Agreement or any waiver on such party's part of any provisions or conditions of this Agreement must be in writing and will be effective only to the extent specifically set forth in such writing. All remedies, either under this Agreement, by law, or otherwise afforded to any party, will be cumulative and not alternative.

3.7 Notices. Except where otherwise specifically provided in this Agreement, all notices, requests, consents, approvals and statements will be in writing and will be deemed to have been properly given by (i) personal delivery, (ii) electronic facsimile transmission, (iii)

electronic mail, or by (iv) nationally recognized overnight courier service, addressed in each case, to the intended recipient as set forth below:

To the Company: Bionano Genomics, Inc.
9640 Towne Centre Drive, Suite 100
San Diego, California 92121
Attention: Chief Executive Officer

With a copy to: Cooley LLP
4401 Eastgate Mall
San Diego, CA 92121
Attention: Thomas A. Coll, Esq.

To Investor: Innovatus Life Sciences Lending Fund I, LP
777 Third Avenue, 25th Floor
New York, NY 10017
Attention: Claes Ekstrom

With a copy to: Greenberg Traurig, LLP
One International Place, Suite 2000
Boston, MA 02110
Attention: Abdullah Malik

Such notice, request, demand, claim or other communication will be deemed to have been duly given on (a) the date of personal delivery, (b) the date actually received if by facsimile or electronic mail; or (c) on the third business day after delivery to a nationally recognized overnight courier service, as the case may be. Either Party may change the address to which notices, requests, demands, claims, and other communications hereunder are to be delivered by giving the other Party notice in the manner herein set forth.

3.8 Fees and Expenses. Each party will pay all costs and expenses that it incurs with respect to the negotiation, execution, delivery and performance of this Agreement. If any action at law or in equity is necessary to enforce or interpret the terms of any of this Agreement, the prevailing party will be entitled to reasonable attorneys' fees, costs and necessary disbursements in addition to any other relief to which such party may be entitled. For purposes of this Section 3.8, "prevailing party" means the net winner of a dispute, taking into account the claims pursued, the claims on which the pursuing party was successful, the amount of money sought, the amount of money awarded, and offsets or counterclaims pursued (successfully or unsuccessfully) by the other Party. If a written settlement offer is rejected and the judgment or award finally obtained is equal to or more favorable to the offeror than an offer made in writing to settle, the offeror is deemed to be the prevailing party from the date of the offer forward.

3.9 Titles and Subtitles; Form of Pronouns; Construction and Definitions. The titles of the Sections and paragraphs of this Agreement are for convenience only and are not to be considered in construing this Agreement. All pronouns used in this Agreement will be deemed to include masculine, feminine and neuter forms, the singular number includes the plural and the plural number includes the singular and will not be interpreted to preclude the application of any provision of this Agreement to any individual or entity. Unless the context otherwise requires, (i) each reference in this Agreement to a designated “Section,” “Schedule,” “Exhibit,” or “Appendix” is to the corresponding Section, Schedule, Exhibit, or Appendix of or to this Agreement; (ii) the word “or” will not be applied in its exclusive sense; (iii) “including” will mean “including, without limitation”; (iv) references to “\$” or “dollars” will mean the lawful currency of the United States; and (v) “herein,” “hereof,” “hereunder” and other words of similar import refer to this Agreement as a whole and not to any particular Section or other subdivision. References in this Agreement to particular sections of the Securities Act or to any provisions of California law will be deemed to refer to such sections or provisions as they may be amended or succeeded after the date of this Agreement.

3.10 Counterparts. This Agreement may be executed in counterparts, each of which will be deemed an original, but all of which together will constitute one and the same instrument, and will become effective when there exist copies hereof which, when taken together, bear the authorized signatures of each of the parties hereto. Only one such counterpart signed by the party against whom enforceability is sought needs to be produced to evidence the existence of this Agreement.

3.11 Aggregation of Stock. All shares of Registrable Securities held or acquired by affiliated entities or persons or persons or entities under common management or control will be aggregated together for the purpose of determining the availability of any rights under this Agreement.

3.12 Specific Performance. The failure of either party to this Agreement to perform its agreements and covenants hereunder, including but not limited to Section 2, may cause irreparable injury to the other party to this Agreement for which monetary damages, even if available, will not be an adequate remedy. Accordingly, each of the parties hereto hereby consents to the granting of equitable relief (including specific performance and injunctive relief) by any court of competent jurisdiction to enforce any Party’s obligations hereunder. The parties further agree to waive any requirement for the securing or posting of any bond in connection with the obtaining of any such equitable relief and that this Section 3.12 is without prejudice to any other rights that the Company and Investor may have for any failure to perform this Agreement.

3.13 Termination. This Agreement will terminate and be of no further force or effect upon the termination of Holder’s registration rights hereunder pursuant to Section 2.10 above.

IN WITNESS WHEREOF, the parties hereto have executed this **REGISTRATION RIGHTS AGREEMENT** as of the date set forth in the first paragraph hereof.

COMPANY:

BIONANO GENOMICS, INC.

By: /s/ R. Erik Holmlin, Ph.D.

Name: R. Erik Holmlin, Ph.D.

Title: President and Chief Executive Officer

IN WITNESS WHEREOF, the parties hereto have executed this **REGISTRATION RIGHTS AGREEMENT** as of the date set forth in the first paragraph hereof.

INVESTOR:

INNOVATUS LIFE SCIENCES LENDING FUND I, LP

By: Innovatus Life Sciences GP, LP
Its: General Partner

By: Innovatus Flagship Parent GP, LLC
Its: General Partner

By: /s/ Andrew Dym
Name: Andrew Dym
Title: Authorized Signatory

Address: 777 Third Avenue
25th Floor
New York, NY 10017

Facsimile: _____

INNOVATUS LIFE SCIENCES OFFSHORE FUND I, LP

By: Innovatus Life Sciences Offshore GP, LP
Its: General Partner

By: Innovatus Flagship Offshore Parent GP, LLC
Its: General Partner

By: /s/ Andrew Dym
Name: Andrew Dym
Title: Authorized Signatory

Address: 777 Third Avenue
25th Floor
New York, NY 10017

Facsimile: _____

EXHIBIT A

DEFINITIONS

1.1 **“Affiliate”** means with respect to any specified person, any other person who or which, directly or indirectly, controls, is controlled by, or is under common control with such specified person, including, without limitation, any general partner, officer, director or manager of such person and any venture capital fund now or hereafter existing that is controlled by one or more general partners or managing members of, or is under common investment management with, such person.

1.2 **“Common Stock”** means the Common Stock of the Company.

1.3 **“Effectiveness Deadline”** means, with respect to a registration statement filed pursuant to Section 2.1, the earlier of (i) the 30th calendar day following the date the registration statement was filed (or the 60th calendar day following the date the registration statement was filed if such registration statement is subject to review by the SEC) and (ii) the 5th trading day after the date the Company is notified (orally or in writing, whichever is earlier) by the SEC that such registration statement will not be “reviewed” or will not be subject to further review and that the SEC is prepared to declare such registration statement effective; provided, that if the Effectiveness Deadline falls on a Saturday, Sunday or other day that the SEC is closed for business, the Effectiveness Deadline shall be extended to the next business day on which the SEC is open for business.

1.4 **“Exchange Act”** means the Securities Exchange Act of 1934, as amended.

1.5 **“Form S-3”** means such form under the Securities Act as in effect on the date hereof or any successor or similar registration form under the Securities Act subsequently adopted by the SEC which permits inclusion or incorporation of substantial information by reference to other documents filed by the Company with the SEC.

1.6 **“Holder”** means Investor or transferee pursuant to Section 2.10, so long as it owns of record Registrable Securities that have not been sold to the public.

1.7 **“Register,” “registered,”** and **“registration”** refer to a registration effected by preparing and filing a registration statement in compliance with the Securities Act, and the declaration or ordering of effectiveness of such registration statement or document.

1.8 **“Registrable Securities”** means (a) Common Stock issued pursuant to the Purchase Agreement and (b) any Common Stock issued as (or issuable upon the conversion or exercise of any warrant, right or other security which is issued as) a dividend or other

distribution with respect to, or in exchange for or in replacement of, such above-described securities. Notwithstanding the foregoing, Registrable Securities will not include any securities (i) sold by a person to the public either pursuant to a registration statement or Rule 144, or (ii) sold in a private transaction where registration rights are not transferred in accordance with Section 2.10.

1.9 “Registration Expenses” means all expenses incurred by the Company in complying with Sections 2.1 or 2.2, including, without limitation, all registration and filing fees, printing expenses, fees and disbursements of counsel for the Company, reasonable fees and disbursements not to exceed ten thousand dollars (\$10,000) of a single special counsel for Holder, if applicable, blue sky fees and expenses and the expense of any special audits incident to or required by any such registration (but excluding the compensation of regular employees of the Company which will be paid in any event by the Company).

1.10 “Rule 144” means Rule 144 promulgated under the Securities Act, as in effect from time to time.

1.11 “SEC” means the Securities and Exchange Commission.

1.12 “Securities Act” means the Securities Act of 1933, as amended.

1.13 “Selling Expenses” means any underwriting discounts and selling commissions applicable to the sale.

1.14 “Special Registration Statement” means (i) a registration statement relating to any employee benefit plan or (ii) with respect to any corporate reorganization or transaction under Rule 145 of the Securities Act, any registration statements related to the issuance or resale of securities issued in such a transaction.

COMMON STOCK PURCHASE AGREEMENT

COMMON STOCK PURCHASE AGREEMENT (the “**Agreement**”), dated as of March 14, 2019, by and between **BIONANO GENOMICS, INC.**, a Delaware corporation (the “**Company**”), and **ASPIRE CAPITAL FUND, LLC**, an Illinois limited liability company (the “**Buyer**”). Capitalized terms used herein and not otherwise defined herein are defined in Section 10 hereof.

WHEREAS:

Subject to the terms and conditions set forth in this Agreement, the Company wishes to sell to the Buyer, and the Buyer wishes to buy from the Company, up to Ten Million Dollars (\$10,000,000) of the Company’s common stock, par value \$0.0001 per share (the “**Common Stock**”). The shares of Common Stock to be purchased hereunder are referred to herein as the “**Purchase Shares**.”

NOW THEREFORE, the Company and the Buyer hereby agree as follows:

1. PURCHASE OF COMMON STOCK.

Subject to the terms and conditions set forth in this Agreement, the Company has the right to sell to the Buyer, and the Buyer has the obligation to purchase from the Company, Purchase Shares as follows:

(a) Initial Purchase; Commencement of Purchases of Common Stock. Immediately upon the execution of this Agreement, the Buyer shall purchase from the Company 272,479 Purchase Shares and upon receipt of such Purchase Shares shall pay to the Company as the purchase price therefor, via wire transfer, One Million Dollars (\$1,000,000) (such purchase the “**Initial Purchase**” and such Purchase Shares are referred to herein as “**Initial Purchase Shares**”). Upon issuance and payment therefor as provided herein, such Initial Purchase Shares shall be validly issued and fully paid and non-assessable. The Initial Purchase Shares shall be issued to the Buyer bearing the restrictive legend set forth in Section 4(e). Thereafter, the purchase and sale of Purchase Shares hereunder shall occur from time to time upon written notices by the Company to the Buyer on the terms and conditions as set forth herein following the satisfaction of the conditions (the “**Commencement**”) as set forth in Sections 6 and 7 below (the date of satisfaction of such conditions, the “**Commencement Date**”).

(b) The Company’s Right to Require Regular Purchases. Subject to the terms and conditions of this Agreement, on any given Business Day after the Commencement Date, the Company shall have the right but not the obligation to direct the Buyer by its delivery to the Buyer of a Purchase Notice from time to time, and the Buyer thereupon shall have the obligation, to buy the number of Purchase Shares specified in such notice, up to 60,000 Purchase Shares, on such Business Day (as long as such notice is delivered on or before 5:00 p.m. Eastern time on such Business Day) (each such purchase, a “**Regular Purchase**”) at the Purchase Price on the Purchase Date; however, in no event shall the Purchase Amount of a Regular Purchase exceed Three Hundred Thousand Dollars (\$300,000) per Business Day. The Company may deliver additional Purchase Notices to the Buyer from time to time so long as the most recent purchase has been completed. The share amounts in this Section 1(b) shall be appropriately adjusted for any reorganization, recapitalization, non-cash dividend, stock split, reverse stock split or other similar transaction.

(c) VWAP Purchases. Subject to the terms and conditions of this Agreement, in addition to purchases of Purchase Shares as described in Section 1(b) above, with one Business Day's prior written notice (as long as such notice is delivered on or before 5:00 p.m. Eastern time on the Business Day immediately preceding the VWAP Purchase Date), the Company shall also have the right but not the obligation to direct the Buyer by the Company's delivery to the Buyer of a VWAP Purchase Notice from time to time, and the Buyer thereupon shall have the obligation, to buy the VWAP Purchase Share Percentage of the trading volume of the Common Stock on the VWAP Purchase Date up to the VWAP Purchase Share Volume Maximum on the VWAP Purchase Date (each such purchase, a "**VWAP Purchase**") at the VWAP Purchase Price. The Company may deliver a VWAP Purchase Notice to the Buyer on or before 5:00 p.m. Eastern time on a date on which the Company also submitted a Purchase Notice for a Regular Purchase of 60,000 Purchase Shares to the Buyer. The share amount in the prior sentence shall be appropriately adjusted for any reorganization, recapitalization, non-cash dividend, stock split, reverse stock split, or other similar transaction. A VWAP Purchase shall automatically be deemed completed at such time on the VWAP Purchase Date that the Sale Price falls below the VWAP Minimum Price Threshold; in such circumstance, the VWAP Purchase Amount shall be calculated using (i) the VWAP Purchase Share Percentage of the aggregate shares traded on the Principal Market for such portion of the VWAP Purchase Date prior to the time that the Sale Price fell below the VWAP Minimum Price Threshold and (ii) a VWAP Purchase Price calculated using the volume weighted average price of Common Stock sold during such portion of the VWAP Purchase Date prior to the time that the Sale Price fell below the VWAP Minimum Price Threshold. Each VWAP Purchase Notice must be accompanied by instructions to the Company's Transfer Agent to immediately issue to the Buyer an amount of Common Stock equal to the VWAP Purchase Share Estimate, a good faith estimate by the Company of the number of Purchase Shares that the Buyer shall have the obligation to buy pursuant to the VWAP Purchase Notice. In no event shall the Buyer, pursuant to any VWAP Purchase, purchase a number of Purchase Shares that exceeds the VWAP Purchase Share Estimate issued on the VWAP Purchase Date in connection with such VWAP Purchase Notice; however, the Buyer will immediately return to the Company any amount of Common Stock issued pursuant to the VWAP Purchase Share Estimate that exceeds the number of Purchase Shares the Buyer actually purchases in connection with such VWAP Purchase. Upon completion of each VWAP Purchase Date, the Buyer shall submit to the Company a confirmation of the VWAP Purchase in form and substance reasonably acceptable to the Company. The Company may deliver additional VWAP Purchase Notices to the Buyer from time to time so long as the most recent purchase has been completed.

(d) Payment for Purchase Shares. For each Regular Purchase, the Buyer shall pay to the Company an amount equal to the Purchase Amount as full payment for such Purchase Shares via wire transfer of immediately available funds on the same Business Day that the Buyer receives such Purchase Shares. For each VWAP Purchase, the Buyer shall pay to the Company an amount equal to the VWAP Purchase Amount as full payment for such Purchase Shares via wire transfer of immediately available funds on the second Business Day following the VWAP Purchase Date. All payments made under this Agreement shall be made in lawful money of the United States of America via wire transfer of immediately available funds to such account as the Company may from time to time designate by written notice in accordance with the provisions of this Agreement. Whenever any amount expressed to be due by the terms of this Agreement is due on any day that is not a Business Day, the same shall instead be due on the next succeeding day that is a Business Day.

(e) Purchase Price Floor. The Company and the Buyer shall not effect any sales under this Agreement on any Purchase Date where the Closing Sale Price is less than the Floor Price. "**Floor Price**"

means \$0.25 per share of Common Stock, which shall be appropriately adjusted for any reorganization, recapitalization, non-cash dividend, stock split, reverse stock split or other similar transaction.

(f) Records of Purchases. The Buyer and the Company shall each maintain records showing the remaining Available Amount at any given time and the dates and Purchase Amounts for each purchase, or shall use such other method reasonably satisfactory to the Buyer and the Company to reconcile the remaining Available Amount.

(g) Taxes. The Company shall pay any and all transfer, stamp or similar taxes that may be payable with respect to the issuance and delivery of any shares of Common Stock to the Buyer made under this Agreement.

(h) Compliance with Principal Market Rules. Notwithstanding anything in this Agreement to the contrary, and in addition to the limitations set forth in Section 1(e), the total number of shares of Common Stock that may be issued under this Agreement, including the Commitment Shares (as defined in Section 4(e) hereof), shall be limited to 2,018,271 shares of Common Stock (the “**Exchange Cap**”), which equals 19.99% of the Company’s outstanding shares of Common Stock as of the date hereof, unless stockholder approval is obtained to issue more than such 19.99%; provided, however, that the Exchange Cap percentage shall be reduced below 19.99% to the extent the Principal Market deems this transaction aggregated with any other transaction in which the Company issues equity securities. The Exchange Cap shall be appropriately adjusted for any reorganization, recapitalization, non-cash dividend, stock split, reverse stock split or other similar transaction. The foregoing limitation shall not apply if stockholder approval has not been obtained and at any time the Exchange Cap is reached and at all times thereafter the average price paid for all shares of Common Stock issued under this Agreement is equal to or greater than \$4.32 (the “**Minimum Price**”), a price equal to the lower of (1) the Closing Sale Price immediately preceding the execution of this Agreement or (2) the arithmetic average of the five (5) Closing Sale Prices for the Common Stock immediately preceding the execution of this Agreement (in such circumstance, for purposes of the Principal Market, the transaction contemplated hereby would not be “below market” and the Exchange Cap would not apply). The Minimum Price shall be appropriately adjusted for any reorganization, recapitalization, non-cash dividend, stock split, reverse stock split or other similar transaction. Notwithstanding the foregoing, the Company shall not be required or permitted to issue, and the Buyer shall not be required to purchase, any shares of Common Stock under this Agreement if such issuance would violate the rules or regulations of the Principal Market. The Company may, in its sole discretion, determine whether to obtain stockholder approval to issue more than 19.99% of its outstanding shares of Common Stock hereunder if such issuance would require stockholder approval under the rules or regulations of the Principal Market.

(i) Beneficial Ownership Limitation. The Company shall not issue and the Buyer shall not purchase any shares of Common Stock under this Agreement if such shares proposed to be issued and sold, when aggregated with all other shares of Common Stock then owned beneficially (as calculated pursuant to Section 13(d) of the Securities Exchange Act of 1934, as amended (the “**1934 Act**”) and Rule 13d-3 promulgated thereunder) by the Buyer and its affiliates would result in the beneficial ownership by the Buyer and its affiliates of more than 19.99% of the then issued and outstanding shares of Common Stock.

2. BUYER’S REPRESENTATIONS AND WARRANTIES.

The Buyer represents and warrants to the Company that as of the date hereof and as of the Commencement Date:

(a) Investment Purpose. The Buyer is entering into this Agreement and acquiring the Commitment Shares and the Purchase Shares (the Purchase Shares and the Commitment Shares are collectively referred to herein as the “**Securities**”), for its own account for investment only and not with a view towards, or for resale in connection with, the public sale or distribution thereof; provided however, by making the representations herein, the Buyer does not agree to hold any of the Securities for any minimum or other specific term.

(b) Accredited Investor Status. The Buyer is an “accredited investor” as that term is defined in Rule 501(a)(3) of Regulation D of the 1933 Act.

(c) Reliance on Exemptions. The Buyer understands that the Securities are being offered and sold to it in reliance on specific exemptions from the registration requirements of United States federal and state securities laws and that the Company is relying in part upon the truth and accuracy of, and the Buyer’s compliance with, the representations, warranties, agreements, acknowledgments and understandings of the Buyer set forth herein in order to determine the availability of such exemptions and the eligibility of the Buyer to acquire the Securities.

(d) Information. The Buyer has been furnished with all materials relating to the business, finances and operations of the Company and materials relating to the offer and sale of the Securities that have been reasonably requested by the Buyer, including, without limitation, the SEC Documents (as defined in Section 3(f) hereof). The Buyer understands that its investment in the Securities involves a high degree of risk. The Buyer (i) is able to bear the economic risk of an investment in the Securities including a total loss, (ii) has such knowledge and experience in financial and business matters that it is capable of evaluating the merits and risks of the proposed investment in the Securities and (iii) has had an opportunity to ask questions of and receive answers from the officers of the Company concerning the financial condition and business of the Company and other matters related to an investment in the Securities. Neither such inquiries nor any other due diligence investigations conducted by the Buyer or its representatives shall modify, amend or affect the Buyer’s right to rely on the Company’s representations and warranties contained in Section 3 below. The Buyer has sought such accounting, legal and tax advice as it has considered necessary to make an informed investment decision with respect to its acquisition of the Securities.

(e) No Governmental Review. The Buyer understands that no United States federal or state agency or any other government or governmental agency has passed on or made any recommendation or endorsement of the Securities or the fairness or suitability of the investment in the Securities nor have such authorities passed upon or endorsed the merits of the offering of the Securities.

(f) Transfer or Sale. The Buyer understands that except as provided in the Registration Rights Agreement (as defined in Section 4(a) hereof): (i) the Securities have not been and are not being registered under the 1933 Act or any state securities laws, and may not be offered for sale, sold, assigned or transferred unless (A) subsequently registered thereunder or (B) an exemption exists permitting such Securities to be sold, assigned or transferred without such registration; (ii) any sale of the Securities made in reliance on Rule 144 may be made only in accordance with the terms of Rule 144 and further, if Rule 144 is not applicable, any resale of the Securities under circumstances in which the seller (or the person through whom the sale is made) may be deemed to be an underwriter (as that term is defined in the 1933 Act) may require compliance with some other exemption under the 1933 Act or the rules and regulations of the SEC thereunder; and (iii) neither the Company nor any other person is

under any obligation to register the Securities under the 1933 Act or any state securities laws or to comply with the terms and conditions of any exemption thereunder.

(g) Organization. The Buyer is a limited liability company duly organized and validly existing in good standing under the laws of the jurisdiction in which it is organized, and has the requisite organizational power and authority to own its properties and to carry on its business as now being conducted.

(h) Validity; Enforcement. This Agreement has been duly and validly authorized, executed and delivered on behalf of the Buyer and is a valid and binding agreement of the Buyer enforceable against the Buyer in accordance with its terms, subject as to enforceability to (i) general principles of equity and to applicable bankruptcy, insolvency, reorganization, moratorium, liquidation and other similar laws relating to, or affecting generally, the enforcement of applicable creditors' rights and remedies and (ii) public policy underlying any law, rule or regulation (including any federal or state securities law, rule or regulation) with regards to indemnification, contribution or exculpation. The execution and delivery of the Transaction Documents (as defined in Section 3(b) hereof) by the Buyer and the consummation by it of the transactions contemplated hereby and thereby do not conflict with the Buyer's certificate of organization or operating agreement or similar documents, and do not require further consent or authorization by the Buyer, its managers or its members.

(i) Residency. The Buyer is a resident of the State of Illinois.

(j) No Prior Short Selling. The Buyer represents and warrants to the Company that at no time prior to the date of this Agreement has any of the Buyer, its agents, representatives or affiliates engaged in or effected, in any manner whatsoever, directly or indirectly, any (i) "short sale" (as such term is defined in Section 242.200 of Regulation SHO of the 1934 Act) of the Common Stock or (ii) hedging transaction, which establishes a net short position with respect to the Common Stock.

3. REPRESENTATIONS AND WARRANTIES OF THE COMPANY.

The Company represents and warrants to the Buyer that as of the date hereof and as of the Commencement Date:

(a) Organization and Qualification. The Company and its "Subsidiaries" (which for purposes of this Agreement means any entity in which the Company, directly or indirectly, owns more than 50% of the voting stock or capital stock or other similar equity interests) are corporations or limited liability companies duly organized and validly existing in good standing under the laws of the jurisdiction in which they are incorporated or organized, and have the requisite corporate or organizational power and authority to own their properties and to carry on their business as now being conducted. Each of the Company and its Subsidiaries is duly qualified as a foreign corporation or limited liability company to do business and is in good standing in every jurisdiction in which its ownership of property or the nature of the business conducted by it makes such qualification necessary, except to the extent that the failure to be so qualified or be in good standing could not reasonably be expected to have a Material Adverse Effect. As used in this Agreement, "**Material Adverse Effect**" means any material adverse effect on any of: (i) the business, properties, assets, operations, results of operations or financial condition of the Company and its Subsidiaries, if any, taken as a whole, or (ii) the authority or ability of the Company to perform its obligations under the Transaction Documents. The Company has no material Subsidiaries except as set forth on Schedule 3(a).

(b) Authorization; Enforcement; Validity. (i) The Company has the requisite corporate power and authority to enter into and perform its obligations under this Agreement, the Registration Rights Agreement and each of the other agreements entered into by the parties on the Commencement Date and attached hereto as exhibits to this Agreement (collectively, the “**Transaction Documents**”), and to issue the Securities in accordance with the terms hereof and thereof, (ii) the execution and delivery of the Transaction Documents by the Company and the consummation by it of the transactions contemplated hereby and thereby, including without limitation, the issuance of the Commitment Shares and the reservation for issuance and the issuance of the Purchase Shares issuable under this Agreement, have been duly authorized by the Company’s Board of Directors or duly authorized committee thereof, do not conflict with the Company’s Certificate of Incorporation or Bylaws (as defined below), and do not require further consent or authorization by the Company, its Board of Directors, except as set forth in this Agreement, or its stockholders (other than as contemplated by Section 1(h) hereof), (iii) this Agreement has been, and each other Transaction Document shall be on the Commencement Date, duly executed and delivered by the Company and (iv) this Agreement constitutes, and each other Transaction Document upon its execution on behalf of the Company, shall constitute, the valid and binding obligations of the Company enforceable against the Company in accordance with their terms, except as such enforceability may be limited by (y) general principles of equity or applicable bankruptcy, insolvency, reorganization, moratorium, liquidation or similar laws relating to, or affecting generally, the enforcement of creditors’ rights and remedies and (z) public policy underlying any law, rule or regulation (including any federal or state securities law, rule or regulation) with regards to indemnification, contribution or exculpation. The Board of Directors of the Company or duly authorized committee thereof has approved resolutions (the “**Signing Resolutions**”) to authorize this Agreement and the transactions contemplated hereby. The Signing Resolutions are valid, in full force and effect and have not been modified or supplemented in any material respect. The Company has delivered to the Buyer a true and correct copy of the Signing Resolutions as approved by the Board of Directors of the Company or an appropriate Board committee.

(c) Capitalization. As of the date hereof, the authorized capital stock of the Company consists of (i) 200,000,000 shares of Common Stock, par value \$0.0001 per share, of which as of the date hereof, 10,096,407 shares are issued and outstanding, zero shares are held as treasury shares, 2,397,207 shares are reserved for future issuance pursuant to the Company’s equity incentive plans, of which approximately 588,727 shares remain available for future option grants or stock awards, and 4,062,507 shares are issuable and reserved for issuance pursuant to securities (other than stock options or equity based awards issued pursuant to the Company’s stock incentive plans) exercisable or exchangeable for, or convertible into, shares of Common Stock, and (ii) 10,000,000 shares of preferred stock, par value \$0.0001 per share, of which as of the date hereof zero shares are issued and outstanding. All of such outstanding shares have been, or upon issuance will be, validly issued and are fully paid and non-assessable. Except as disclosed in Schedule 3(c), (i) no shares of the Company’s capital stock are subject to preemptive rights or any other similar rights or any liens or encumbrances suffered or permitted by the Company, (ii) there are no outstanding debt securities of the Company or any of its Subsidiaries, (iii) other than issued pursuant to the Company’s equity incentive plans and employee stock purchase plan, there are no outstanding options, warrants, scrip, rights to subscribe to, calls or commitments of any character whatsoever relating to, or securities or rights convertible into, any shares of capital stock of the Company or any of its Subsidiaries, or contracts, commitments, understandings or arrangements by which the Company or any of its Subsidiaries is or may become bound to issue additional shares of capital stock of the Company or any of its Subsidiaries or options, warrants, scrip, rights to subscribe to, calls or commitments of any character whatsoever relating to, or securities or rights convertible into,

any shares of capital stock of the Company or any of its Subsidiaries, (iv) there are no material agreements or arrangements under which the Company or any of its Subsidiaries is obligated to register the sale of any of their securities under the 1933 Act (except the Registration Rights Agreement), (v) there are no outstanding securities or instruments of the Company or any of its Subsidiaries which contain any redemption or similar provisions, and there are no contracts, commitments, understandings or arrangements by which the Company or any of its Subsidiaries is or may become bound to redeem a security of the Company or any of its Subsidiaries, (vi) there are no securities or instruments containing anti-dilution or similar provisions that will be triggered by the issuance of the Securities as described in this Agreement and (vii) the Company does not have any stock appreciation rights or “phantom stock” plans or agreements or any similar plan or agreement. The Company has furnished or made available to the Buyer true and correct copies of the Company’s Certificate of Incorporation, as amended and as in effect on the date hereof (the “**Certificate of Incorporation**”), and the Company’s Bylaws, as amended and as in effect on the date hereof (the “**Bylaws**”).

(d) Issuance of Securities. The Commitment Shares and the Initial Purchase Shares have been duly authorized and, upon issuance in accordance with the terms hereof, the Commitment Shares and the Initial Purchase Shares shall be (i) validly issued, fully paid and non-assessable and (ii) free from all taxes, liens and charges with respect to the issuance thereof. At least an additional 1,676,348 shares of Common Stock have been duly authorized and reserved for issuance upon future purchase as Purchase Shares under this Agreement. Upon issuance and payment therefore in accordance with the terms and conditions of this Agreement, the Purchase Shares shall be validly issued, fully paid and non-assessable and free from all taxes, liens and charges with respect to the issue thereof, with the holders being entitled to all rights accorded to a holder of Common Stock.

(e) No Conflicts. Except as disclosed in Schedule 3(e), the execution, delivery and performance of the Transaction Documents by the Company and the consummation by the Company of the transactions contemplated hereby and thereby (including, without limitation, the reservation for issuance and issuance of the Purchase Shares) will not (i) result in a violation of the Certificate of Incorporation, any Certificate of Designations, Preferences and Rights of any outstanding series of preferred stock of the Company or the Bylaws or (ii) conflict with, or constitute a default (or an event which with notice or lapse of time or both would become a default) under, or give to others any rights of termination, amendment, acceleration or cancellation of, any agreement, indenture or instrument to which the Company or any of its Subsidiaries is a party, or result, to the Company’s knowledge, in a violation of any law, rule, regulation, order, judgment or decree (including federal and state securities laws and regulations and the rules and regulations of the Principal Market applicable to the Company or any of its Subsidiaries) or by which any property or asset of the Company or any of its Subsidiaries is bound or affected, except in the case of conflicts, defaults, terminations, amendments, accelerations, cancellations and violations under clause (ii), which could not reasonably be expected to result in a Material Adverse Effect. Except as disclosed in Schedule 3(e), neither the Company nor its Subsidiaries is in violation of any term of or in default under its Certificate of Incorporation, including any Certificate of Designation, Preferences and Rights of any outstanding series of preferred stock of the Company, or Bylaws or their organizational charter or bylaws, respectively. Except as disclosed in Schedule 3(e), neither the Company nor any of its Subsidiaries is in violation of any term of or is in default under any material contract, agreement, mortgage, indebtedness, indenture, instrument, judgment, decree or order or any statute, rule or regulation applicable to the Company or its Subsidiaries, except for possible violations, defaults, terminations or amendments that could not reasonably be expected to have a Material Adverse Effect. The business of the Company and its Subsidiaries is not being conducted, and shall not be conducted, in violation of any law, ordinance, or regulation of any governmental entity,

except for possible violations, the sanctions for which either individually or in the aggregate could not reasonably be expected to have a Material Adverse Effect. Except as specifically contemplated by this Agreement, reporting obligations under the 1934 Act or as required under the 1933 Act or applicable state securities laws or the filing of a Listing of Additional Shares Notification Form with the Principal Market, the Company is not required to obtain any consent, authorization or order of, or make any filing or registration with, any court or governmental agency or any regulatory or self-regulatory agency in order for it to execute, deliver or perform any of its obligations under or contemplated by the Transaction Documents in accordance with the terms hereof or thereof. Except as disclosed in Schedule 3(e) and for reporting obligations under the 1934 Act, all consents, authorizations, orders, filings and registrations which the Company is required to obtain pursuant to the preceding sentence shall be obtained or effected on or prior to the Commencement Date. Except as disclosed in Schedule 3(e), the Company is not subject to any notices or actions from or to the Principal Market, other than routine matters incident to listing on the Principal Market and not involving a violation of the rules of the Principal Market. Except as disclosed in Schedule 3(e), to the Company's knowledge, the Principal Market has not commenced any delisting proceedings against the Company.

(f) SEC Documents; Financial Statements. Except as disclosed in Schedule 3(f), since December 31, 2017, the Company has filed all reports, schedules, forms, statements and other documents required to be filed by it with the SEC pursuant to the reporting requirements of the 1934 Act (all of the foregoing filed prior to the date hereof and all exhibits included therein and financial statements and schedules thereto and documents incorporated by reference therein being hereinafter referred to as the "**SEC Documents**"). As of their respective dates (except as they have been correctly amended), the SEC Documents complied in all material respects with the requirements of the 1934 Act and the rules and regulations of the SEC promulgated thereunder applicable to the SEC Documents, and none of the SEC Documents, at the time they were filed with the SEC (except as they may have been properly amended), contained any untrue statement of a material fact or omitted to state a material fact required to be stated therein or necessary in order to make the statements therein, in light of the circumstances under which they were made, not misleading. As of their respective dates (except as they have been properly amended), the financial statements of the Company included in the SEC Documents complied as to form in all material respects with applicable accounting requirements and the published rules and regulations of the SEC with respect thereto. Such financial statements have been prepared in accordance with generally accepted accounting principles, consistently applied, during the periods involved (except (i) as may be otherwise indicated in such financial statements or the notes thereto or (ii) in the case of unaudited interim statements, to the extent they may exclude footnotes or may be condensed or summary statements) and fairly present in all material respects the financial position of the Company as of the dates thereof and the results of its operations and cash flows for the periods then ended (subject, in the case of unaudited statements, to normal year-end audit adjustments). Except as disclosed in Schedule 3(f) or routine correspondence, such as comment letters and notices of effectiveness in connection with previously filed registration statements or periodic reports publicly available on EDGAR, to the Company's knowledge, the Company or any of its Subsidiaries are not on the date hereof the subject of any inquiry, investigation or action by the SEC.

(g) Absence of Certain Changes. Except as disclosed in Schedule 3(g), since December 31, 2018, there has been no material adverse change in the business, properties, operations, financial condition or results of operations of the Company or its Subsidiaries taken as a whole. For purposes of this Agreement, neither a decrease in cash or cash equivalents or in the market price of the Common Stock nor losses incurred in the ordinary course of the Company's business shall be deemed or considered a material adverse change. The Company has not taken any steps, and does not currently

expect to take any steps, to seek protection pursuant to any Bankruptcy Law nor does the Company or any of its Subsidiaries have any knowledge or reason to believe that its creditors intend to initiate involuntary bankruptcy or insolvency proceedings. The Company is financially solvent and is generally able to pay its debts as they become due.

(h) Absence of Litigation. Except as disclosed in Schedule 3(h), to the Company's knowledge, there is no action, suit, proceeding, inquiry or investigation before or by any court, public board, government agency, self-regulatory organization or body pending or, to the knowledge of the Company or any of its Subsidiaries, threatened against the Company, the Common Stock or any of the Company's Subsidiaries or any of the Company's or the Company's Subsidiaries' officers or directors in their capacities as such, which could reasonably be expected to have a Material Adverse Effect (each, an "**Action**"). A description of each such Action, if any, is set forth in Schedule 3(h).

(i) Acknowledgment Regarding Buyer's Status. The Company acknowledges and agrees that the Buyer is acting solely in the capacity of arm's length purchaser with respect to the Transaction Documents and the transactions contemplated hereby and thereby. The Company further acknowledges that the Buyer is not acting as a financial advisor or fiduciary of the Company (or in any similar capacity) with respect to the Transaction Documents and the transactions contemplated hereby and thereby and any advice given by the Buyer or any of its representatives or agents in connection with the Transaction Documents and the transactions contemplated hereby and thereby is merely incidental to the Buyer's purchase of the Securities. The Company further represents to the Buyer that the Company's decision to enter into the Transaction Documents has been based solely on the independent evaluation by the Company and its representatives and advisors.

(j) Intellectual Property Rights. To the Company's knowledge, the Company and its Subsidiaries own or possess adequate rights or licenses to use all material trademarks, trade names, service marks, service mark registrations, service names, patents, patent rights, copyrights, inventions, licenses, approvals, governmental authorizations, trade secrets and other intellectual property rights (collectively, "**Intellectual Property**") necessary to conduct their respective businesses as now conducted, except as set forth in Schedule 3(j) or to the extent that the failure to own, possess, license or otherwise hold adequate rights to use Intellectual Property would not, individually or in the aggregate, have a Material Adverse Effect. Except as disclosed in Schedule 3(j), to the Company's knowledge, none of the Company's active and registered Intellectual Property have expired or terminated, or, by the terms and conditions thereof, will expire or terminate within two years from the date of this Agreement, except as would not reasonably be expected to have a Material Adverse Effect. The Company and its Subsidiaries do not have any knowledge of any infringement by the Company or its Subsidiaries of any Intellectual Property of others and, except as set forth on Schedule 3(j), there is no claim, action or proceeding being made or brought against, or to the Company's knowledge, being threatened against, the Company or its Subsidiaries regarding Intellectual Property, which could reasonably be expected to have a Material Adverse Effect.

(k) Environmental Laws. To the Company's knowledge, the Company and its Subsidiaries (i) are in material compliance with any and all applicable foreign, federal, state and local laws and regulations relating to the protection of human health and safety or the environment and with respect to hazardous or toxic substances or wastes, pollutants or contaminants ("**Environmental Laws**"), (ii) have received all material permits, licenses or other approvals required of them under applicable Environmental Laws to conduct their respective businesses and (iii) are in material compliance with all terms and conditions of any such permit, license or approval, except where, in each of the three

foregoing clauses, the failure to so comply or receive such approvals could not reasonably be expected to have, individually or in the aggregate, a Material Adverse Effect.

(l) Title. The Company and its Subsidiaries have good and marketable title to all personal property owned by them that is material to the business of the Company and its Subsidiaries, in each case free and clear of all liens, encumbrances and defects except such as are described in Schedule 3(l) or such as do not 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 any of its Subsidiaries or could not reasonably be expected to have, individually or in the aggregate, a Material Adverse Effect. Any real property and facilities held under lease by the Company and any of its Subsidiaries, to the Company's knowledge, are held by them under valid, subsisting and enforceable leases with such exceptions as are not material and do not interfere with the use made and proposed to be made of such property and buildings by the Company and its Subsidiaries.

(m) Insurance. The Company and each of its Subsidiaries are insured by insurers of recognized financial responsibility against such losses and risks and in such amounts as management of the Company believes to be reasonable and customary in the businesses in which the Company and its Subsidiaries are engaged. To the Company's knowledge, since January 1, 2017 neither the Company nor any such Subsidiary has been refused any insurance coverage sought or applied for and neither the Company nor any such Subsidiary, to the Company's knowledge, will be unable 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.

(n) Regulatory Permits. The Company and its Subsidiaries possess all material certificates, authorizations and permits issued by the appropriate federal, state or foreign regulatory authorities necessary to conduct their respective businesses as currently conducted, except when the failure to so possess such certificates, authorizations or permits could not reasonably be expected to have, individually or in the aggregate, a Material Adverse Effect, and neither the Company nor any such Subsidiary has received any written notice of proceedings relating to the revocation or modification of any such material certificate, authorization or permit.

(o) Tax Status. The Company and each of its Subsidiaries has made or filed all federal and state income and all other material tax returns, reports and declarations required by any jurisdiction to which it is subject (unless and only to the extent that the Company and each of its Subsidiaries has set aside on its books reserves reasonably adequate for the payment of all unpaid and unreported taxes or filed valid extensions) and has paid all taxes and other governmental assessments and charges that are material in amount, shown or determined to be due on such returns, reports and declarations, except those being contested in good faith and has set aside on its books reserves reasonably adequate for the payment of all taxes for periods subsequent to the periods to which such returns, reports or declarations apply. To the Company's knowledge, there are no unpaid taxes in any material amount claimed to be due by the taxing authority of any jurisdiction.

(p) Transactions With Affiliates. Except as set forth on Schedule 3(p), and other than the grant or exercise of stock options or any other equity securities offered pursuant to duly adopted stock or incentive compensation plans as disclosed on Schedule 3(c), none of the officers, directors or employees of the Company is on the date hereof a party to any transaction with the Company or any of its Subsidiaries (other than for services as employees, officers and directors and reimbursement for

expenses incurred on behalf of the Company), including any contract, agreement or other arrangement providing for the furnishing of services to or by, providing for rental of real or personal property to or from, or otherwise requiring payments to or from any officer, director or such employee or, to the knowledge of the Company, any corporation, partnership, trust or other entity in which any officer, director, or any such employee has a material interest or is an officer, director, trustee or general partner.

(q) Application of Takeover Protections. The Company and its board of directors have taken or will take prior to the Commencement Date all necessary action, if any, in order to render inapplicable any control share acquisition, business combination, poison pill (including any distribution under a rights agreement) or other similar anti-takeover provision under the Certificate of Incorporation or the laws of the state of its incorporation, other than Section 203 of the Delaware General Corporation Law, which is or could become applicable to the Buyer as a result of the transactions contemplated by this Agreement, including, without limitation, the Company's issuance of the Securities and the Buyer's ownership of the Securities.

4. COVENANTS.

(a) Filing of Form 8-K and Registration Statement. The Company agrees that it shall, within the time required under the 1934 Act, file a Current Report on Form 8-K disclosing this Agreement and the transaction contemplated hereby. The Company shall also file within fifteen (15) Business Days from the date hereof a new registration statement covering the sale of the Securities by the Buyer in accordance with the terms of the Registration Rights Agreement between the Company and the Buyer, dated as of the date hereof ("**Registration Rights Agreement**").

(b) Blue Sky. The Company shall take such action, if any, as is reasonably necessary in order to obtain an exemption for or to qualify (i) the initial issuance of the Securities to the Buyer under this Agreement and (ii) any subsequent sale of the Securities by the Buyer, in each case, under applicable securities or "Blue Sky" laws of the states of the United States in such states as is reasonably requested by the Buyer from time to time, and shall provide evidence of any such action so taken to the Buyer at its written request; provided, however, that the Company shall not be obligated to file any general consent to service of process or to qualify as a foreign corporation or as a dealer in securities in any jurisdiction in which it is not so qualified or to subject itself to taxation in respect of doing business in any jurisdiction in which it is not otherwise so subject.

(c) Listing. The Company shall promptly secure the listing of all of the Securities upon each national securities exchange and automated quotation system that requires an application by the Company for listing, if any, upon which shares of Common Stock are then listed (subject to official notice of issuance) and shall maintain such listing, so long as any other shares of Common Stock shall be so listed. The Company shall use its reasonable best efforts to maintain the Common Stock's listing on the Principal Market in accordance with the requirements of the Registration Rights Agreement. Neither the Company nor any of its Subsidiaries shall take any action that would be reasonably expected to result in the delisting or suspension of the Common Stock on the Principal Market, unless the Common Stock is immediately thereafter traded on the New York Stock Exchange, the NYSE American, the Nasdaq Global Select Market, the Nasdaq Global Market, or the Nasdaq Capital Market. The Company shall pay all fees and expenses in connection with satisfying its obligations under this Section.

(d) Limitation on Short Sales and Hedging Transactions. The Buyer agrees that beginning on the date of this Agreement and ending on the date of termination of this Agreement as provided in Section 11(k), the Buyer and its agents, representatives and affiliates shall not in any manner whatsoever enter into or effect, directly or indirectly, any (i) "short sale" (as such term is defined in Section 242.200 of Regulation SHO of the 1934 Act) of the Common Stock or (ii) hedging transaction, which establishes a net short position with respect to the Common Stock.

(e) Issuance of Commitment Shares and Initial Purchase Shares. Immediately upon the execution of this Agreement, the Company shall issue to the Buyer as consideration for the Buyer entering into this Agreement 69,444 shares of Common Stock (the "Commitment Shares") and, pursuant to Section 1(a), the Buyer shall purchase the Initial Purchase Shares. The Commitment Shares and Initial Purchase Shares shall be issued in certificated or restricted book-entry form and (subject to Section 5 hereof) shall bear a restrictive legend substantially similar to the following:

THE SECURITIES REPRESENTED BY THIS CERTIFICATE HAVE NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933, AS AMENDED, OR APPLICABLE STATE SECURITIES LAWS. THE SECURITIES HAVE BEEN ACQUIRED FOR INVESTMENT AND MAY NOT BE OFFERED FOR SALE, SOLD, TRANSFERRED OR ASSIGNED IN THE ABSENCE OF AN EFFECTIVE REGISTRATION STATEMENT FOR THE SECURITIES UNDER THE SECURITIES ACT OF 1933, AS AMENDED, OR APPLICABLE STATE SECURITIES LAWS, UNLESS SOLD PURSUANT TO: (1) RULE 144 UNDER THE SECURITIES ACT OF 1933, AS AMENDED, OR (2) AN OPINION OF HOLDER'S COUNSEL, IN A CUSTOMARY FORM, THAT REGISTRATION IS NOT REQUIRED UNDER SAID ACT OR APPLICABLE STATE SECURITIES LAWS.

(f) Due Diligence. The Buyer shall have the right, from time to time as the Buyer may reasonably request, to perform reasonable due diligence on the Company during normal business hours and subject to reasonable prior notice to the Company. The Company and its officers and employees shall provide information and reasonably cooperate with the Buyer in connection with any reasonable request by the Buyer related to the Buyer's due diligence of the Company, including, but not limited to, any such request made by the Buyer in connection with (i) the filing of the registration statement described in Section 4(a) hereof and (ii) the Commencement; provided, however, that at no time is the Company required to disclose material nonpublic information to the Buyer or breach any obligation of confidentiality or non-disclosure to a third party or make any disclosure that could cause a waiver of attorney-client privilege. Except as may be required by law, court order or governmental authority, each party hereto agrees not to disclose any Confidential Information of the other party to any third party and shall not use the Confidential Information of such other party for any purpose other than in connection with, or in furtherance of, the transactions contemplated hereby; provided, that to the extent such disclosure is required by law, court order or governmental authority, the receiving party shall provide the disclosing party with reasonable prior written notice of such disclosure and make a reasonable effort to assist the disclosing party in obtaining a protective order preventing or limiting the disclosure and/or requiring that the Confidential Information so disclosed be used only for the purposes for which the law, court order or governmental authority requires. Each party hereto acknowledges that the Confidential Information shall remain the property of the disclosing party and agrees that it shall take all reasonable measures to protect the secrecy of any Confidential Information disclosed by the other party.

(g) **Disposition of Securities.** The Buyer shall not sell any Securities except as provided in this Agreement, the Registration Rights Agreement and the “Plan of Distribution” section of the prospectus included in the Registration Statement (as defined in the Registration Rights Agreement). The Buyer shall not transfer any Securities except pursuant to sales described in the “Plan of Distribution” section of the prospectus included in the Registration Statement or pursuant to Rule 144 under the 1933 Act. In the event of any sales of Securities pursuant to the Registration Statement, the Buyer will (i) effect such sales pursuant to the “Plan of Distribution” section of the prospectus included in the Registration Statement, and (ii) will comply with all applicable prospectus delivery requirements.

5. TRANSFER AGENT INSTRUCTIONS.

Immediately upon the execution of this Agreement, the Company shall deliver to the Transfer Agent a letter in the form as set forth as **Exhibit C** attached hereto with respect to the issuance of the Initial Purchase Shares and the Commitment Shares. On the Commencement Date, the Company shall cause any restrictive legend on the Initial Purchase Shares and the Commitment Shares to be removed upon surrender of the originally issued certificate(s) for such shares. So long as the Buyer complies with its obligations in Section 4(g), all of the additional Purchase Shares to be issued under this Agreement shall be issued without any restrictive legend unless the Buyer expressly consents otherwise. The Company shall issue irrevocable instructions to the Transfer Agent, and any subsequent transfer agent, to issue Common Stock in the name of the Buyer for the Purchase Shares (the “**Irrevocable Transfer Agent Instructions**”). The Company warrants to the Buyer that, so long as the Buyer complies with its obligations in Section 4(g), no instruction other than the Irrevocable Transfer Agent Instructions referred to in this Section 5, will be given by the Company to the Transfer Agent with respect to the Purchase Shares and that the Commitment Shares, Initial Purchase Shares and the Purchase Shares shall otherwise be freely transferable on the books and records of the Company as and to the extent provided in this Agreement and the Registration Rights Agreement, subject to the provisions of Section 4(e) in the case of the Commitment Shares and the Initial Purchase Shares.

6. CONDITIONS TO THE COMPANY’S RIGHT TO COMMENCE SALES OF SHARES OF COMMON STOCK UNDER THIS AGREEMENT.

The right of the Company hereunder to commence sales of the Purchase Shares (other than the Initial Purchase Shares) is subject to the satisfaction of each of the following conditions on or before the Commencement Date (the date that the Company may begin sales of Purchase Shares (other than the Initial Purchase Shares)):

(a) The Buyer shall have executed each of the Transaction Documents and delivered the same to the Company;

(b) The representations and warranties of the Buyer shall be true and correct as of the Commencement Date as though made at that time (except for representations and warranties that speak as of a specific date, which shall be true and correct in all material respects as of such specific date) and the Buyer shall have performed, satisfied and complied in all material respects with the covenants and agreements required by this Agreement to be performed, satisfied or complied with by the Buyer at or prior to the Commencement Date; and

(c) A registration statement covering the sale of the Securities by the Buyer shall have been declared effective under the 1933 Act by the SEC and no stop order with respect to the registration statement shall be pending or threatened by the SEC.

7. CONDITIONS TO THE BUYER'S OBLIGATION TO MAKE PURCHASES OF SHARES OF COMMON STOCK.

The obligation of the Buyer to buy Purchase Shares (other than the Initial Purchase Shares) under this Agreement is subject to the satisfaction of each of the following conditions on or before the Commencement Date (the date that the Company may begin sales of Purchase Shares (other than the Initial Purchase Shares)) and once such conditions have been initially satisfied, there shall not be any ongoing obligation to satisfy such conditions after the Commencement has occurred:

(a) The Company shall have executed each of the Transaction Documents and delivered the same to the Buyer;

(b) The Company shall have issued to the Buyer the Commitment Shares and, in the event that the Buyer shall have surrendered the originally issued certificate(s), shall have removed the restrictive transfer legend from the certificate representing the Commitment Shares;

(c) The Common Stock shall be authorized for quotation on the Principal Market, trading in the Common Stock shall not have been within the last 365 days suspended by the SEC or the Principal Market, other than a general halt in trading in the Common Stock by the Principal Market under halt codes indicating pending or released material news, and the Securities shall be approved for listing upon the Principal Market;

(d) The Buyer shall have received the opinion of the Company's legal counsel dated as of the Commencement Date in customary form and substance;

(e) The representations and warranties of the Company shall be true and correct in all material respects (except to the extent that any of such representations and warranties is already qualified as to materiality in Section 3 above, in which case, such representations and warranties shall be true and correct without further qualification) as of the date of this Agreement and as of the Commencement Date as though made at that time (except for representations and warranties that speak as of a specific date, which shall be true and correct in all material respects as of such specific date) and the Company shall have performed, satisfied and complied in all material respects with the covenants, agreements and conditions required by the Transaction Documents to be performed, satisfied or complied with by the Company at or prior to the Commencement Date. The Buyer shall have received a certificate, executed by the CEO, President or CFO of the Company, dated as of the Commencement Date, to the foregoing effect in the form attached hereto as **Exhibit A**;

(f) The Board of Directors of the Company or a duly authorized committee thereof shall have adopted the Signing Resolutions, which shall be in full force and effect without any amendment or supplement thereto as of the Commencement Date;

(g) As of the Commencement Date, the Company shall have reserved out of its authorized and unissued Common Stock, solely for the purpose of effecting future purchases of Purchase Shares hereunder, 1,676,348 shares of Common Stock;

- (h) The Irrevocable Transfer Agent Instructions, in form acceptable to the Buyer, shall have been signed by the Company and the Buyer and shall have been delivered to the Transfer Agent;
- (i) The Company shall have delivered to the Buyer a certificate evidencing the incorporation and good standing of the Company in the State of Delaware issued by the Secretary of State of the State of Delaware as of a date within ten (10) Business Days of the Commencement Date;
- (j) [Intentionally Omitted.];
- (k) The Company shall have delivered to the Buyer a secretary's certificate executed by the Secretary of the Company, dated as of the Commencement Date, in the form attached hereto as **Exhibit B**;
- (l) A registration statement covering the sale of (i) all of the Commitment Shares and the Initial Purchase Shares and (ii) such number of additional Purchase Shares as reasonably determined by the Company shall have been declared effective under the 1933 Act by the SEC and no stop order with respect thereto shall be pending or threatened by the SEC. The Company shall have prepared and delivered to the Buyer a final and complete form of prospectus, dated and current as of the Commencement Date, to be used by the Buyer in connection with any sales of any Securities, and to be filed by the Company one (1) Business Day after the Commencement Date pursuant to Rule 424(b). The Company shall have made all filings under all applicable federal and state securities laws necessary to consummate the issuance of the Commitment Shares and the Purchase Shares pursuant to this Agreement in compliance with such laws;
- (m) No Event of Default has occurred and is continuing, or any event which, after notice and/or lapse of time, would become an Event of Default has occurred;
- (n) On or prior to the Commencement Date, the Company shall take all necessary action, if any, and such actions as reasonably requested by the Buyer, in order to render inapplicable any control share acquisition, business combination, stockholder rights plan or poison pill (including any distribution under a rights agreement) or other similar anti-takeover provision under the Certificate of Incorporation or the laws of the state of its incorporation, other than Section 203 of the Delaware General Corporation Law, that is or could become applicable to the Buyer as a result of the transactions contemplated by this Agreement, including, without limitation, the Company's issuance of the Securities and the Buyer's ownership of the Securities; and
- (o) The Company shall have provided the Buyer with the information reasonably requested by the Buyer in connection with its due diligence requests made prior to, or in connection with, the Commencement, in accordance with the terms of Section 4(f) hereof.

8. INDEMNIFICATION.

In consideration of the Buyer's execution and delivery of the Transaction Documents and acquiring the Securities hereunder and in addition to all of the Company's other obligations under the Transaction Documents, the Company shall defend, protect, indemnify and hold harmless the Buyer and all of its affiliates, members, officers, directors, and employees, and any of the foregoing person's agents or other representatives (including, without limitation, those retained in connection with the

transactions contemplated by this Agreement) (collectively, the “**Indemnitees**”) from and against any and all third party actions, causes of action, suits, claims, losses, costs, penalties, fees, liabilities and damages, and expenses in connection therewith (irrespective of whether any such Indemnitee is a party to the action for which indemnification hereunder is sought), and including reasonable attorneys’ fees and disbursements (the “**Indemnified Liabilities**”), incurred by any Indemnitee as a result of, or arising out of, or relating to (a) any misrepresentation or breach of any representation or warranty made by the Company in the Transaction Documents or any other certificate, instrument or document contemplated hereby or thereby, (b) any breach of any covenant, agreement or obligation of the Company contained in the Transaction Documents or any other certificate, instrument or document contemplated hereby or thereby, or (c) any cause of action, suit or claim brought or made against such Indemnitee and arising out of or resulting from the execution, delivery, performance or enforcement of the Transaction Documents or any other certificate, instrument or document contemplated hereby or thereby, other than with respect to Indemnified Liabilities which directly and primarily result from (A) a breach of any of the Buyer’s representations and warranties, covenants or agreements contained in this Agreement, or (B) the gross negligence, bad faith or willful misconduct of the Buyer or any other Indemnitee. To the extent that the foregoing undertaking by the Company may be unenforceable for any reason, the Company shall make the maximum contribution to the payment and satisfaction of each of the Indemnified Liabilities which is permissible under applicable law.

9. EVENTS OF DEFAULT.

An “**Event of Default**” shall be deemed to have occurred at any time as any of the following events occurs:

(a) during any period in which the effectiveness of any registration statement is required to be maintained pursuant to the terms of the Registration Rights Agreement, the effectiveness of such registration statement lapses for any reason (including, without limitation, the issuance of a stop order) or is unavailable to the Buyer for the sale of all of the Registrable Securities (as defined in the Registration Rights Agreement), and such lapse or unavailability continues for a period of ten (10) consecutive Business Days or for more than an aggregate of thirty (30) Business Days in any 365-day period, which is not in connection with a Permitted Delay (as defined in the Registration Rights Agreement), post-effective amendment to any such registration statement or the filing of a new registration statement; provided, however, that in connection with any post-effective amendment to such registration statement or filing of a new registration statement that is required to be declared effective by the SEC, such lapse or unavailability may continue for a period of no more than thirty (30) consecutive Business Days, which such period shall be extended for an additional thirty (30) Business Days if the Company receives a comment letter from the SEC in connection therewith;

(b) the suspension from trading or failure of the Common Stock to be listed on a Principal Market for a period of three (3) consecutive Business Days;

(c) the delisting of the Common Stock from the Principal Market, and the Common Stock is not immediately thereafter trading on the New York Stock Exchange, the NYSE American, the Nasdaq Global Select Market, the Nasdaq Global Market, or the Nasdaq Capital Market;

(d) the failure for any reason by the Transfer Agent to issue Purchase Shares to the Buyer within five (5) Business Days after the applicable Purchase Date that the Buyer is entitled to receive;

(e) the Company's breach of any representation or warranty (as of the dates made), covenant or other term or condition under any Transaction Document if such breach could reasonably be expected to have a Material Adverse Effect and except, in the case of a breach of a covenant which is reasonably curable, only if such breach continues uncured for a period of at least five (5) Business Days;

(f) if any Person commences a proceeding against the Company pursuant to or within the meaning of any Bankruptcy Law;

(g) if the Company pursuant to or within the meaning of any Bankruptcy Law; (A) commences a voluntary case, (B) consents to the entry of an order for relief against it in an involuntary case, (C) consents to the appointment of a Custodian of it or for all or substantially all of its property, (D) makes a general assignment for the benefit of its creditors or (E) becomes insolvent;

(h) a court of competent jurisdiction enters an order or decree under any Bankruptcy Law that (A) is for relief against the Company in an involuntary case, (B) appoints a Custodian of the Company or for all or substantially all of its property, or (C) orders the liquidation of the Company or any Subsidiary; or

(i) if at any time after the Commencement Date, the Exchange Cap is reached unless and until stockholder approval has been obtained pursuant to Section 1(h) hereof. The Exchange Cap shall be deemed to be reached at such time if, upon submission of a Purchase Notice or VWAP Purchase Notice under this Agreement, the issuance of such shares of Common Stock would exceed the number of shares of Common Stock which the Company may issue under this Agreement without breaching the Company's obligations under the rules or regulations of the Principal Market.

So long as an Event of Default has occurred and is continuing, or if any event which, after notice and/or lapse of time, would become an Event of Default, has occurred and is continuing, or so long as the Closing Sale Price is below the Floor Price, the Company may not require and the Buyer shall not be obligated or permitted to purchase any shares of Common Stock under this Agreement. If pursuant to or within the meaning of any Bankruptcy Law, the Company commences a voluntary case or any Person commences a proceeding against the Company, a Custodian is appointed for the Company or for all or substantially all of its property, or the Company makes a general assignment for the benefit of its creditors, (any of which would be an Event of Default as described in Sections 9(f), 9(g) and 9(h) hereof) this Agreement shall automatically terminate without any liability or payment to the Company without further action or notice by any Person. No such termination of this Agreement under Section 11(k)(i) shall affect the Company's or the Buyer's obligations under this Agreement with respect to pending purchases and the Company and the Buyer shall complete their respective obligations with respect to any pending purchases under this Agreement.

10. CERTAIN DEFINED TERMS.

For purposes of this Agreement, the following terms shall have the following meanings:

(a) "**1933 Act**" means the Securities Act of 1933, as amended.

(b) "**Available Amount**" means initially Ten Million Dollars (\$10,000,000) in the aggregate which amount shall be reduced by the Purchase Amount (including the Initial Purchase) each

time the Buyer purchases shares of Common Stock pursuant to Section 1 hereof including the purchase of the Initial Purchase Shares under Section 1(a) hereof.

(c) “**Bankruptcy Law**” means Title 11, U.S. Code, or any similar federal or state law for the relief of debtors.

(d) “**Business Day**” means any day on which the Principal Market is open for trading during normal trading hours (i.e., 9:30 a.m. to 4:00 p.m. Eastern Time), including any day on which the Principal Market is open for trading for a period of time less than the customary time.

(e) “**Closing Sale Price**” means the last closing trade price for the Common Stock on the Principal Market as reported by the Principal Market.

(f) “**Confidential Information**” means any information disclosed by either party to the other party, either directly or indirectly, in writing, orally or by inspection of tangible objects (including, without limitation, documents, prototypes, samples, plant and equipment), which is designated as “Confidential,” “Proprietary” or some similar designation. Information communicated orally shall be considered Confidential Information if such information is expressly identified as Confidential Information at the time of such initial disclosure and confirmed in writing as being Confidential Information within ten (10) Business Days after the initial disclosure. Confidential Information may also include information disclosed to a disclosing party by third parties. Confidential Information shall not, however, include any information which (i) was publicly known and made generally available in the public domain prior to the time of disclosure by the disclosing party; (ii) becomes publicly known and made generally available after disclosure by the disclosing party to the receiving party through no action or inaction of the receiving party or its affiliates; (iii) is already in the possession of the receiving party at the time of disclosure by the disclosing party as shown by the receiving party’s files and records immediately prior to the time of disclosure; (iv) is obtained by the receiving party from a third party without a breach of such third party’s obligations of confidentiality; or (v) is independently developed by the receiving party without use of or reference to the disclosing party’s Confidential Information, as shown by documents and other competent evidence in the receiving party’s possession.

(g) “**Custodian**” means any receiver, trustee, assignee, liquidator or similar official under any Bankruptcy Law.

(h) “**Maturity Date**” means the date that is thirty (30) months from the Commencement Date.

(i) “**Person**” means an individual or entity including any limited liability company, a partnership, a joint venture, a corporation, a trust, an unincorporated organization and a government or any department or agency thereof.

(j) “**Principal Market**” means the Nasdaq Capital Market; provided however, that in the event the Company’s Common Stock is ever listed or traded on the New York Stock Exchange, the NYSE American, the Nasdaq Global Select Market, the Nasdaq Global Market, or the Nasdaq Capital Market, then the “Principal Market” shall mean such other market or exchange on which the Company’s Common Stock is then listed or traded.

(k) “**Purchase Amount**” means, with respect to any particular purchase made hereunder, the portion of the Available Amount to be purchased by the Buyer pursuant to Section 1 hereof as set forth in a valid Purchase Notice or VWAP Purchase Notice which the Company delivers to the Buyer.

(l) “**Purchase Date**” means, with respect to any Regular Purchase made hereunder, the Business Day of receipt by the Buyer of a valid Purchase Notice that the Buyer is to buy Purchase Shares pursuant to Section 1(b) hereof.

(m) “**Purchase Notice**” shall mean an irrevocable written notice from the Company to the Buyer directing the Buyer to buy Purchase Shares pursuant to Section 1(b) hereof as specified by the Company therein at the applicable Purchase Price on the Purchase Date.

(n) “**Purchase Price**” means the lesser of (i) the lowest Sale Price of the Common Stock on the Purchase Date or (ii) the arithmetic average of the three (3) lowest Closing Sale Prices for the Common Stock during the ten (10) consecutive Business Days ending on the Business Day immediately preceding such Purchase Date (to be appropriately adjusted for any reorganization, recapitalization, non-cash dividend, stock split, reverse stock split or other similar transaction).

(o) “**Sale Price**” means any trade price for the shares of Common Stock on the Principal Market during normal trading hours, as reported by the Principal Market.

(p) “**SEC**” means the U.S. Securities and Exchange Commission.

(q) “**Transfer Agent**” means the transfer agent of the Company as set forth in Section 11(f) hereof or such other person who is then serving as the transfer agent for the Company in respect of the Common Stock.

(r) “**VWAP Minimum Price Threshold**” means, with respect to any particular VWAP Purchase Notice, the Sale Price on the VWAP Purchase Date equal to the greater of (i) 80% of the Closing Sale Price on the Business Day immediately preceding the VWAP Purchase Date or (ii) such higher price as set forth by the Company in the VWAP Purchase Notice.

(s) “**VWAP Purchase Amount**” means, with respect to any particular VWAP Purchase Notice, the portion of the Available Amount to be purchased by the Buyer pursuant to Section 1(c) hereof pursuant to a valid VWAP Purchase Notice which requires the Buyer to buy the VWAP Purchase Share Percentage of the aggregate shares traded on the Principal Market during normal trading hours on the VWAP Purchase Date up to the VWAP Purchase Share Volume Maximum, subject to the VWAP Minimum Price Threshold.

(t) “**VWAP Purchase Date**” means, with respect to any VWAP Purchase made hereunder, the Business Day following the receipt by the Buyer of a valid VWAP Purchase Notice that the Buyer is to buy Purchase Shares pursuant to Section 1(c) hereof.

(u) “**VWAP Purchase Notice**” shall mean an irrevocable written notice from the Company to the Buyer directing the Buyer to buy Purchase Shares on the VWAP Purchase Date pursuant to Section 1(c) hereof as specified by the Company therein at the applicable VWAP Purchase Price with the applicable VWAP Purchase Share Percentage specified therein.

(v) “**VWAP Purchase Share Percentage**” means, with respect to any particular VWAP Purchase Notice pursuant to Section 1(c) hereof, the percentage set forth in the VWAP Purchase Notice which the Buyer will be required to buy as a specified percentage of the aggregate shares traded on the Principal Market during normal trading hours up to the VWAP Purchase Share Volume Maximum on the VWAP Purchase Date subject to Section 1(c) hereof but in no event shall this percentage exceed thirty percent (30%) of such VWAP Purchase Date’s share trading volume of the Common Stock on the Principal Market during normal trading hours.

(w) “**VWAP Purchase Price**” means the lesser of (i) the Closing Sale Price on the VWAP Purchase Date; or (ii) ninety-seven percent (97%) of volume weighted average price for the Common Stock traded on the Principal Market during normal trading hours on (A) the VWAP Purchase Date if the aggregate shares traded on the Principal Market on the VWAP Purchase Date have not exceeded the VWAP Purchase Share Volume Maximum and the Sale Price of Common Stock has not fallen below the VWAP Minimum Price Threshold (to be appropriately adjusted for any reorganization, recapitalization, non-cash dividend, stock split, reverse stock split or other similar transaction), or (B) the portion of the VWAP Purchase Date until such time as the sooner to occur of (1) the time at which the aggregate shares traded on the Principal Market has exceeded the VWAP Purchase Share Volume Maximum, or (2) the time at which the Sale Price of Common Stock falls below the VWAP Minimum Price Threshold (to be appropriately adjusted for any reorganization, recapitalization, non-cash dividend, stock split, reverse stock split or other similar transaction).

(x) “**VWAP Purchase Share Estimate**” means the number of shares of Common Stock that the Company has in its sole discretion irrevocably instructed its Transfer Agent to issue to the Buyer via the Depository Trust Company (“**DTC**”) Fast Automated Securities Transfer Program in connection with a VWAP Purchase Notice pursuant to Section 1(c) hereof and issued to the Buyer’s or its designee’s balance account with DTC through its Deposit Withdrawal At Custodian (DWAC) system on the VWAP Purchase Date (to be appropriately adjusted for any reorganization, recapitalization, non-cash dividend, stock split, reverse stock split or other similar transaction).

(y) “**VWAP Purchase Share Volume Maximum**” means a number of shares of Common Stock traded on the Principal Market during normal trading hours on the VWAP Purchase Date equal to: (i) the VWAP Purchase Share Estimate, divided by (ii) the VWAP Purchase Share Percentage (to be appropriately adjusted for any reorganization, recapitalization, non-cash dividend, stock split, reverse stock split or other similar transaction).

11. MISCELLANEOUS.

(a) Governing Law; Jurisdiction; Jury Trial. The corporate laws of the State of Delaware shall govern all issues concerning the relative rights of the Company and its stockholders. All other questions concerning the construction, validity, enforcement and interpretation of this Agreement and the other Transaction Documents shall be governed by the internal laws of the State of Illinois, without giving effect to any choice of law or conflict of law provision or rule (whether of the State of Illinois or any other jurisdictions) that would cause the application of the laws of any jurisdictions other than the State of Illinois. Each party hereby irrevocably submits to the exclusive jurisdiction of the state and federal courts sitting in the City of Chicago, for the adjudication of any dispute hereunder or under the other Transaction Documents or in connection herewith or therewith, or with any transaction contemplated hereby or discussed herein, 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, that such suit,

action or proceeding is brought in an inconvenient forum or that the venue of such suit, action or proceeding is improper. Each party 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 to such party at the address for such notices to it under this Agreement 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 PARTY HEREBY IRREVOCABLY WAIVES ANY RIGHT IT MAY HAVE, AND AGREES NOT TO REQUEST, A JURY TRIAL FOR THE ADJUDICATION OF ANY DISPUTE HEREUNDER OR IN CONNECTION HERewith OR ARISING OUT OF THIS AGREEMENT OR ANY TRANSACTION CONTEMPLATED HEREBY.**

(b) Counterparts. This Agreement may be executed in two or more identical counterparts, all of which shall be considered one and the same agreement and shall become effective when counterparts have been signed by each party and delivered to the other party; provided that a facsimile or pdf (or other electronic reproduction) signature shall be considered due execution and shall be binding upon the signatory thereto with the same force and effect as if the signature were an original, not a facsimile or PDF (or other electronic reproduction) signature.

(c) Headings. The headings of this Agreement are for convenience of reference and shall not form part of, or affect the interpretation of, this Agreement.

(d) Severability. If any provision of this Agreement shall be invalid or unenforceable in any jurisdiction, such invalidity or unenforceability shall not affect the validity or enforceability of the remainder of this Agreement in that jurisdiction or the validity or enforceability of any provision of this Agreement in any other jurisdiction.

(e) Entire Agreement. This Agreement and the Registration Rights Agreement supersede all other prior oral or written agreements between the Buyer, the Company, their affiliates and persons acting on their behalf with respect to the matters discussed herein, and this Agreement, the other Transaction Documents and the instruments referenced herein contain the entire understanding of the parties with respect to the matters covered herein and therein and, except as specifically set forth herein or therein, neither the Company nor the Buyer makes any representation, warranty, covenant or undertaking with respect to such matters. Each of the Company and the Buyer acknowledges and agrees that it has not relied on, in any manner whatsoever, any representations or statements, written or oral, other than as expressly set forth in this Agreement.

(f) Notices. Any notices, consents or other communications required or permitted to be given under the terms of this Agreement must be in writing and will be deemed to have been delivered: (i) upon receipt, when delivered personally; (ii) upon receipt, when sent by facsimile (provided confirmation of transmission is mechanically or electronically generated and kept on file by the sending party); (iii) upon receipt, when sent by electronic message (provided the recipient responds to the message and confirmation of both electronic messages are kept on file by the sending party); or (iv) one (1) Business Day after timely deposit with a nationally recognized overnight delivery service, in each case properly addressed to the party to receive the same. The addresses and facsimile numbers for such communications shall be:

If to the Company:

Bionano Genomics, Inc.
9640 Towne Centre Drive, Suite 100
San Diego, CA 92121
Telephone:
Facsimile:
Attention: Mike Ward
Email:

With a copy (which shall not constitute notice) to:

Cooley LLP
4401 Eastgate Mall
San Diego, CA 92121
Telephone:
Facsimile:
Attention: James C. Pennington
Email:

If to the Buyer:

Aspire Capital Fund, LLC
155 North Wacker Drive, Suite 1600
Chicago, IL 60606
Telephone:
Facsimile:
Attention: Steven G. Martin
Email:

With a copy to (which shall not constitute delivery to the Buyer):

Morrison & Foerster LLP
2000 Pennsylvania Avenue, NW, Suite 6000
Washington, DC 20006
Telephone:
Facsimile:
Attention: Martin P. Dunn, Esq.
Email:

If to the Transfer Agent:

American Stock Transfer & Trust Company, LLC
6201 15th Avenue
Brooklyn, NY 11219
Telephone:
Facsimile:
Attention: Jacqueline I. Kretzu
Email:

or at such other address and/or facsimile number and/or to the attention of such other person as the recipient party has specified by written notice given to each other party at least one (1) Business Day prior to the effectiveness of such change. Written confirmation of receipt (A) given by the recipient of such notice, consent or other communication, (B) mechanically or electronically generated by the sender's facsimile machine containing the time, date, and recipient facsimile number, (C) electronically generated by the sender's electronic mail containing the time, date and recipient email address or (D) provided by a nationally recognized overnight delivery service, shall be rebuttable evidence of receipt in accordance with clause (i), (ii), (iii) or (iv) above, respectively.

(g) Successors and Assigns. This Agreement shall be binding upon and inure to the benefit of the parties and their respective successors and assigns. The Company shall not assign this Agreement or any rights or obligations hereunder without the prior written consent of the Buyer, including by merger or consolidation; provided, however, that any transaction, whether by merger, reorganization, restructuring, consolidation, financing or otherwise, whereby the Company remains the surviving entity immediately after such transaction shall not be deemed a succession or assignment. The Buyer may not assign its rights or obligations under this Agreement.

(h) No Third Party Beneficiaries. This Agreement is intended for the benefit of the parties hereto and their respective permitted successors and assigns, and is not for the benefit of, nor may any provision hereof be enforced by, any other person.

(i) Publicity. The Buyer shall have the right to approve before issuance any press release, SEC filing or any other public disclosure made by or on behalf of the Company whatsoever with respect to, in any manner, the Buyer, its purchases hereunder or any aspect of this Agreement or the transactions contemplated hereby; provided, however, that the Company shall be entitled, without the prior approval of the Buyer, to make any press release or other public disclosure (including any filings with the SEC) with respect to such transactions as is required by applicable law and regulations so long as the Company and its counsel consult with the Buyer in connection with any such press release or other public disclosure at least one (1) Business Day prior to its release; provided, however, that the Company's obligations pursuant to this Section 11(i) shall not apply if the material provisions of such press release, SEC filing, or other public disclosure previously has been publicly disclosed by the Company in accordance with this Section 11(i). The Buyer must be provided with a copy thereof at least one (1) Business Day prior to any release or use by the Company thereof.

(j) Further Assurances. Each party shall do and perform, or cause to be done and performed, all such further acts and things, and shall execute and deliver all such other agreements, certificates, instruments and documents, as the other party may reasonably request in order to carry out the intent and accomplish the purposes of this Agreement and the consummation of the transactions contemplated hereby.

(k) Termination. This Agreement may be terminated only as follows:

(i) If pursuant to or within the meaning of any Bankruptcy Law, the Company commences a voluntary case or any Person commences a proceeding against the Company, a Custodian is appointed for the Company or for all or substantially all of its property, or the Company makes a general assignment for the benefit of its creditors, (any of which would be an Event of Default as described in Sections 9(f), 9(g) and 9(h) hereof) this Agreement shall automatically terminate without any liability or payment to the Company without further action

or notice by any Person. No such termination of this Agreement under this Section 11(k)(i) shall affect the Company's or the Buyer's obligations under this Agreement with respect to pending purchases and the Company and the Buyer shall complete their respective obligations with respect to any pending purchases under this Agreement.

(ii) In the event that the Commencement shall not have occurred the Company shall have the option to terminate this Agreement for any reason or for no reason without any liability whatsoever of either party to the other party under this Agreement except as set forth in Section 11(k)(viii) hereof.

(iii) In the event that the Commencement shall not have occurred on or before the one year anniversary of the date of this Agreement, due to the failure to satisfy any of the conditions set forth in Sections 6 and 7 above with respect to the Commencement, this Agreement shall automatically terminate without any liability or payment to the Company without further action or notice by any Person.

(iv) At any time after the Commencement Date, the Company shall have the option to terminate this Agreement for any reason or for no reason by delivering notice (a "**Company Termination Notice**") to the Buyer electing to terminate this Agreement without any liability whatsoever of either party to the other party under this Agreement except as set forth in Section 11(k)(viii) hereof. The Company Termination Notice shall not be effective until one (1) Business Day after it has been received by the Buyer.

(v) This Agreement shall automatically terminate on the date that the Company sells and the Buyer purchases the full Available Amount as provided herein, without any action or notice on the part of any party and without any liability whatsoever of any party to any other party under this Agreement except as set forth in Section 11(k)(viii) hereof.

(vi) If by the Maturity Date for any reason or for no reason the full Available Amount under this Agreement has not been purchased as provided for in Section 1 of this Agreement, this Agreement shall automatically terminate on the Maturity Date, without any action or notice on the part of any party and without any liability whatsoever of any party to any other party under this Agreement except as set forth in Section 11(k)(viii) hereof.

(vii) Except as set forth in Sections 11(k)(i) (in respect of an Event of Default under Sections 9(f), 9(g) and 9(h)), 11(k)(v) and 11(k)(vi), any termination of this Agreement pursuant to this Section 11(k) shall be effected by written notice from the Company to the Buyer setting forth the basis for the termination hereof.

(viii) The representations and warranties of the Company and the Buyer contained in Sections 2, 3 and 5 hereof, the indemnification provisions set forth in Section 8 hereof and the agreements and covenants set forth in Sections 4(e), 4(g) and 11, shall survive the Commencement and any termination of this Agreement. No termination of this Agreement shall affect the Company's or the Buyer's rights or obligations (i) under the Registration Rights Agreement, which shall survive any such termination in accordance with its terms, or (ii) under this Agreement with respect to pending purchases and the Company and the Buyer shall complete their respective obligations with respect to any pending purchases under this Agreement.

(l) No Financial Advisor, Placement Agent, Broker or Finder. The Company represents and warrants to the Buyer that it has not engaged any financial advisor, placement agent, broker or finder in connection with the transactions contemplated hereby. The Buyer represents and warrants to the Company that it has not engaged any financial advisor, placement agent, broker or finder in connection with the transactions contemplated hereby. Each party shall be responsible for the payment of any fees or commissions, if any, of any financial advisor, placement agent, broker or finder engaged by such party relating to or arising out of the transactions contemplated hereby. Each party shall pay, and hold the other party harmless against, any liability, loss or expense (including, without limitation, attorneys' fees and out of pocket expenses) arising in connection with any such claim.

(m) No Strict Construction. The language used in this Agreement will be deemed to be the language chosen by the parties to express their mutual intent, and no rules of strict construction will be applied against any party.

(n) Failure or Indulgence Not Waiver. No failure or delay in the exercise of any power, right or privilege hereunder shall operate as a waiver thereof, nor shall any single or partial exercise of any such power, right or privilege preclude other or further exercise thereof or of any other right, power or privilege.

* * * * *

IN WITNESS WHEREOF, the Buyer and the Company have caused this Common Stock Purchase Agreement to be duly executed as of the date first written above.

THE COMPANY:

BIONANO GENOMICS, INC.

By: /s/ R. Erik Holmlin, Ph.D.

Name: R. Erik Holmlin, Ph.D.

Title: Chief Executive Officer

BUYER:

ASPIRE CAPITAL FUND, LLC

BY: ASPIRE CAPITAL PARTNERS, LLC

BY: SGM HOLDINGS CORP.

By: /s/ Steven G. Martin

Name: Steven G. Martin

Title: President

SCHEDULES

Schedule 3(a)	Subsidiaries
Schedule 3(c)	Capitalization
Schedule 3(e)	Conflicts
Schedule 3(f)	1934 Act Filings
Schedule 3(g)	Material Changes
Schedule 3(h)	Litigation
Schedule 3(j)	Intellectual Property
Schedule 3(l)	Title
Schedule 3(p)	Transactions with Affiliates

EXHIBITS

Exhibit A	Form of Officer's Certificate
Exhibit B	Form of Secretary's Certificate
Exhibit C	Form of Letter to Transfer Agent

DISCLOSURE SCHEDULES

Schedule 3(a) – Subsidiaries

- BioNano Genomics UK, Ltd., a private limited company organized under the laws of the United Kingdom
- BioNano Genomics (Shanghai) Trading Co., Ltd., a private limited company organized under the laws of the China

Schedule 3(c) – Capitalization

- Fifth Amended and Restated Investors' Rights Agreement, dated August 5, 2016 as amended (the "**Investors Rights Agreement**").
- Warrant to Purchase Common Stock, dated July 3, 2012, originally issued by Bionano Genomics, Inc. to Square 1 Bank and subsequently transferred to PacWest Bancorp (f/k/a Square 1 Financial, Inc.) on October 6, 2015.
- Warrant to Purchase Common Stock, dated December 11, 2013, originally issued by Bionano Genomics, Inc. to Square 1 Bank and subsequently transferred to PacWest Bancorp (f/k/a Square 1 Financial, Inc.) on October 6, 2015.
- Warrant to Purchase Common Stock, dated March 8, 2016, issued by Bionano Genomics, Inc. to Western Alliance Bank
- Warrant to Purchase Common Stock, dated December 9, 2016, issued by Bionano Genomics, Inc. to Western Alliance Bank
- Warrant to Purchase Common Stock, dated June 29, 2018, issued by Bionano Genomics, Inc. to Midcap Financial Trust
- Warrant to Purchase Common Stock, dated August 23, 2018, issued by Bionano Genomics, Inc. to Roth Capital Partners.
- Warrant to Purchase Common Stock, dated August 23, 2018, issued by Bionano Genomics, Inc. to Maxim Partners LLC.
- Warrant to Purchase Common Stock, dated August 23, 2018, issued by Bionano Genomics, Inc. to LifeSci Capital, LLC.
- Warrant to Purchase Common Stock, dated August 30, 2018, issued by Bionano Genomics, Inc. to Roth Capital Partners.
- Warrant to Purchase Common Stock, dated August 30, 2018, issued by Bionano Genomics, Inc. to Maxim Partners LLC.
- Warrant to Purchase Common Stock, dated August 30, 2018, issued by Bionano Genomics, Inc. to LifeSci Capital, LLC.
- Warrant to Purchase Common Stock, dated November 19, 2018, issued by Bionano Genomics, Inc. to Russell Creative.
- Warrant to Purchase Common Stock, dated November 19, 2018, issued by Bionano Genomics, Inc. to LifeSci Capital, LLC.
- On August 21, 2018, the Company completed its initial public offering (the "**IPO**"), pursuant to which the Company sold an aggregate of 3,864,000 units (each unit consisting of one share of Common Stock and one warrant to purchase one share of Common Stock). As of the commencement of trading on September 21, 2018, the units sold in the IPO separated in accordance with their terms and the Common Stock and warrants began trading separately on

the Nasdaq Capital Market (“**Nasdaq**”). Currently, there are outstanding warrants to purchase 3,864,000 shares of Common Stock listed on Nasdaq under the symbol “BNGOW”.

Schedule 3(e) – Conflicts

None.

Schedule 3(f) – 1934 Act Filings

None.

Schedule 3(g) – Material Changes

None.

Schedule 3(h) – Litigation

None.

Schedule 3(j) – Intellectual Property

- **Employee Inventions**

The Company’s core intellectual property, licensed exclusively from Princeton University, was co-invented by the Company’s founder, Han Cao, while he was employed by Princeton University. Dr. Cao assigned all rights to the intellectual property to Princeton University but retains 10% net revenue sharing rights payable to him by Princeton University under the university’s standard agreements (the “**Han Cao Rights**”).

Schedule 3(l) – Title

- **MidCap Financial Trust**

Pursuant to that certain Credit Security Agreement by and between the Company and Midcap Financial Trust, dated June 29, 2018, (the “**Credit Security Agreement**”), the Company has granted to Midcap Financial Trust a first ranking security interest in substantially all of its assets, including, without limitation, the Company’s Intellectual Property.

- **Union Bank**

A lien on cash collateral (\$100,000) of Company securing reimbursement obligations under a letter of credit issued by Union Bank.

- **Western Alliance Bank**

A lien on cash collateral (\$150,000) of Company securing reimbursement obligations under a letter of credit issued by Western Alliance Bank.

- The Han Cao Rights

Schedule 3(p) – Transactions with Affiliates

- The Investors Rights Agreement

EXHIBIT A

FORM OF OFFICER'S CERTIFICATE

This Officer's Certificate ("Certificate") is being delivered pursuant to Section 7(e) of that certain Common Stock Purchase Agreement dated as of March 14, 2019 (the "Common Stock Purchase Agreement"), by and between **BIONANO GENOMICS, INC.**, a Delaware corporation (the "Company"), and **ASPIRE CAPITAL FUND, LLC**, an Illinois limited liability company (the "Buyer"). Terms used herein and not otherwise defined shall have the meanings ascribed to them in the Common Stock Purchase Agreement.

The undersigned, _____, in his capacity as _____ of the Company, and not individually, hereby certifies as follows:

1. I am the _____ of the Company and make the statements contained in this Certificate in my capacity as _____ of the Company;
2. The representations and warranties of the Company are true and correct in all material respects (except to the extent that any of such representations and warranties is already qualified as to materiality in Section 3 of the Common Stock Purchase Agreement, in which case, such representations and warranties are true and correct without further qualification) as of the date when made and as of the Commencement Date as though made at that time (except for representations and warranties that speak as of a specific date);
3. The Company has performed, satisfied and complied in all material respects with covenants, agreements and conditions required by the Transaction Documents to be performed, satisfied or complied with by the Company at or prior to the Commencement Date.
4. The Company has not taken any steps, and does not currently expect to take any steps, to seek protection pursuant to any Bankruptcy Law nor does the Company or any of its Subsidiaries have any knowledge or reason to believe that its creditors intend to initiate involuntary bankruptcy or insolvency proceedings. The Company is financially solvent and is generally able to pay its debts as they become due.

IN WITNESS WHEREOF, I have hereunder signed my name on this ___ day of _____.

Name:
Title:

The undersigned as Secretary of the Company hereby certifies that _____ is the duly elected, appointed, qualified and acting _____ of the Company and that the signature appearing above is his genuine signature.

_____, Secretary

EXHIBIT B

FORM OF SECRETARY'S CERTIFICATE

This Secretary's Certificate (the "**Certificate**") is being delivered pursuant to Section 7(k) of that certain Common Stock Purchase Agreement dated as of March 14, 2019 (the "**Common Stock Purchase Agreement**"), by and between **BIONANO GENOMICS, INC.**, a Delaware corporation (the "**Company**") and **ASPIRE CAPITAL FUND, LLC**, an Illinois limited liability company (the "**Buyer**"), pursuant to which the Company may sell to the Buyer up to Ten Million Dollars (\$10,000,000) of the Company's Common Stock, par value \$0.0001 (the "**Common Stock**"). Terms used herein and not otherwise defined shall have the meanings ascribed to them in the Common Stock Purchase Agreement.

The undersigned, _____, in her capacity as Secretary of the Company, and not individually, hereby certifies as follows:

1. I am the Secretary of the Company and make the statements contained in this Secretary's Certificate in my capacity as the Secretary of the Company.

2. Attached hereto as Exhibit A and Exhibit B are true, correct and complete copies of the Company's bylaws ("**Bylaws**") and Certificate of Incorporation ("**Certificate of Incorporation**"), respectively, in each case, as amended through the date hereof, and no action has been taken by the Company, its directors, officers or stockholders, in contemplation of the filing of any further amendment relating to or affecting the Bylaws or Articles.

3. Attached hereto as Exhibit C are true, correct and complete copies of the Signing Resolutions duly adopted by the Board of Directors of the Company. Such resolutions have not been amended, modified or rescinded and remain in full force and effect and such resolutions are the only resolutions adopted by the Company's Board of Directors, or any committee thereof, or the stockholders of the Company relating to or affecting (i) the entering into and performance of the Common Stock Purchase Agreement, or the issuance, offering and sale of the Purchase Shares and the Commitment Shares and (ii) and the performance of the Company of its obligation under the Transaction Documents as contemplated therein.

4. As of the date hereof, the authorized, issued and reserved capital stock of the Company is as set forth on Exhibit D hereto.

IN WITNESS WHEREOF, I have hereunder signed my name on this ___ day of _____.

_____, Secretary

The undersigned, as _____ of the Company, hereby certifies that _____ is the duly elected, appointed, qualified and acting Secretary of the Company and that the signature appearing above is her genuine signature.

EXHIBIT C

FORM OF LETTER TO THE TRANSFER AGENT FOR THE ISSUANCE OF THE COMMITMENT SHARES AND INITIAL PURCHASE
SHARES AT SIGNING OF THE PURCHASE AGREEMENT

[COMPANY LETTERHEAD]

_____, 201_

[Transfer Agent]

[Address]

[Address]

Attention:

Re: Issuance of Common Stock to Aspire Capital Fund, LLC

Ladies and Gentlemen:

On behalf of **BIONANO GENOMICS, INC.**, (the “**Company**”), you are hereby instructed to issue **as soon as possible** _____ shares of our common stock in the name of **ASPIRE CAPITAL FUND, LLC**. The share certificate should be dated March __, 2019. I have included a true and correct copy of adopted resolutions of the Board of Directors of the Company approving the issuance of these shares. The shares should be issued subject to the following restrictive legend:

THE SECURITIES REPRESENTED BY THIS CERTIFICATE HAVE NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933, AS AMENDED, OR APPLICABLE STATE SECURITIES LAWS. THE SECURITIES HAVE BEEN ACQUIRED FOR INVESTMENT AND MAY NOT BE OFFERED FOR SALE, SOLD, TRANSFERRED OR ASSIGNED IN THE ABSENCE OF AN EFFECTIVE REGISTRATION STATEMENT FOR THE SECURITIES UNDER THE SECURITIES ACT OF 1933, AS AMENDED, OR APPLICABLE STATE SECURITIES LAWS, UNLESS SOLD PURSUANT TO: (1) RULE 144 UNDER THE SECURITIES ACT OF 1933, AS AMENDED, OR (2) AN OPINION OF HOLDER’S COUNSEL, IN A CUSTOMARY FORM, THAT REGISTRATION IS NOT REQUIRED UNDER SAID ACT OR APPLICABLE STATE SECURITIES LAWS.

The share certificate should be sent **as soon as possible via overnight mail** to the following address:

Aspire Capital Fund, LLC
155 North Wacker Drive, Suite 1600
Chicago, IL 60606
Attention: Steven G. Martin

Thank you very much for your help. Please call _____, at _____ if you have any questions or need anything further.

BIONANO GENOMICS, INC.

BY: _____

Name:

Title:

LOAN AND SECURITY AGREEMENT

THIS LOAN AND SECURITY AGREEMENT (as the same may be amended, restated, modified, or supplemented from time to time, this “**Agreement**”) dated as of March 14, 2019 (the “**Effective Date**”) among INNOVATUS LIFE SCIENCES LENDING FUND I, LP, a Delaware limited partnership, as collateral agent (in such capacity, together with its successors and assigns in such capacity, “**Collateral Agent**”), and the Lenders listed on Schedule 1.1 hereof or otherwise a party hereto from time to time including EAST WEST BANK in its capacity as a Lender (“**Bank**”), and BIONANO GENOMICS, INC., a Delaware corporation (“**Borrower**”), provides the terms on which the Lenders shall lend to Borrower and Borrower shall repay the Lenders. The parties agree as follows:

1. DEFINITIONS, ACCOUNTING AND OTHER TERMS

1.1 Capitalized terms used herein shall have the meanings set forth in Section 1.3 to the extent defined therein. All other capitalized terms used but not defined herein shall have the meaning given to such terms in the Code. Any accounting term used but not defined herein shall be construed in accordance with GAAP and all calculations shall be made in accordance with GAAP. The term “financial statements” shall include the accompanying notes and schedules. Any section, subsection, schedule or exhibit references are to this Agreement unless otherwise specified.

2. LOANS AND TERMS OF PAYMENT

2.1 Promise to Pay. Borrower hereby unconditionally promises to pay each Lender the outstanding principal amount of the Term Loan advanced to Borrower by such Lender and accrued and unpaid interest thereon and any other amounts due hereunder as and when due in accordance with this Agreement.

2.2 Term Loans.(a) Availability.

(i) Subject to the terms and conditions of this Agreement, the Lenders agree, severally and not jointly, to make a term loan to Borrower during the Term A-1 Draw Period in an aggregate principal amount of Seventeen Million Five Hundred Thousand Dollars (\$17,500,000.00) according to each Lender’s Term Loan Commitment as set forth on Schedule 1.1 hereto (the “**Term A-1 Loan**”). After repayment, the Term A-1 Loan may not be re-borrowed.

(ii) Subject to the terms and conditions of this Agreement, the Lenders agree, severally and not jointly, to make a term loan to Borrower during the Term A-2 Draw Period in an aggregate principal amount of Two Million Five Hundred Thousand Dollars (\$2,500,000.00) according to each Lender’s Term Loan Commitment as set forth on Schedule 1.1 hereto (the “**Term A-2 Loan**,” each Term A-1 Loan and Term A-2 Loan is referred to singly as a “**Term A Loan**” and Term A-1 Loan and Term A-2 Loan are referred to collectively as “**Term A Loans**”). After repayment, the Term A-2 Loan may not be re-borrowed.

(iii) Subject to the terms and conditions of this Agreement, the Lenders agree, severally and not jointly, to make a term loan to Borrower during the Term B Draw Period in an aggregate principal amount of Five Million Dollars (\$5,000,000.00) according to each Lender’s Term Loan Commitment as set forth on Schedule 1.1 hereto (the “**Term B Loan**,” each Term A Loan and Term B Loan is referred to singly as a “**Term Loan**” and the Term A Loan and the Term B Loan are referred to collectively as the “**Term Loans**”). After repayment, the Term B Loan may not be re-borrowed.

(b) Repayment. Borrower shall make monthly payments of interest only commencing on the second (2nd) Payment Date following the Funding Date of the Term Loan, and continuing on the Payment Date of each successive month thereafter through and including the Payment Date immediately preceding the Amortization Date. Borrower agrees to pay, on the Funding Date of the Term Loan, any initial partial monthly interest payment otherwise due for the period between the Funding Date of such Term Loan and the first Payment Date after such Funding Date. Commencing on the Amortization Date, and continuing on the Payment Date of each month thereafter,

Borrower shall make consecutive equal monthly payments of principal and interest, in arrears, to each Lender, as calculated by Collateral Agent (which calculations shall be deemed correct absent manifest error) based upon: (1) the amount of such Lender's Term Loan, (2) the effective rate of interest, as determined in Section 2.5(a), and (3) a repayment schedule equal to twenty-four (24) months. All unpaid principal and accrued and unpaid interest with respect to the Term Loan is due and payable in full on the Maturity Date. The Term Loan may only be prepaid in accordance with Sections 2.2(c) and 2.2(d).

(c) Mandatory Prepayments. If an event described in Section 7.2(c)(ii) occurs or the Term Loan is accelerated following the occurrence of an Event of Default, Borrower shall immediately pay to Lenders, payable to each Lender in accordance with its respective Pro Rata Share, an amount equal to the sum of: (i) all outstanding principal of the Term Loan plus accrued and unpaid interest thereon through the prepayment date, (ii) the Final Fee, (iii) the Prepayment Fee, plus (iv) all other Obligations that are due and payable, including, without limitation, Lenders' Expenses and interest at the Default Rate with respect to any past due amounts. Notwithstanding (but without duplication with) the foregoing, on the Maturity Date, if the Final Fee had not previously been paid in full in connection with the prepayment of the Term Loan in full, Borrower shall pay to each Lender in accordance with its respective Pro Rata Share, the Final Fee in respect of the Term Loan.

(d) Permitted Prepayment of Term Loan. After the date that is the first anniversary of the Effective Date, Borrower shall have the option to prepay all, but not less than all, of the Term Loan advanced by the Lenders under this Agreement, provided Borrower (i) provides written notice to Collateral Agent of its election to prepay the Term Loan at least seven (7) Business Days prior to such prepayment, and (ii) pays to the Lenders on the date of such prepayment, payable to each Lender in accordance with its respective Pro Rata Share, an amount equal to the sum of (A) all outstanding principal of the Term Loan plus accrued and unpaid interest thereon through the prepayment date, (B) the Final Fee, (C) the Prepayment Fee, plus (D) all other Obligations that are due and payable, including, without limitation, Lenders' Expenses and interest at the Default Rate with respect to any past due amounts.

2.3 Advances Under Revolving Line.

(a) Amount. Subject to and upon the terms and conditions of this Agreement, including Borrower's compliance with Section 6.6(d) of this Agreement, Borrower may request Advances from Bank in an aggregate outstanding amount not to exceed the lesser of (A) the Revolving Line or (B) the Borrowing Base. Amounts borrowed pursuant to this Section 2.3(a) may be repaid and reborrowed at any time without penalty or premium prior to the Maturity Date, at which time all Advances under this Section 2.3(b) shall be immediately due and payable; provided that, in the event of a mandatory or permitted prepayment of the Term Loan in accordance with Section 2.2(c) or (d) above, Borrower shall, at the same time as such prepayment, satisfy in full the Obligations owing with respect to the Revolving Line.

(b) Form of Request. Whenever Borrower desires an Advance, Borrower will notify Bank by facsimile transmission or telephone no later than 12:00 p.m. Pacific time on the Business Day that the Advance is to be made. Each such notification shall be promptly confirmed by a Payment/Advance Form in substantially the form of Exhibit B-1; provided that, Borrower shall deliver to Bank, no less than five (5) Business Days prior to the first request for an Advance hereunder, a completed Borrowing Base Certificate, together with detailed aged listings by invoice date of accounts receivable and accounts payable for Bank's review and approval in its sole reasonable discretion. Bank is authorized to make Advances under this Agreement, based upon instructions received from a Responsible Officer or a designee of a Responsible Officer, or without instructions if in Bank's discretion such Advances are necessary to meet Obligations which have become due and remain unpaid. Bank shall be entitled to rely on any facsimile or telephonic notice given by a person who Bank reasonably believes to be a Responsible Officer or a designee thereof, and Borrower shall indemnify and hold Bank harmless for any damages or loss suffered by Bank

as a result of such reliance. Bank will credit the amount of Advances made under this Section 2.3(b) to Borrower's deposit account.

2.4 Overadvances. If the aggregate amount of the outstanding Advances exceeds the lesser of the Revolving Line or the Borrowing Base at any time, Borrower shall immediately pay to Bank, in cash, the amount of such excess.

2.5 Payment of Interest.

(a) Interest Rates, Payments, and Calculations.

(i) Term Loans. Subject to Section 2.3(b), the principal amount outstanding under the Term Loan shall accrue interest at a floating per annum rate equal to the Term Loan Basic Rate, determined by Collateral Agent on the Funding Date of the Term Loan and monthly thereafter, which interest shall be payable monthly in arrears in accordance with Sections 2.2(b) and 2.3(e); provided that at the election of Borrower (which shall be considered elected on the Funding Date of the applicable Term Loan) with no less than five (5) Business Days' written notice to Collateral Agent prior to the Funding Date of the applicable Term Loan, 3.00% of such Term Loan Basic Rate may be payable in-kind by adding an amount equal to such 3.00% of the outstanding principal amount to the then outstanding principal balance on a monthly basis until the second anniversary of the Effective Date so as to increase the outstanding principal balance of the applicable Term Loan on each Payment Date and which amount shall be payable when the principal amount of the applicable Term Loan is payable in accordance with Sections 2.2(b) and 2.3(e) and on which principal amount interest shall be owed pursuant to Section 2.3(a).

Interest shall accrue on the Term Loan commencing on, and including, the Funding Date of the Term Loan, and shall accrue on the principal amount outstanding under the Term Loan through and including the day on which the Term Loan is paid in full.

(ii) Advances. Subject to Section 2.5(b), the Advances shall bear interest, on the outstanding daily balance thereof, at a rate equal to two percent (2.00%) above the Prime Rate.

(b) Late Fee; Default Rate. If any payment is not made within ten (10) days after the date such payment is due, Borrower shall pay Collateral Agent, for the ratable benefit of the Lenders, a late fee equal to the greater of (i) five percent (5.00%) of the amount of such unpaid amount or (ii) the maximum amount permitted to be charged under applicable law, but not less than Five Dollars (\$5.00). Immediately upon the occurrence and during the continuance of an Event of Default, Obligations shall accrue interest at a fixed per annum rate equal to the rate that is otherwise applicable thereto plus five percentage points (5.00%) (the "**Default Rate**"). Payment or acceptance of the increased interest rate provided in this Section 2.5(b) is not a permitted alternative to timely payment and shall not constitute a waiver of any Event of Default or otherwise prejudice or limit any rights or remedies of Collateral Agent.

(c) 365-Day Year. Interest shall be computed on the basis of a three hundred sixty-five (365) day year and the actual number of days elapsed.

(d) Debit of Accounts. Collateral Agent and each Lender may debit (or ACH) any deposit accounts maintained by Borrower or any of its Subsidiaries for principal and interest payments or any other amounts Borrower owes the Lenders under the Loan Documents when due. Any such debits (or ACH activity) shall not constitute a set-off.

(e) Payments. Except as otherwise expressly provided herein, all payments by Borrower under the Loan Documents shall be made to Collateral Agent in immediately available funds on the date specified herein. Unless otherwise provided, interest is payable monthly on the Payment Date of each month. Payments of principal and/or interest received after 12:00 noon Eastern time are considered received at the opening of business on the next Business Day. When a payment is due on a day that is not a Business Day, the payment is due the next Business Day and additional fees or interest, as applicable, shall continue to accrue until paid. All payments to be made by Borrower hereunder or under any other Loan Document, including payments of principal and interest, and all fees, expenses, indemnities and reimbursements, shall be made without set-off, recoupment or counterclaim, in lawful money of the

United States and in immediately available funds. Collateral Agent shall, within one (1) Business Day of receipt thereof, remit to the respective Lender to which such payments are owed, at such Lender's office, all amounts of principal, interest, fees and/or expenses due to such Lender.

(f) Application of Payments. Unless otherwise agreed or required by applicable law, payments will be applied first to any accrued unpaid interest as shown on the most recent statement or bill provided to Borrower (if no statement or bill has been provided for any reason, it shall be applied to the unpaid interest accrued since the last payment); then to principal; then to any late charges; and then to any unpaid collection costs. Borrower will pay Collateral Agent at Collateral Agent's address shown above or at such other place as Collateral Agent may designate in writing.

(g) Changes in Prime Rate. In the event the Prime Rate is changed from time to time hereafter, the applicable rate of interest hereunder shall be increased or decreased, effective as of the day the Prime Rate is changed, by an amount equal to such change in the Prime Rate.

2.6 Fees. Borrower shall pay to Collateral Agent:

(a) Term Loan Facility Fee. The Term Loan Facility Fee, which shall be due on the Funding Date of the Term A-1 Loan with respect to the Term A-1 Loan, on the Funding Date of the Term A-2 Loan with respect to the Term A-2 Loan and the Funding Date of the Term B Loan with respect to the Term Loan, to be shared among the Lenders in accordance with their respective Pro Rata Shares;

(b) Revolving Facility Fee. The Revolving Facility Fee, which shall be due on the Effective Date with respect to the Revolving Line, payable solely for the account of Bank;

(c) Unused Facility Fee. On April 1, 2019 and the first day of each month thereafter prior to the Maturity Date, and on the Maturity Date, a fee (the "**Unused Facility Fee**") equal to seventy-five hundredths percent (0.75%) per annum of the average daily unused portion of the Revolving Line, as reasonably determined by Bank, solely for the account of Bank, and which shall be nonrefundable;

(d) Final Fee. The Final Fee, when due hereunder, to be shared among the Lenders in accordance with their fee letter;

(e) Prepayment Fee. The Prepayment Fee, when due hereunder, to be shared among the Lenders in accordance with their fee letter; and

(f) Lenders' Expenses. All Lenders' Expenses incurred through and after the Effective Date, when due; *provided* that all such Lenders' Expenses incurred up to and including the Effective Date shall not exceed One Hundred Fifty Thousand Dollars (\$150,000.00) in the aggregate for the account of Borrower.

2.7 Withholding. Payments received by the Collateral Agent or the Lenders from Borrower hereunder will be made free and clear of and without deduction for any and all present or future taxes, levies, imposts, duties, deductions, withholdings, assessments, fees or other charges imposed by any governmental authority (including any interest, additions to tax or penalties applicable thereto). Specifically, however, if at any time any Governmental Authority, applicable law, regulation or international agreement requires Borrower to make any withholding or deduction from any such payment or other sum payable hereunder to the Lenders, Borrower hereby covenants and agrees that the amount due from Borrower with respect to such payment or other sum payable hereunder will be increased to the extent necessary to ensure that, after the making of such required withholding or deduction, each Lender receives a net sum equal to the sum which it would have received had no withholding or deduction been required and Borrower shall pay the full amount withheld or deducted to the relevant Governmental Authority. Borrower will, upon request, furnish the Lenders with proof reasonably satisfactory to the Lenders indicating that Borrower has made such withholding payment; provided, however, that Borrower need not make any withholding payment if the amount or validity of such withholding payment is contested in good faith by appropriate and timely

proceedings and as to which payment in full is bonded or reserved against by Borrower. The agreements and obligations of Borrower contained in this Section 2.7 shall survive the termination of this Agreement.

2.8 Secured Promissory Notes. The Term Loan and the Revolving Line shall be evidenced by a Secured Promissory Note or Notes in the form attached as Exhibit E hereto (each a “**Secured Promissory Note**”), and shall be repayable as set forth in this Agreement. Borrower irrevocably authorizes each Lender to make or cause to be made, on or about the Funding Date of any Credit Extension or at the time of receipt of any payment of principal on such Lender’s Secured Promissory Note, an appropriate notation on such Lender’s Secured Promissory Note Record reflecting the making of such Credit Extension or (as the case may be) the receipt of such payment. The outstanding amount of each Credit Extension set forth on such Lender’s Secured Promissory Note Record shall, absent manifest error, be prima facie evidence of the principal amount thereof owing and unpaid to such Lender, but the failure to record, or any error in so recording, any such amount on such Lender’s Secured Promissory Note Record shall not limit or otherwise affect the obligations of Borrower under any Secured Promissory Note or any other Loan Document to make payments of principal of or interest on any Secured Promissory Note when due. Upon receipt of an affidavit of an officer of a Lender as to the loss, theft, destruction, or mutilation of its Secured Promissory Note, Borrower shall issue, in lieu thereof, a replacement Secured Promissory Note in the same principal amount thereof and of like tenor.

3. CONDITIONS OF LOANS

3.1 Conditions Precedent to Initial Credit Extension. Each Lender’s obligation to make the initial Credit Extension is subject to the condition precedent that Collateral Agent and each Lender shall consent to or shall have received, in form and substance satisfactory to Collateral Agent and each Lender, such documents, and completion of such other matters, as Collateral Agent and each Lender may reasonably deem necessary or appropriate, including, without limitation:

- (a) original Loan Documents, each duly executed by Borrower and each Subsidiary, as applicable;
- (b) a completed Perfection Certificate for Borrower and each of its Subsidiaries, which must be received on the Effective Date;
- (c) duly executed original Control Agreements with respect to any Collateral Accounts maintained by Borrower or any of its Subsidiaries;
- (d) the Operating Documents and good standing certificates of Borrower and its Subsidiaries certified by the Secretary of State (or equivalent agency) of Borrower’s and such Subsidiaries’ jurisdiction of organization or formation and each jurisdiction in which Borrower and each Subsidiary is qualified to conduct business, each as of a date no earlier than thirty (30) days prior to the Effective Date;
- (e) a copy of resolutions of the governing body for Borrower evidencing approval of the Term Loan and other transactions evidenced by the Loan Documents;
- (f) duly executed original officer’s certificates for Borrower and each Subsidiary that is a party to the Loan Documents certifying as to (i) the incumbency of each Responsible Officer executing each Loan Document and (ii) the documents delivered pursuant to Section 3.1(d) and 3.1(e), in a form acceptable to Collateral Agent and the Lenders;
- (g) certified copies, dated as of date no earlier than thirty (30) days prior to the Effective Date, of financing statement searches, as Collateral Agent shall request, accompanied by written evidence (including any

UCC termination statements) that the Liens indicated in any such financing statements either constitute Permitted Liens or have been or, in connection with the initial Term Loan, will be terminated or released;

(h) a duly executed legal opinion of counsel to Borrower dated as of the Funding Date of the initial Credit Extension;

(i) evidence satisfactory to Collateral Agent and the Lenders that the insurance policies required by Section 6.5 hereof are in full force and effect, together with appropriate evidence showing loss payable and/or additional insured clauses or endorsements in favor of Collateral Agent, for the ratable benefit of the Lenders;

(j) payment of the Term Loan Facility Fee, Revolving Facility Fee and Lenders' Expenses then due as specified in Section 2.6 hereof;

(k) a landlord's consent executed in favor of Collateral Agent in respect of all of Borrower's and each Subsidiaries' leased locations;

(l) a bailee waiver executed in favor of Collateral Agent in respect of each third party bailee where Borrower or any Subsidiary maintains Collateral having a book value in excess of Two Hundred Fifty Thousand Dollars (\$250,000.00);

(m) a payoff letter from MidCap Financial Trust in respect of the Existing Indebtedness;

(n) evidence that (i) the Liens securing the Existing Indebtedness will be terminated and (ii) the documents and/or filings evidencing the perfection of such Liens, including without limitation any financing statements and/or control agreements, have or will, concurrently with the initial Credit Extension, be terminated; and

(o) an Automatic Debit Authorization.

3.2 Conditions Precedent to all Credit Extensions. The obligation of each Lender to extend each Credit Extension, including the Term A-1 Loan, is subject to the following conditions precedent:

(a) receipt by Collateral Agent of (i) an executed Loan Payment Request Form in the form of EXHIBIT B-1 attached hereto and (ii) an executed Disbursement Letter in the form of EXHIBIT B-2 attached hereto;

(b) the representations and warranties in Section 5 hereof shall be true, accurate and complete in all material respects on the date of each Loan Payment Request Form and the date of each Disbursement Letter and the Funding Date of each Term Loan; provided, however, that such materiality qualifier shall not be applicable to any representations and warranties that already are qualified or modified by materiality in the text thereof; and provided, further that those representations and warranties expressly referring to a specific date shall be true, accurate and complete in all material respects as of such date, and no Event of Default shall have occurred and be continuing or result from the funding of such Term Loan;

(c) if such Credit Extension is the initial Advance, an audit of Borrower's accounts, the results of which must be satisfactory to Bank and which must have been completed prior to the making of the initial Advance and, regardless of the initial Advance, no later than the date that is 180 days after the Effective Date (it being agreed and understood that Bank may in its sole discretion terminate its commitment under this Agreement to make Advances if the results of such audit are not satisfactory to Bank);

(d) if such Credit Extension is the initial Advance, Borrower must be in compliance with its obligations under 6.6(d), (ii) the full amount of Term A-1 Loan must have been drawn by Borrower and (iii) the security interest granted under this Agreement to Collateral Agent for the ratable benefit of the Lenders must already be effective and constitute a first priority perfected security interest in the Collateral, subject only to Permitted Liens that are permitted by the terms of this Agreement to have priority to Collateral Agent's Lien;

(e) in such Lender's reasonable discretion, there has not been any Material Adverse Change;

(f) no Event of Default or an event that with the passage of time could result in an Event of Default, shall exist;

(g) to the extent not delivered at the Effective Date, duly executed original Secured Promissory Notes and Warrants, in number, form and content acceptable to each Lender, and in favor of each Lender according to its Commitment Percentage, with respect to each Credit Extension made by such Lender after the Effective Date;

(h) if such Credit Extension is the Term A-2 Loan, the Term A-1 Loan must already have been drawn or should be drawn contemporaneously with the Term A-2 Loan;

(i) if such Credit Extension is the Term B Loan, the Term A-1 Loan and the Term A-2 Loan must already have been drawn; and

(j) payment of the fees and Lenders' Expenses then due as specified in Section 2.5 hereof.

3.3 Covenant to Deliver. Borrower agrees to deliver to Collateral Agent and the Lenders each item required to be delivered to Collateral Agent under this Agreement as a condition precedent to any Term Loan. Borrower expressly agrees that the Term Loan made prior to the receipt by Collateral Agent or any Lender of any such item shall not constitute a waiver by Collateral Agent or any Lender of Borrower's obligation to deliver such item, and any such Term Loan in the absence of a required item shall be made in each Lender's sole discretion.

3.4 Procedures for Borrowing. Subject to the prior satisfaction of all other applicable conditions to the making of the Credit Extensions set forth in this Agreement, to obtain each Credit Extension, Borrower shall notify the Collateral Agent, with respect to the Term Loans, and the Bank, with respect to the Revolving Line, (each of which notices shall be irrevocable) by electronic mail, facsimile, or telephone by 12:00 noon New York City time twelve (12) Business Days prior to the date the Credit Extension is to be made (unless a shorter period for such notice is agreed to by Collateral Agent or Bank, as applicable). Together with any such electronic, facsimile or telephonic notification, Borrower shall deliver to Collateral Agent by electronic mail or facsimile a completed Disbursement Letter and Loan Advance/Payment Authorization executed by a Responsible Officer or his or her designee. The Collateral Agent may rely on any telephone notice given by a person whom Collateral Agent reasonably believes is a Responsible Officer or designee. Notwithstanding anything herein or in any other Loan Document to the contrary, the parties agree that Borrower is by its execution hereof hereby requesting the Term A-1 Loan and the Term A-2 Loan to be funded upon the earliest date when they become available, subject to the prior satisfaction of all other applicable conditions, and is accordingly notifying the Collateral Agent.

4. CREATION OF SECURITY INTEREST

4.1 Grant of Security Interest. Borrower hereby grants Collateral Agent, effective as of the Funding Date of the first Credit Extension made hereunder, for the ratable benefit of the Lenders, to secure the payment and performance in full of all of the Obligations, a continuing security interest in, and pledges to Collateral Agent, for the ratable benefit of the Lenders, the Collateral, wherever located, whether now owned or hereafter acquired or arising, and all proceeds and products thereof. If Borrower shall acquire a commercial tort claim (as defined in the Code), Borrower shall grant to Collateral Agent, for the ratable benefit of the Lenders, a security interest therein and in the proceeds thereof, all upon the terms of this Agreement, with such writing to be in form and substance reasonably satisfactory to Collateral Agent.

If this Agreement is terminated, Collateral Agent's Lien in the Collateral shall continue until the Obligations (other than inchoate indemnity obligations) are repaid in full in cash. Upon payment in full in cash of the Obligations (other than inchoate indemnity obligations) and at such time as the Lenders' obligation to extend the Term Loan has terminated, Collateral Agent shall, at the sole cost and expense of Borrower, release its Liens in the Collateral and all rights therein shall revert to Borrower.

4.2 Authorization to File Financing Statements. Borrower hereby authorizes Collateral Agent, from and after the Funding Date of the first Credit Extension made hereunder, to file financing statements or take any other action required to perfect Collateral Agent's security interests in the Collateral,

without notice to Borrower, with all appropriate jurisdictions to perfect or protect Collateral Agent's interest or rights under the Loan Documents.

5. REPRESENTATIONS AND WARRANTIES

Borrower represents and warrants to Collateral Agent and the Lenders as follows:

5.1 Due Organization, Authorization: Power and Authority. Borrower and each of its Subsidiaries is duly existing and in good standing as a Registered Organization in its jurisdictions of organization or formation and Borrower and each of its Subsidiaries is qualified and licensed to do business and is in good standing in any jurisdiction in which the conduct of its businesses or its ownership of property requires that it be qualified except where the failure to do so could not reasonably be expected to have a Material Adverse Change. In connection with this Agreement, Borrower and each of its Subsidiaries has delivered to Collateral Agent a completed perfection certificate and any updates or supplements thereto on or before the Effective Date (each a "**Perfection Certificate**" and collectively, the "**Perfection Certificates**"). Borrower represents and warrants that all the information set forth on the Perfection Certificates pertaining to Borrower and each of its Subsidiaries is accurate and complete as of the Effective Date or as of the date of the most recently delivered update or supplement delivered by Borrower to Collateral Agent in accordance with the terms hereof.

The execution, delivery and performance by Borrower and each of its Subsidiaries of the Loan Documents to which it is a party have been duly authorized, and do not (i) conflict with any of Borrower's or such Subsidiaries' organizational documents, including its respective Operating Documents, (ii) contravene, conflict with, constitute a default under or violate any material Requirement of Law applicable thereto, (iii) contravene, conflict or violate any applicable order, writ, judgment, injunction, decree, determination or award of any Governmental Authority by which Borrower or such Subsidiary, or any of their property or assets may be bound or affected, (iv) require any action by, filing, registration, or qualification with, or Governmental Approval from, any Governmental Authority (except such Governmental Approvals which have already been obtained and are in full force and effect) or are being obtained pursuant to Section 6.1(b), or (v) constitute an event of default under any material agreement by which Borrower or any of such Subsidiaries, or their respective properties, is bound. Neither Borrower nor any of its Subsidiaries is in default under any agreement to which it is a party or by which it or any of its assets is bound in which such default could reasonably be expected to have a Material Adverse Change.

5.2 Collateral.

(a) Borrower and each its Subsidiaries have good title to, have rights in, and the power to transfer each item of the Collateral upon which it purports to grant a Lien under the Loan Documents, free and clear of any and all Liens except Permitted Liens and, prior to the Funding Date of the initial Credit Extension, Liens securing Existing Indebtedness, and neither Borrower nor any of its Subsidiaries have any Deposit Accounts, Securities Accounts, Commodity Accounts or other investment accounts other than the Collateral Accounts or the other investment accounts, if any, described in the Perfection Certificates delivered to Collateral Agent in connection herewith with respect of which Borrower or such Subsidiary has given Collateral Agent notice and taken such actions as are necessary to give Collateral Agent a perfected security interest therein. The Accounts are bona fide, existing obligations of the Account Debtors.

(b) The Eligible Accounts are bona fide existing obligations. The property or services giving rise to such Eligible Accounts has been delivered or rendered to the Account Debtor or its agent for immediate shipment to and unconditional acceptance by the Account Debtor. Borrower has not received notice of an actual or imminent Insolvency Proceeding of any Account Debtor whose accounts are included in any Borrowing Base Certificate as an Eligible Account. No licenses or agreements giving rise to such Eligible Accounts is with any Prohibited Territory or with any Person organized under or doing business in a Prohibited Territory. All Inventory is in all material respects of good and merchantable quality, free from all material defects, except for Inventory for which adequate reserves have been made.

(c) The security interest granted herein, which shall become effective as of the Funding Date of the first Credit Extension made under this Agreement, once effective shall at all times continue to be a first priority perfected security interest in the Collateral, subject only to Permitted Liens that are permitted by the terms of this Agreement to have priority to Collateral Agent's Lien.

(d) On the Effective Date, and except as disclosed on the Perfection Certificate (i) the Collateral is not in the possession of any third party bailee, and (ii) no such third party bailee possesses components of the Collateral in excess of Two Hundred Fifty Thousand Dollars (\$250,000.00).

(e) All Inventory and Equipment is in all material respects of good and marketable quality, free from material defects.

(f) Borrower and each of its Subsidiaries is the sole owner of the Intellectual Property each respectively purports to own, free and clear of all Liens other than Permitted Liens and, prior to the Funding Date of the initial Credit Extension, Liens securing Existing Indebtedness. Except as noted on the Perfection Certificates delivered to Collateral Agent as of the Effective Date, and as updated from time to time with respect hereto in accordance with the terms hereof, neither Borrower nor any of its Subsidiaries is a party to, nor is bound by, any material license or other Material Agreement.

5.3 Litigation. Except as disclosed on the Perfection Certificate, there are no actions, suits, investigations, or proceedings pending or, to the Knowledge of the Responsible Officers, threatened in writing by or against Borrower or any of its Subsidiaries involving more than Two Hundred Fifty Thousand Dollars (\$250,000.00) or a claim for infringement of any intellectual property. Except as disclosed on the Perfection Certificate, there are no actions, suits, investigations or proceedings pending or, to the Knowledge of the Responsible Officers, threatened in writing by or against Borrower or any Subsidiaries involving challenges to the validity of the Intellectual Property.

5.4 No Material Adverse Change; Financial Statements. All consolidated financial statements for Borrower and its Subsidiaries, delivered to Collateral Agent fairly present, in conformity with GAAP, in all material respects the consolidated financial condition of Borrower and its Subsidiaries, and the consolidated results of operations of Borrower and its Subsidiaries. Since the date of the most recent financial statements submitted to any Lender, there has not been a Material Adverse Change.

5.5 Solvency. Borrower and each of its Subsidiaries, when taken as a whole, is Solvent.

5.6 Regulatory Compliance. Neither Borrower nor any of its Subsidiaries is an “investment company” or a company “controlled” by an “investment company” under the Investment Company Act of 1940, as amended. Neither Borrower nor any of its Subsidiaries is engaged as one of its important activities in extending credit for margin stock (under Regulations X, T and U of the Federal Reserve Board of Governors). Borrower and each of its Subsidiaries has complied in all material respects with the Federal Fair Labor Standards Act. Neither Borrower nor any of its Subsidiaries is a “holding company” or an “affiliate” of a “holding company” or a “subsidiary company” of a “holding company” as each term is defined and used in the Public Utility Holding Company Act of 2005. Neither Borrower nor any of its Subsidiaries has violated any laws, ordinances or rules, the violation of which could reasonably be expected to have a Material Adverse Change. Neither Borrower’s nor any of its Subsidiaries’ properties or assets has been used by Borrower or such Subsidiary or, to Borrower’s Knowledge, by previous Persons, in disposing, producing, storing, treating, or transporting any hazardous substance other than in material compliance with applicable laws. Borrower and each of its Subsidiaries has obtained all consents, approvals and authorizations of, made all declarations or filings with, and given all notices to, all Governmental Authorities that are necessary to continue their respective businesses as currently conducted.

None of Borrower, any of its Subsidiaries, or any of Borrower’s or its Subsidiaries’ Affiliates or any of their respective agents acting or benefiting in any capacity in connection with the transactions contemplated by this Agreement is (i) in violation of any Anti-Terrorism Law, (ii) engaging in or conspiring to engage in any transaction that evades or avoids, or has the purpose of evading or avoiding or attempts to violate, any of the prohibitions set forth in any Anti-Terrorism Law, or (iii) is a Blocked Person. None of Borrower, any of its Subsidiaries, or to the Knowledge of Borrower and any of their Affiliates or agents, acting or benefiting in any capacity in connection with the transactions contemplated by this Agreement, (x) conducts any business or engages in making or receiving any contribution of funds, goods or services to or for the benefit of any Blocked Person, or (y) deals in, or otherwise engages in any transaction relating to, any property or interest in property blocked pursuant to Executive Order No. 13224, any similar executive order or other Anti-Terrorism Law.

5.7 Investments. Neither Borrower nor any of its Subsidiaries owns any stock, shares, partnership interests or other equity securities except for Permitted Investments.

5.8 Tax Returns and Payments; Pension Contributions. Borrower and each of its Subsidiaries has (i) timely filed all required tax returns and reports, and Borrower and each of its Subsidiaries, and (ii) has timely paid all foreign, federal, state, and material local taxes, assessments, deposits and contributions owed by Borrower and such Subsidiaries, in each case of (i) and (ii), in an amount greater than Twenty-Five Thousand Dollars (\$25,000.00), in all jurisdictions in which Borrower or any such Subsidiary is subject to taxes, including the United States, unless such taxes are being contested in accordance with the next sentence. Borrower and each of its Subsidiaries, may defer payment of any contested taxes, provided that Borrower or such Subsidiary in good faith contests its obligation to pay the taxes by appropriate proceedings promptly and diligently instituted and conducted. Neither Borrower nor any of its Subsidiaries is aware of any claims or adjustments proposed for any of Borrower's or such Subsidiaries' prior tax years which could result in additional taxes (in an amount greater than Twenty-Five Thousand Dollars (\$25,000.00)) becoming due and payable by Borrower or its Subsidiaries. Borrower and each of its Subsidiaries have paid all amounts necessary to fund all present pension, profit sharing and deferred compensation plans in accordance with their terms, and neither Borrower nor any of its Subsidiaries have, withdrawn from participation in, and have not permitted partial or complete termination of, or permitted the occurrence of any other event with respect to, any such plan which could reasonably be expected to result in any liability of Borrower or its Subsidiaries, including any liability to the Pension Benefit Guaranty Corporation or its successors or any other Governmental Authority.

5.9 Use of Proceeds. Borrower shall use the proceeds of the Term Loan solely as working capital and to fund its general business requirements in accordance with the provisions of this Agreement, and not for personal, family, household or agricultural purposes. A portion of the proceeds of the Term A-1 Loans shall be used by Borrower to repay the Existing Indebtedness in full on the Funding Date of the Term A-1 Loans.

5.10 Full Disclosure. No written representation, warranty or other statement of Borrower or any of its Subsidiaries in any certificate or written statement given to Collateral Agent or any Lender, as of the date such representation, warranty, or other statement was made, taken together with all such written certificates and written statements given to Collateral Agent or any Lender, contains any untrue statement of a material fact or omits to state a material fact necessary to make the statements contained in the certificates or statements not misleading (it being recognized that projections and forecasts provided by Borrower in good faith and based upon reasonable assumptions are not viewed as facts and that actual results during the period or periods covered by such projections and forecasts may differ from the projected or forecasted results).

6. AFFIRMATIVE COVENANTS

Borrower shall, and shall cause each of its Subsidiaries to, do all of the following:

6.1 Government Compliance.

(a) Maintain its and all its Subsidiaries' legal existence and good standing in their respective jurisdictions of organization and maintain qualification in each jurisdiction in which the failure to so qualify could reasonably be expected to have a Material Adverse Change. Comply with all laws, ordinances and regulations to which Borrower or any of its Subsidiaries is subject, the noncompliance with which could reasonably be expected to have a Material Adverse Change.

(b) Obtain and keep in full force and effect, all of the material Governmental Approvals necessary for the performance by Borrower and its Subsidiaries of their respective businesses and obligations under the Loan Documents and the grant of a security interest to Collateral Agent for the ratable benefit of the Lenders, in all of the Collateral.

6.2 Financial Statements, Reports, Certificates; Notices.

(a) Deliver to Collateral Agent and each Lender:

(i) (A) as soon as available, but no later than thirty (30) days after the last day of each month, a company prepared income statement and cash burn statement covering the consolidated operations of Borrower and its Subsidiaries for such month certified by a Responsible Officer and in a form reasonably acceptable

to Collateral Agent and (B) as soon as available, but no later than forty-five (45) days after the last day of each quarter a company prepared consolidated and consolidating balance sheet, income statement and cash flow statement covering the consolidated operations of Borrower and its Subsidiaries for such quarter certified by a Responsible Officer and in a form reasonably acceptable to Collateral Agent;

(ii) as soon as available, but no later than one hundred twenty (120) days after the last day of Borrower's fiscal year or within five (5) days of filing with the Securities and Exchange Commission, audited consolidated financial statements prepared under GAAP, consistently applied, together with an unqualified opinion on the financial statements from an independent certified public accounting firm acceptable to Collateral Agent in its reasonable discretion;

(iii) as soon as available after approval thereof by Borrower's board of directors, but no later than the earlier of ten (10) days after such approval and forty-five (45) days after the last day of Borrower's fiscal year, Borrower's annual (A) financial projections and (B) budget, in each case, for the entire current fiscal year as approved by Borrower's board of directors; provided that, any board approved revisions to such projections and/or budget approved by Borrower's board of directors shall be delivered to Collateral Agent and the Lenders no later than seven (7) days after such approval;

(iv) within five (5) days of delivery, copies of all non-ministerial statements, reports and notices made available to Borrower's board of directors, security holders or holders of Subordinated Debt;

(v) in the event that Borrower becomes subject to the reporting requirements under the Securities Exchange Act of 1934, as amended, within five (5) days of filing, all reports on Form 10-K, 10-Q and 8-K filed with the Securities and Exchange Commission;

(vi) prompt notice of any amendments of or other changes to the capitalization table of Borrower and to the Operating Documents of Borrower or any of its Subsidiaries, together with any copies reflecting such amendments or changes with respect thereto;

(vii) as soon as available, but no later than thirty (30) days after the last day of each month, copies of the month-end account statements for each Collateral Account maintained by Borrower or its Subsidiaries, provided that (x) Borrower shall cause such statements to be provided to Collateral Agent and each Lender by the applicable institution(s), by virtue of the inclusion of the same in any control agreement(s) delivered by such institution(s);

(viii) prompt delivery of (and in any event within five (5) days after the same are sent or received) copies of all material correspondence, reports, documents and other filings with any Governmental Authority that could reasonably be expected to have a material adverse effect on any of the Governmental Approvals material to Borrower's business or otherwise could reasonably be expected to have a Material Adverse Change;

(ix) prompt notice of any event that (A) could reasonably be expected to materially and adversely affect the Borrower's Intellectual Property and (B) could reasonably be expected to result in a Material Adverse Change;

(x) written notice at least (10) days' prior to Borrower's creation of a New Subsidiary in accordance with the terms of Section 6.10;

(xi) prompt written notice upon Borrower's (A) adding any new offices or business locations, including warehouses (unless such new offices or business locations contain less than Two Hundred and Fifty Thousand Dollars (\$250,000.00) in assets or property of Borrower or any of its Subsidiaries), (B) changing its jurisdiction of organization, (C) changing its organizational structure or type, (D) changing its legal name, or (E) changing any organizational number (if any) assigned by its jurisdiction of organization;

(xii) upon Borrower becoming aware of the existence of any Event of Default or event which, with the giving of notice or passage of time, or both, would constitute an Event of Default, prompt (and in any

event within three (3) Business Days) written notice of such occurrence, which such notice shall include a reasonably detailed description of such Event of Default or event which, with the giving of notice or passage of time, or both, would constitute an Event of Default;

(xiii) immediate notice if Borrower or such Subsidiary has Knowledge that Borrower, or any Subsidiary or Affiliate of Borrower, is listed on the OFAC Lists or (a) is convicted on, (b) pleads *nolo contendere* to, (c) is indicted on, or (d) is arraigned and held over on charges involving money laundering or predicate crimes to money laundering;

(xiv) notice of any commercial tort claim which could result in proceeds to the Borrower in excess of Two Hundred and Fifty Thousand Dollars (\$250,000.00) and of the general details thereof;

(xv) if Borrower or any of its Subsidiaries is not now a Registered Organization but later becomes one, written notice of such occurrence and information regarding such Person's organizational identification number within seven (7) Business Days of receiving such organizational identification number; and

(xvi) other information as reasonably requested by Collateral Agent or any Lender.

Notwithstanding the foregoing, documents required to be delivered pursuant to the terms hereof (to the extent any such documents are included in materials otherwise filed with the Securities and Exchange Commission) may be delivered electronically and if so delivered, shall be deemed to have been delivered on the date on which Borrower posts such documents, or provides a link thereto, on Borrower's website on the internet at Borrower's website address.

(b) Concurrently with the delivery of the financial statements specified in Section 6.2(a)(i)(A), deliver to Collateral Agent and each Lender:

(i) a duly completed Compliance Certificate signed by a Responsible Officer;

(ii) after the first Advance hereunder has been made, a Borrowing Base Certificate signed by a Responsible Officer, together with detailed aged listings by invoice date of accounts receivable and accounts payable; provided, however, such a Borrowing Base Certificate along with detailed aged listings by invoice date of accounts receivable and accounts payable shall also be delivered five (5) Business Days in advance of first Advance made hereunder;

(iii) copies of any material Governmental Approvals obtained by Borrower or any of its Subsidiaries;

(iv) written notice of the commencement of, and any material development in, the proceedings contemplated by Section 5.8 hereof;

(v) written notice of any litigation or governmental proceedings pending or threatened (in writing) against Borrower or any of its Subsidiaries, which could reasonably be expected to result in damages or costs to Borrower or any of its Subsidiaries of more than Two Hundred and Fifty Thousand Dollars (\$250,000.00); and

(vi) written notice of all returns, recoveries, disputes and claims regarding Inventory that involve more than Two Hundred and Fifty Thousand Dollars (\$250,000.00) individually or in the aggregate in any calendar year.

(c) Keep proper, complete and true books of record and account in accordance with GAAP in all material respects. Borrower shall, and shall cause each of its Subsidiaries to, allow, at the sole cost of Borrower, Collateral Agent or any Lender, during regular business hours upon reasonable prior notice (provided that no notice shall be required when an Event of Default has occurred and is continuing), to visit and inspect any of its properties, to examine and make abstracts or copies from any of its books and records, and to conduct a collateral audit and analysis of its operations and the Collateral. Such audits shall be conducted no more often than once every year unless

(and more frequently if) an Event of Default has occurred and is continuing. Notwithstanding the foregoing, upon request of any Lender, but not more frequently than annually, unless an Event of Default has occurred and is continuing, Borrower agrees to permit Collateral Agent or such Lender to communicate with Borrower's accounting firm with respect to the consolidated financial statements delivered pursuant to this Section 6.2.

(d) Concurrently with the delivery of the financial statements specified in Section 6.2(a)(i)(B), deliver to Collateral Agent and each Lender, an updated Perfection Certificate to reflect any amendments, modifications and updates to certain information in the Perfection Certificate after the Effective Date to the extent such amendments, modifications and updates are permitted by one or more specific provisions in this Agreement; in each case, subject to the review and approval of Collateral Agent and each Lender.

(e) Concurrently with the delivery of the financial statements specified in Section 6.2(a)(ii), deliver to Bank a detailed listing of each Account Debtor and each such Account Debtor's contact information

6.3 Inventory; Returns. Keep all Inventory in good and marketable condition, free from material defects. Returns and allowances between Borrower, or any of its Subsidiaries, and their respective Account Debtors shall follow Borrower's, or such Subsidiary's, customary practices as they exist at the Effective Date.

6.4 Taxes; Pensions. Timely file and require each of its Subsidiaries to timely file, all required tax returns and reports and timely pay, and require each of its Subsidiaries to timely pay, all federal, state and material foreign and local taxes, assessments, deposits and contributions owed by Borrower or its Subsidiaries, except as otherwise permitted pursuant to the terms of Section 5.8 hereof, and shall deliver to Collateral Agent and each Lender, on demand, appropriate certificates attesting to such payments, and pay all amounts necessary to fund all present pension, profit sharing and deferred compensation plans in accordance with the terms of such plans.

6.5 Insurance. Keep Borrower's and its Subsidiaries' business and the Collateral insured for risks and in amounts standard for companies in Borrower's and its Subsidiaries' industry and location and as Collateral Agent may reasonably request, including, but not limited to, D&O insurance reasonably satisfactory to Collateral Agent. Insurance policies shall be in a form, with companies, and in amounts that are reasonably satisfactory to Collateral Agent and Lenders. All property policies shall have a lender's loss payable endorsement showing Collateral Agent as lender loss payee and waive subrogation against Collateral Agent, and all liability policies shall show, or have endorsements showing, Collateral Agent, as additional insured. Effective as of the Funding Date of the first Credit Extension made under this Agreement, the Collateral Agent shall be named as lender loss payee and/or additional insured with respect to any such insurance providing coverage in respect of any Collateral, and each provider of any such insurance shall agree, by endorsement upon the policy or policies issued by it or by independent instruments furnished to the Collateral Agent, that it will give the Collateral Agent thirty (30) days' prior written notice before any such policy or policies shall be materially altered or canceled (other than cancellation for non-payment of premiums, for which ten (10) days' prior written notice shall be required). At Collateral Agent's request, Borrower shall deliver certified copies of policies and evidence of all premium payments. Proceeds payable under any policy shall, at Collateral Agent's option, be payable to Collateral Agent, for the ratable benefit of the Lenders, on account of the Obligations. Notwithstanding the foregoing, (a) so long as no Event of Default has occurred and is continuing, Borrower shall have the option of applying the proceeds of any casualty policy within 180 days of receipt thereof up to Two Hundred Fifty Thousand Dollars (\$250,000.00) with respect to any loss, but not exceeding Three Hundred Thousand Dollars (\$300,000.00), in the aggregate for all losses under all casualty policies in any one year, toward the replacement or repair of destroyed or damaged property; provided that any such replaced or repaired property (i) shall be of equal or like value as the replaced or repaired Collateral and (ii) shall be deemed Collateral in which Collateral Agent has been granted a first priority security interest, and (b) after the occurrence and during the continuance of an Event of Default, all proceeds payable under such casualty policy shall, at the option of Collateral Agent, be payable to Collateral Agent, for the ratable benefit of the Lenders, on account of the Obligations. If Borrower or any of its Subsidiaries fails to obtain insurance as required under this Section 6.5 or to pay any amount or furnish any required proof of payment to third persons, Collateral Agent and/or any Lender may make (but has no

obligation to do so), at Borrower's expense, all or part of such payment or obtain such insurance policies required in this Section 6.5, and take any action under the policies Collateral Agent or such Lender deems prudent.

6.6 Operating Accounts.

(a) From and after the date ninety (90) days from the Effective Date, Borrower shall maintain its, and its Domestic Subsidiaries', domestic depository and operating accounts with Bank, subject to a Control Agreement in favor of, and in form and content acceptable to, Collateral Agent; provided, however, that during such ninety (90) day period, all Collateral Accounts maintained with any bank or financial institution shall be subject to one or more Control Agreements in favor of Collateral Agent that are in such form and substance as are acceptable to Collateral Agent.

(b) Borrower shall provide Collateral Agent ten (10) days' prior written notice before Borrower or any of its Subsidiaries establishes any Collateral Account. In addition, for each Collateral Account that Borrower or any of its Subsidiaries at any time maintains, commencing with the Funding Date of the first Credit Extension made hereunder, Borrower or such Subsidiary shall cause the applicable bank or financial institution at or with which such Collateral Account is maintained to execute and deliver a Control Agreement or other appropriate instrument with respect to such Collateral Account to perfect Collateral Agent's Lien in such Collateral Account in accordance with the terms hereunder prior to the establishment of such Collateral Account, which Control Agreement may not be terminated without prior written consent of Collateral Agent. The provisions of the previous sentence shall not apply to deposit accounts exclusively used for payroll, payroll taxes and other employee wage and benefit payments to or for the benefit of Borrower's, or any of its Subsidiaries', employees and identified to Collateral Agent by Borrower as such in the Perfection Certificate.

(c) Neither Borrower nor any of its Subsidiaries shall maintain any Collateral Accounts except Collateral Accounts maintained in accordance with Section 6.6.

(d) Lock Box; Dominion of Funds. Without limiting any of the foregoing:

(i) Borrower agrees that the Obligations with respect to the Revolving Line shall be on a "remittance basis." Borrower shall at its sole expense establish and maintain (and Bank, at Bank's option, may establish and maintain at Borrower's expense), prior to the Funding Date of the initial Advance and no later than ninety (90) days from the Effective Date:

(1) A United States Post Office lock box (the "**Lock Box**"), to which Bank shall have exclusive access and control. Borrower expressly authorizes Bank, from time to time, to remove the contents from the Lock Box, for disposition in accordance with this Agreement. Borrower shall notify all account debtors and other parties obligated to Borrower that all payments made to Borrower (other than payments by electronic funds transfer) shall be remitted, for the credit of Borrower, to the Lock Box, and Borrower shall include a like statement on all invoices; and

(2) A non-interest bearing deposit account with Bank which shall be titled as designated by Bank (the "Dominion of Funds Account") to which Bank shall have exclusive access and control. Borrower shall notify all account debtors and other parties obligated to Borrower that all payments made to Borrower by electronic funds transfer shall be remitted to the Dominion of Funds Account, and Borrower, at Bank's request, shall include a like statement on all invoices. Borrower shall execute all documents and authorizations as required by Bank to establish and maintain the Lock Box and the Dominion of Funds Account.

(ii) Borrower shall hold in trust for Bank all amounts that Borrower receives despite the directions to make payments to the Lock Box or Dominion of Funds Account, and immediately deliver such payments to Bank in their original form as received from the account debtor, with proper endorsements for deposit into the Lock Box or Dominion of Funds Account, as applicable;

(iii) All items or amounts which are remitted to the Dominion of Funds Account, or otherwise delivered by or for the benefit of Borrower to Bank on account of partial or full payment of, or with respect to, any Collateral shall, on a daily basis, be applied to the payment of outstanding Advances, whether then due or not,

with the balance, if any, deposited to Borrower's operating account maintained at Bank. After the occurrence and during the continuance of an Event of Default, all items or amounts remitted to the Lock Box, the Dominion of Funds Account or that Bank has otherwise received shall, in Bank's sole discretion, be applied to the payment of any Obligations, whether then due or not, in such order or at such time of application as Bank may determine in its sole discretion. Bank shall not be liable for any loss or damage which Borrower may suffer as a result of Bank's processing of items or its exercise of any other rights or remedies under this Agreement, including without limitation indirect, special or consequential damages, loss of revenues or profits, or any claim, demand or action by any third party arising out of or in connection with the processing of items or the exercise of any other rights or remedies under this Agreement. Borrower shall indemnify and hold Bank harmless from and against all such third party claims, demands or actions, and all related expenses or liabilities, including, without limitation, attorney's fees and including claims, damages, fines, expenses, liabilities or causes of action of whatever kind resulting from bank's own negligence except to the extent (but only to the extent) caused by Bank's gross negligence or willful misconduct.

6.7 Protection of Intellectual Property Rights. Borrower and each of its Subsidiaries shall: (a) protect, defend and maintain the validity and enforceability of its Intellectual Property that is material to its business; (b) promptly advise Collateral Agent in writing of a challenge to the validity, or material infringement by a third party of its Intellectual Property; and (c) not allow any Intellectual Property material to its business to be abandoned, forfeited or dedicated to the public without Collateral Agent's prior written consent, not to be unreasonably withheld. If Borrower or any of its Subsidiaries (i) obtains any patent, registered trademark or servicemark, registered copyright, registered mask work, or any pending application for any of the foregoing, whether as owner, licensee or otherwise, or (ii) applies for any patent or the registration of any trademark or servicemark, then Borrower or such Subsidiary shall substantially contemporaneously provide written notice thereof to Collateral Agent and each Lender and shall execute such intellectual property security agreements and other documents and take such other actions as Collateral Agent shall reasonably request in its good faith business judgment to perfect and maintain a first priority perfected security interest in favor of Collateral Agent, for the ratable benefit of the Lenders, in such property. If Borrower or any of its Subsidiaries decides to register any copyrights or mask works in the United States Copyright Office, Borrower or such Subsidiary shall: (x) provide Collateral Agent and each Lender with at least ten (10) days prior written notice of Borrower's or such Subsidiary's intent to register such copyrights or mask works together with a copy of the application it intends to file with the United States Copyright Office (excluding exhibits thereto); (y) execute an intellectual property security agreement and such other documents and take such other actions as Collateral Agent may reasonably request in its good faith business judgment to perfect and maintain a first priority perfected security interest in favor of Collateral Agent, for the ratable benefit of the Lenders, in the copyrights or mask works intended to be registered with the United States Copyright Office; and (z) record such intellectual property security agreement with the United States Copyright Office contemporaneously with filing the copyright or mask work application(s) with the United States Copyright Office. Borrower or such Subsidiary shall promptly provide to Collateral Agent and each Lender with evidence of the recording of the intellectual property security agreement necessary for Collateral Agent to perfect and maintain a first priority perfected security interest in such property.

6.8 Litigation Cooperation. Commencing on the Effective Date and continuing through the termination of this Agreement, make available to Collateral Agent and the Lenders, without expense to Collateral Agent or the Lenders, Borrower and each of Borrower's officers, employees and agents and Borrower's Books, to the extent that Collateral Agent or any Lender may reasonably deem them necessary to prosecute or defend any third-party suit or proceeding instituted by or against Collateral Agent or any Lender with respect to any Collateral or relating to Borrower.

6.9 Landlord Waivers; Bailee Waivers. In the event that Borrower or any of its Subsidiaries, after the Funding Date of the first Credit Extension made under this Agreement, intends to add any new offices or business locations, including warehouses, or otherwise store any portion of the Collateral with, or deliver any portion of the Collateral to, a bailee, in each case pursuant to Section 7.2, then Borrower or such Subsidiary will first receive the written consent of Collateral Agent and, in the event that the Collateral at any new location is valued in excess of Two Hundred Fifty Thousand Dollars (\$250,000.00) in the aggregate, at Collateral Agent's election, Borrower shall cause such bailee or landlord, as applicable, to execute and deliver a bailee waiver or landlord waiver, as applicable, in form and substance reasonably satisfactory to Collateral Agent no later than fifteen (15) days after the addition of any new offices or business locations, or any such storage with or delivery to any such bailee, as the case may be.

6.10 Creation/Acquisition of Subsidiaries. In the event any Borrower or any Subsidiary of any Borrower creates or acquires any Subsidiary after the Effective Date, Borrower or such Subsidiary shall promptly notify Collateral Agent of such creation or acquisition, and Borrower or such Guarantor shall take all actions reasonably requested by Collateral Agent to achieve any of the following with respect to such “**New Subsidiary**” (defined as a Subsidiary formed after the date hereof during the term of this Agreement): (i) to cause such New Subsidiary to become either a co-Borrower hereunder or a secured guarantor with respect to the Obligations, if such New Subsidiary is organized under the laws of the United States; and (ii) to grant and pledge to Collateral Agent a perfected security interest in the Shares of such New Subsidiary.

6.11 Financial Covenant. Borrower shall achieve the following TTM Revenue, as determined by Collateral Agent:

(a) As tested on June 30, 2019, September 30, 2019 and December 31, 2019, actual TTM Revenue for the 12-month period then ended in an amount not less than eighty-five percent (85.00%) of the projections for the same 12-month period as then ended as set forth in the Management Plan; and

(b) As tested on the last date of each quarter starting with the quarter ending March 31, 2020, actual TTM Revenue for the 12-month period then ended in an amount not less than seventy-five percent (75.00%) of the projections for the same 12-month period as then ended as set forth in the Management Plan.

6.12 Liquidity Covenant. Effective as of the Funding Date of the first Credit Extension made under this Agreement, Borrower shall at all times maintain in a Collateral Account subject to a Control Agreement in favor of Collateral Agent a cash balance of not less than an amount equal to: (i) the greater of (A) Three Million Dollars (\$3,000,000.00) or (B) the Cash Burn of Borrower in the immediately preceding three months, minus (ii) such amount of Revolving Line (if any) as is then available to Borrower but has not been drawn by the Borrower; provided, however, the cash balance in such aforementioned Collateral Account shall not be less than Two Million Dollars (\$2,000,000.00) at any given time.

6.13 Further Assurances. Execute any further instruments and take further action as Collateral Agent or any Lender reasonably requests to perfect or continue Collateral Agent’s Lien in the Collateral or to effect the purposes of this Agreement, including without limitation, permit Collateral Agent or any Lender to discuss Borrower’s financial condition with Borrower’s accountants.

7. NEGATIVE COVENANTS

Borrower shall not, and shall not permit any of its Subsidiaries to, do any of the following without the prior written consent of the Required Lenders:

7.1 Dispositions. From and after the Funding Date of the first Credit Extension made under this Agreement, convey, sell, lease, transfer, assign, dispose of (collectively, “**Transfer**”), or permit any of its Subsidiaries to Transfer, all or any part of its business or property (including Intellectual Property), except for Transfers (a) of Inventory in the ordinary course of business; (b) of worn-out, surplus or obsolete Equipment; (c) in connection with Permitted Liens, Permitted Investments and Permitted Licenses and (d) other assets of Borrower and its Subsidiaries the book value of which does not in the aggregate exceed Two Hundred Fifty Thousand Dollars (\$250,000.00) per fiscal year.

7.2 Changes in Business, Management, Ownership, or Business Locations. (a) Engage in or permit any of its Subsidiaries to engage in any business other than the businesses engaged in by Borrower as of the Effective Date or reasonably related thereto; (b) liquidate or dissolve; or (c) (i) any Key Person shall cease to be actively engaged in the management of Borrower unless written notice thereof is provided to Collateral Agent and each Lender within ten (10) days of such, or (ii) enter into any transaction or series of related transactions in which (A) the stockholders of Borrower who were not stockholders immediately prior to the first such transaction own more than 50% of the voting stock of Borrower immediately after giving effect to such transaction or related series of such transactions and (B) Borrower ceases to own 100% of the ownership interests of a Subsidiary of Borrower. Borrower shall not, without at least ten (10) days’ prior written notice to Collateral Agent: (A) add any new offices or business locations, including warehouses (unless such new offices or business locations contain less than Two Hundred Fifty Thousand Dollars (\$250,000.00) in assets or property of Borrower or any of its Subsidiaries); (B) change its jurisdiction of organization,

(C) change its organizational structure or type, (D) change its legal name, or (E) change any organizational number (if any) assigned by its jurisdiction of organization.

7.3 Mergers or Acquisitions. Merge or consolidate, or permit any of its Subsidiaries to merge or consolidate, with any other Person, or acquire, or permit any of its Subsidiaries to acquire, all or substantially all of the capital stock, shares or property of another Person. A Subsidiary may merge or consolidate into another Subsidiary (provided such surviving Subsidiary is a “co-borrower” hereunder or has provided a secured Guaranty of Borrower’s Obligations hereunder) or with (or into) Borrower provided Borrower is the surviving legal entity, and as long as no Event of Default is occurring prior thereto or arises as a result therefrom.

7.4 Indebtedness. From and after the Funding Date of the first Credit Extension made under this Agreement, create, incur, assume, or be liable for any Indebtedness, or permit any Subsidiary to do so, other than Permitted Indebtedness.

7.5 Encumbrance. From and after the Funding Date of the first Credit Extension made under this Agreement, create, incur, allow, or suffer any Lien on any of its property, or assign or convey any right to receive income, including the sale of any Accounts, or permit any of its Subsidiaries to do so, except for Permitted Liens, or permit any Collateral not to be subject to the first priority security interest granted herein (except for Permitted Liens), or enter into any agreement, document, instrument or other arrangement (except with or in favor of Collateral Agent, for the ratable benefit of the Lenders) with any Person which directly or indirectly prohibits or has the effect of prohibiting Borrower, or any of its Subsidiaries, from assigning, mortgaging, pledging, granting a security interest in or upon, or encumbering any of Borrower’s or such Subsidiary’s Intellectual Property, except as is otherwise permitted in Section 7.1 hereof and the definition of “**Permitted Liens**”.

7.6 Maintenance of Collateral Accounts. Maintain any Collateral Account except pursuant to the terms of Section 6.6 hereof.

7.7 Restricted Payments. From and after the Funding Date of the first Credit Extension made under this Agreement, pay any dividends (other than dividends payable solely in capital stock) or make any distribution or payment in respect of or redeem, retire or purchase any capital stock (other than repurchases pursuant to the terms of employee stock purchase plans, employee restricted stock agreements, stockholder rights plans, director or consultant stock option plans, or similar plans, provided such repurchases (i) do not exceed One Hundred Fifty Thousand Dollars (\$150,000.00) in the aggregate per fiscal year or (ii) are transactions for which the consideration is limited to the cancellation of indebtedness owed by such employee, director or consultant to Borrower, provided further that the aggregate amount of such cancelled indebtedness does not exceed Five Hundred Thousand Dollars (\$500,000.00) in any given year, unless consented to by the Required Lenders, which consent shall not be unreasonably withheld.

7.8 Investments. Directly or indirectly make any Investment other than Permitted Investments, or permit any of its Subsidiaries to do so.

7.9 Transactions with Affiliates. Directly or indirectly enter into or permit to exist any material transaction with any Affiliate of Borrower or any of its Subsidiaries, except for (a) transactions that are in the ordinary course of Borrower’s or such Subsidiary’s business, upon fair and reasonable terms that are no less favorable to Borrower or such Subsidiary than would be obtained in an arm’s length transaction with a non-affiliated Person, and (b) Subordinated Debt or equity investments by Borrower’s investors in Borrower or its Subsidiaries.

7.10 Subordinated Debt. (a) Make or permit any payment on any Subordinated Debt, except under the terms of the subordination, intercreditor, or other similar agreement to which such Subordinated Debt is subject, or (b) amend any provision in any document relating to the Subordinated Debt which would increase the amount thereof or adversely affect the subordination thereof to Obligations owed to the Lenders.

7.11 Compliance. Become an “investment company” or a company controlled by an “investment company”, under the Investment Company Act of 1940, as amended, or undertake as one of its important activities extending credit to purchase or carry margin stock (as defined in Regulation U of the Board of Governors of the Federal Reserve System), or use the proceeds of any Term Loan for that purpose; fail to meet the minimum funding

requirements of ERISA, permit a Reportable Event or Prohibited Transaction, as defined in ERISA, to occur; fail to comply with the Federal Fair Labor Standards Act or violate any other law or regulation, if the failure to comply or violation could reasonably be expected to have a Material Adverse Change, or permit any of its Subsidiaries to do so; withdraw or permit any Subsidiary to withdraw from participation in, permit partial or complete termination of, or permit the occurrence of any other event with respect to, any present pension, profit sharing and deferred compensation plan which could reasonably be expected to result in any liability of Borrower or any of its Subsidiaries, including any liability to the Pension Benefit Guaranty Corporation or its successors or any other Governmental Authority.

7.12 Compliance with Anti-Terrorism Laws. Neither Borrower nor any of its Subsidiaries shall, nor shall Borrower or any of its Subsidiaries permit any Affiliate to, directly or indirectly, knowingly enter into any documents, instruments, agreements or contracts with any Person listed on the OFAC Lists. Neither Borrower nor any of its Subsidiaries shall, nor shall Borrower or any of its Subsidiaries, permit any Affiliate to, directly or indirectly, (i) conduct any business or engage in any transaction or dealing with any Blocked Person, including, without limitation, the making or receiving of any contribution of funds, goods or services to or for the benefit of any Blocked Person, (ii) deal in, or otherwise engage in any transaction relating to, any property or interests in property blocked pursuant to Executive Order No. 13224 or any similar executive order or other Anti-Terrorism Law, or (iii) engage in or conspire to engage in any transaction that evades or avoids, or has the purpose of evading or avoiding, or attempts to violate, any of the prohibitions set forth in Executive Order No. 13224 or other Anti-Terrorism Law.

7.13 Material Agreements. Borrower shall provide Collateral Agent no less than ten (10) days' notice after the termination of any Material Agreement.

8. EVENTS OF DEFAULT

Any one of the following shall constitute an event of default (an "**Event of Default**") under this Agreement:

8.1 Payment Default. Borrower fails to (a) make any payment of principal or interest on any Term Loan on its due date, or (b) pay any other Obligations within three (3) Business Days after such Obligations are due and payable (which three (3) Business Day grace period shall not apply to payments due on the Maturity Date or the date of acceleration pursuant to Section 9.1 (a) hereof);

8.2 Covenant Default.

(a) Borrower or any of its Subsidiaries fails or neglects to perform any obligation in Sections 6.2 (Financial Statements, Reports, Certificates), 6.4 (Taxes), 6.5 (Insurance), 6.6 (Operating Accounts), 6.10 (Creation/Acquisition of Subsidiaries), 6.7 (Protection of Intellectual Property Rights), 6.11 (Financial Covenant) or 6.12 (Minimum Liquidity) or Borrower violates any provision in Section 7; provided, however, in the event that the Borrower fails to comply with the requirements of the financial covenant set forth in Section 6.11, Collateral Agent may, in its sole discretion, allow Borrower to cure such breach by means of raising such amount of capital from the sale and issuance of its equity securities during such period of time as Collateral Agent may permit in its sole discretion; or

(b) Borrower, or any of its Subsidiaries, fails or neglects to perform, keep, or observe any other term, provision, condition, covenant or agreement contained in this Agreement or any Loan Documents, and as to any default (other than those specified in this Section 8) under such other term, provision, condition, covenant or agreement that can be cured, has failed to cure the default within ten (10) days after the occurrence thereof; provided, however, that if the default cannot by its nature be cured within the ten (10) day period or cannot after diligent attempts by Borrower be cured within such ten (10) day period, and such default is likely to be cured within a reasonable time, then Borrower shall have an additional period (which shall not in any case exceed thirty (30) days) to attempt to cure such default, and within such reasonable time period the failure to cure the default shall not be deemed an Event of Default (but no Term Loan shall be made during such cure period).

8.3 Material Adverse Change. A Material Adverse Change has occurred;

8.4 Attachment; Levy; Restraint on Business.

(a) (i) The service of process seeking to attach, by trustee or similar process, any funds of Borrower or any of its Subsidiaries or of any entity under control of Borrower or its Subsidiaries on deposit with any institution at which Borrower or any of its Subsidiaries maintains a Collateral Account, or (ii) a notice of lien, levy, or assessment is filed against Borrower or any of its Subsidiaries or their respective assets by any government agency, and the same under subclauses (i) and (ii) hereof are not, within ten (10) days after the occurrence thereof, discharged or stayed (whether through the posting of a bond or otherwise); and

(b) (i) any material portion of Borrower's or any of its Subsidiaries' assets is attached, seized, levied on, or comes into possession of a trustee or receiver, or (ii) any court order enjoins, restrains, or prevents Borrower or any of its Subsidiaries from conducting any part of its business;

8.5 Insolvency. (a) Borrower or any of its Subsidiaries is or becomes Insolvent; (b) Borrower or any of its Subsidiaries begins an Insolvency Proceeding; or (c) an Insolvency Proceeding is begun against Borrower or any of its Subsidiaries and not dismissed or stayed within forty-five (45) days (but no Term Loan shall be extended while Borrower or any Subsidiary is Insolvent and/or until any Insolvency Proceeding is dismissed);

8.6 Other Agreements. There is (a) a default in any agreement to which Borrower or any of its Subsidiaries is a party with a third party or parties resulting in a right by such third party or parties, whether or not exercised, to accelerate the maturity of any Indebtedness in an amount in excess of Two Hundred Fifty Thousand Dollars (\$250,000.00) or could reasonably be expected to have a Material Adverse Change; or (b) any default under a Material Agreement that permits the counterparty thereto to accelerate the payments owed thereunder;

8.7 Judgments. (a) One or more judgments, orders, or decrees for the payment of money in an amount, individually or in the aggregate, of at least Two Hundred Fifty Thousand Dollars (\$250,000.00) (not covered by independent third-party insurance) shall be rendered against Borrower or any of its Subsidiaries and shall remain unsatisfied, unvacated, or unstayed for a period of ten (10) days after the entry thereof; or (b) any judgment, orders or decrees rendered against Borrower that could reasonably be expected to result in a Material Adverse Change;

8.8 Misrepresentations. Borrower or any of its Subsidiaries or any Person acting for Borrower or any of its Subsidiaries makes any representation, warranty, or other statement now or later in this Agreement, any Loan Document or in any writing delivered to Collateral Agent and/or Lenders or to induce Collateral Agent and/or the Lenders to enter this Agreement or any Loan Document, and such representation, warranty, or other statement, when taken as a whole, is incorrect in any material respect when made;

8.9 Subordinated Debt. A default or breach occurs under any agreement between Borrower or any of its Subsidiaries and any creditor of Borrower or any of its Subsidiaries that signed a subordination, intercreditor, or other similar agreement with Collateral Agent or the Lenders, or any creditor that has signed such an agreement with Collateral Agent or the Lenders breaches any terms of such agreement;

8.10 Guaranty. (a) Any Guaranty terminates or ceases for any reason to be in full force and effect; (b) any Guarantor does not perform any obligation or covenant under any Guaranty; (c) any circumstance described in Section 8 occurs with respect to any Guarantor; or (d) a Material Adverse Change with respect to any Guarantor;

8.11 Governmental Approvals; FDA Action. (a) Any Governmental Approval shall have been revoked, rescinded, suspended, modified in an adverse manner, or not renewed in the ordinary course for a full term and such revocation, rescission, suspension, modification or non-renewal has resulted in or could reasonably be expected to result in a Material Adverse Change; or (b) (i) the FDA, DOJ, or other Governmental Authority initiates a Regulatory Action or any other enforcement action against Borrower or any of its Subsidiaries or any supplier of Borrower or any of its Subsidiaries that causes Borrower or any of its Subsidiaries to recall, withdraw, remove or discontinue manufacturing, distributing, and/or marketing any of its products, even if such action is based on previously disclosed conduct; (ii) the FDA issues a warning letter or Regulatory Action to Borrower or any of its Subsidiaries with respect to any of its activities or products which could reasonably be expected to result in a Material Adverse Change; (iii) Borrower or any of its Subsidiaries conducts a mandatory or voluntary recall which could reasonably be expected to result in liability and expense to Borrower or any of its Subsidiaries of Two Hundred Fifty Thousand Dollars (\$250,000.00) or more; (iv) Borrower or any of its Subsidiaries enters into a settlement agreement with the FDA, DOJ, or other Governmental Authority that results in aggregate liability as to any single or related

series of transactions, incidents or conditions, of Two Hundred Fifty Thousand Dollars (\$250,000.00) or more, or that could reasonably be expected to result in a Material Adverse Change even if such settlement agreement is based on previously disclosed conduct; or (v) Borrower or any of its Subsidiaries fails to remediate observations identified in an FDA Form 483 notice of inspection observation to Collateral Agent's reasonable satisfaction within six months of receipt; or (vi) the FDA revokes any authorization or permission granted under any Registration, or Borrower or any of its Subsidiaries withdraws any Registration, that could reasonably be expected to result in a Material Adverse Change.

8.12 Lien Priority; Intellectual Property. Any Lien created hereunder or by any other Loan Document shall at any time fail to constitute a valid and perfected Lien on any of the Collateral purported to be secured thereby, subject to no prior or equal Lien, other than Permitted Liens arising as a matter of applicable law. Any Intellectual Property material to Borrower's business shall cease to be validly owned or licensed by Borrower free and clear of any Liens other than Permitted Liens.

9. RIGHTS AND REMEDIES

9.1 Rights and Remedies.

(a) From and after the Funding Date of the first Credit Extension made under this Agreement, upon the occurrence and during the continuance of an Event of Default, Collateral Agent may, without notice or demand, do any or all of the following: (i) deliver notice of the Event of Default to Borrower, (ii) by notice to Borrower declare all Obligations immediately due and payable (but if an Event of Default described in Section 8.5 occurs all Obligations shall be immediately due and payable without any action by Collateral Agent or the Lenders) or (iii) by notice to Borrower suspend or terminate the obligations, if any, of the Lenders to advance money or extend credit for Borrower's benefit under this Agreement or under any other agreement between Borrower and Collateral Agent and/or the Lenders (but if an Event of Default described in Section 8.5 occurs all obligations, if any, of the Lenders to advance money or extend credit for Borrower's benefit under this Agreement or under any other agreement between Borrower and Collateral Agent and/or the Lenders shall be immediately terminated without any action by Collateral Agent or the Lenders).

(b) Without limiting the rights of Collateral Agent and the Lenders set forth in Section 9.1(a) above, from and after the Funding Date of the first Credit Extension made under this Agreement, upon the occurrence and during the continuance of an Event of Default, Collateral Agent shall have the right, without notice or demand, to do any or all of the following:

(i) foreclose upon and/or sell or otherwise liquidate, the Collateral;

(ii) apply to the Obligations any (a) balances and deposits of Borrower that Collateral Agent or any Lender holds or controls, or (b) any amount held or controlled by Collateral Agent or any Lender owing to or for the credit or the account of Borrower; and/or

(iii) commence and prosecute an Insolvency Proceeding or consent to Borrower commencing any Insolvency Proceeding.

(c) Without limiting the rights of Collateral Agent and the Lenders set forth in Sections 9.1(a) and (b) above, upon the occurrence and during the continuance of an Event of Default, Collateral Agent shall have the right, without notice or demand, to do any or all of the following:

(i) settle or adjust disputes and claims directly with Account Debtors for amounts on terms and in any order that Collateral Agent considers advisable, notify any Person owing Borrower money of Collateral Agent's security interest in such funds, and verify the amount of such account;

(ii) make any payments and do any acts it considers necessary or reasonable to protect the Collateral and/or its security interest in the Collateral. Borrower shall assemble the Collateral if Collateral Agent requests and make it available in a location as Collateral Agent reasonably designates. Collateral Agent may enter premises where the Collateral is located, take and maintain possession of any part of the Collateral, and pay, purchase, contest, or compromise any Lien which appears to be prior or superior to its security interest and pay all expenses

incurred. Borrower grants Collateral Agent a license to enter and occupy any of its premises, without charge, to exercise any of Collateral Agent's rights or remedies;

(iii) ship, reclaim, recover, store, finish, maintain, repair, prepare for sale, and/or advertise for sale, the Collateral. Collateral Agent is hereby granted a non-exclusive, royalty-free license or other right to use, without charge, Borrower's and each of its Subsidiaries' labels, Patents, Copyrights, mask works, rights of use of any name, trade secrets, trade names, Trademarks, service marks, and advertising matter, or any similar property as it pertains to the Collateral, in completing production of, advertising for sale, and selling any Collateral and, in connection with Collateral Agent's exercise of its rights under this Section 9.1, Borrower's and each of its Subsidiaries' rights under all licenses and all franchise agreements inure to Collateral Agent, for the benefit of the Lenders;

(iv) place a "hold" on any account maintained with Collateral Agent or the Lenders and/or deliver a notice of exclusive control, any entitlement order, or other directions or instructions pursuant to any Control Agreement or similar agreements providing control of any Collateral;

(v) demand and receive possession of Borrower's Books;

(vi) appoint a receiver to seize, manage and realize any of the Collateral, and such receiver shall have any right and authority as any competent court will grant or authorize in accordance with any applicable law, including any power or authority to manage the business of Borrower or any of its Subsidiaries; and

(vii) subject to clauses 9.1(a) and (b), exercise all rights and remedies available to Collateral Agent and each Lender under the Loan Documents or at law or equity, including all remedies provided under the Code (including disposal of the Collateral pursuant to the terms thereof).

Notwithstanding any provision of this Section 9.1 to the contrary, upon the occurrence of any Event of Default, Collateral Agent shall have the right to exercise any and all remedies referenced in this Section 9.1 without the written consent of Required Lenders following the occurrence of an Exigent Circumstance.

9.2 Power of Attorney. Effective as of the Funding Date of the first Credit Extension made under this Agreement, Borrower hereby irrevocably appoints Collateral Agent as its lawful attorney-in-fact, exercisable upon the occurrence and during the continuance of an Event of Default, to: (a) endorse Borrower's or any of its Subsidiaries' name on any checks or other forms of payment or security; (b) sign Borrower's or any of its Subsidiaries' name on any invoice or bill of lading for any Account or drafts against Account Debtors; (c) settle and adjust disputes and claims about the Accounts directly with Account Debtors, for amounts and on terms Collateral Agent determines reasonable; (d) make, settle, and adjust all claims under Borrower's insurance policies; (e) pay, contest or settle any Lien, charge, encumbrance, security interest, and adverse claim in or to the Collateral, or any judgment based thereon, or otherwise take any action to terminate or discharge the same; and (f) transfer the Collateral into the name of Collateral Agent or a third party as the Code or any applicable law permits. Borrower hereby appoints Collateral Agent as its lawful attorney-in-fact to sign Borrower's or any of its Subsidiaries' name on any documents necessary to perfect or continue the perfection of Collateral Agent's security interest in the Collateral regardless of whether an Event of Default has occurred until all Obligations (other than inchoate indemnity obligations) have been satisfied in full and Collateral Agent and the Lenders are under no further obligation to extend the Credit Extensions hereunder. Collateral Agent's foregoing appointment as Borrower's or any of its Subsidiaries' attorney in fact, and all of Collateral Agent's rights and powers, coupled with an interest, are irrevocable until all Obligations (other than inchoate indemnity obligations) have been fully repaid and performed and Collateral Agent's and the Lenders' obligation to provide the Credit Extensions terminates.

9.3 Protective Payments. If Borrower or any of its Subsidiaries fail to obtain the insurance called for by Section 6.5 or fails to pay any premium thereon or fails to pay any other amount which Borrower or any of its Subsidiaries is obligated to pay under this Agreement or any other Loan Document, Collateral Agent may obtain such insurance or make such payment, and all amounts so paid by Collateral Agent are Lenders' Expenses and immediately due and payable, bearing interest at the Default Rate, and secured by the Collateral. Collateral Agent will make reasonable efforts to provide Borrower with notice of Collateral Agent obtaining such insurance or making such payment at the time it is obtained or paid or within a reasonable time thereafter. No such payments by Collateral

Agent are deemed an agreement to make similar payments in the future or Collateral Agent's waiver of any Event of Default.

9.4 Application of Payments and Proceeds. Notwithstanding anything to the contrary contained in this Agreement, upon the occurrence and during the continuance of an Event of Default, (a) Borrower irrevocably waives the right to direct the application of any and all payments at any time or times thereafter received by Collateral Agent from or on behalf of Borrower or any of its Subsidiaries of all or any part of the Obligations, and, as between Borrower on the one hand and Collateral Agent and Lenders on the other, Collateral Agent shall have the continuing and exclusive right to apply and to reapply any and all payments received against the Obligations in such manner as Collateral Agent may deem advisable notwithstanding any previous application by Collateral Agent, and (b) the proceeds of any sale of, or other realization upon all or any part of the Collateral shall be applied: first, to the Lenders' Expenses; second, to accrued and unpaid interest on the Obligations (including any interest which, but for the provisions of the United States Bankruptcy Code, would have accrued on such amounts); third, to the principal amount of the Obligations outstanding; and fourth, to any other indebtedness or obligations of Borrower owing to Collateral Agent or any Lender under the Loan Documents. Any balance remaining shall be delivered to Borrower or to whoever may be lawfully entitled to receive such balance or as a court of competent jurisdiction may direct. In carrying out the foregoing, (x) amounts received shall be applied in the numerical order provided until exhausted prior to the application to the next succeeding category, and (y) each of the Persons entitled to receive a payment in any particular category shall receive an amount equal to its pro rata share of amounts available to be applied pursuant thereto for such category. Any reference in this Agreement to an allocation between or sharing by the Lenders of any right, interest or obligation "ratably," "proportionally" or in similar terms shall refer to Pro Rata Share unless expressly provided otherwise. Collateral Agent, or if applicable, each Lender, shall promptly remit to the other Lenders such sums as may be necessary to ensure the ratable repayment of each Lender's portion of any Credit Extension and the ratable distribution of interest, fees and reimbursements paid or made by Borrower. Notwithstanding the foregoing, a Lender receiving a scheduled payment shall not be responsible for determining whether the other Lenders also received their scheduled payment on such date; provided, however, if it is later determined that a Lender received more than its ratable share of scheduled payments made on any date or dates, then such Lender shall remit to Collateral Agent or other Lenders such sums as may be necessary to ensure the ratable payment of such scheduled payments, as instructed by Collateral Agent. If any payment or distribution of any kind or character, whether in cash, properties or securities, shall be received by a Lender in excess of its ratable share, then the portion of such payment or distribution in excess of such Lender's ratable share shall be received by such Lender in trust for and shall be promptly paid over to the other Lender for application to the payments of amounts due on the other Lenders' claims. To the extent any payment for the account of Borrower is required to be returned as a voidable transfer or otherwise, the Lenders shall contribute to one another as is necessary to ensure that such return of payment is on a pro rata basis. If any Lender shall obtain possession of any Collateral, it shall hold such Collateral for itself and as agent and bailee for Collateral Agent and other Lenders for purposes of perfecting Collateral Agent's security interest therein.

9.5 Liability for Collateral. So long as Collateral Agent and the Lenders comply with reasonable banking practices regarding the safekeeping of the Collateral in the possession or under the control of Collateral Agent and the Lenders, Collateral Agent and the Lenders shall not be liable or responsible for: (a) the safekeeping of the Collateral; (b) any loss or damage to the Collateral; (c) any diminution in the value of the Collateral; or (d) any act or default of any carrier, warehouseman, bailee, or other Person. Borrower bears all risk of loss, damage or destruction of the Collateral.

9.6 No Waiver; Remedies Cumulative. Failure by Collateral Agent or any Lender, at any time or times, to require strict performance by Borrower of any provision of this Agreement or any other Loan Document shall not waive, affect, or diminish any right of Collateral Agent or any Lender thereafter to demand strict performance and compliance herewith or therewith. No waiver hereunder shall be effective unless signed by Collateral Agent and the Required Lenders and then is only effective for the specific instance and purpose for which it is given. The rights and remedies of Collateral Agent and the Lenders under this Agreement and the other Loan Documents are cumulative. Collateral Agent and the Lenders have all rights and remedies provided under the Code, any applicable law, by law, or in equity. The exercise by Collateral Agent or any Lender of one right or remedy is not an election, and Collateral

Agent's or any Lender's waiver of any Event of Default is not a continuing waiver. Collateral Agent's or any Lender's delay in exercising any remedy is not a waiver, election, or acquiescence.

9.7 Demand Waiver. Borrower waives, to the fullest extent permitted by law, demand, notice of default or dishonor, notice of payment and nonpayment, notice of any default, nonpayment at maturity, release, compromise, settlement, extension, or renewal of accounts, documents, instruments, chattel paper, and guarantees held by Collateral Agent or any Lender on which Borrower or any Subsidiary is liable.

10. NOTICES

All notices, consents, requests, approvals, demands, or other communication by any party to this Agreement or any other Loan Document must be in writing and shall be deemed to have been validly served, given, or delivered: (a) upon the earlier of actual receipt and three (3) Business Days after deposit in the U.S. mail, first class, registered or certified mail return receipt requested, with proper postage prepaid; (b) upon transmission, when sent by facsimile transmission; (c) one (1) Business Day after deposit with a reputable overnight courier with all charges prepaid; or (d) when delivered, if hand delivered by messenger, all of which shall be addressed to the party to be notified and sent to the address, facsimile number, or email address indicated below. Any of Collateral Agent, Lender or Borrower may change its mailing address or facsimile number by giving the other party written notice thereof in accordance with the terms of this Section 10.

If to Borrower: BIONANO GENOMICS, INC.
9540 Towne Centre Drive
Suite 100
San Diego, CA 92121
Attn: Michael Ward
Email: mward@bionanogenomics.com
with a copy (which shall
not constitute notice) to:

Cooley LLP
James Pennington
4401 Eastgate Mall
San Diego, CA 92121-1909
Attn: James Pennington
Email: jpennington@cooley.com

If to Collateral Agent: INNOVATUS LIFE SCIENCES
LENDING FUND I, LP
777 Third Avenue, 25th Floor
New York, NY 10017
Attn: Claes Ekstrom
Email: cekstrom@innovatuscp.com

with a copy to: EAST WEST BANK
2350 Mission College Blvd.
Ste. 988
Santa Clara, CA 95054
Attn: James Tai
Email: James.Tai@eastwestbank.com

with a copy (which shall
not constitute notice) to: Greenberg Traurig, LLP

One International Place
Boston, MA 02110

11. CHOICE OF LAW, VENUE AND JURY TRIAL WAIVER

11.1 Waiver of Jury Trial. EACH OF BORROWER, COLLATERAL AGENT AND LENDERS UNCONDITIONALLY WAIVES ANY AND ALL RIGHT TO A JURY TRIAL OF ANY CLAIM OR CAUSE OF ACTION BASED UPON OR ARISING OUT OF THIS AGREEMENT, ANY OF THE OTHER LOAN DOCUMENTS, ANY OF THE INDEBTEDNESS SECURED HEREBY, ANY DEALINGS AMONG BORROWER, COLLATERAL AGENT AND/OR LENDERS RELATING TO THE SUBJECT MATTER OF THIS TRANSACTION OR ANY RELATED TRANSACTIONS, AND/OR THE RELATIONSHIP THAT IS BEING ESTABLISHED AMONG BORROWER, COLLATERAL AGENT AND/OR LENDERS. THE SCOPE OF THIS WAIVER IS INTENDED TO BE ALL ENCOMPASSING OF ANY AND ALL DISPUTES THAT MAY BE FILED IN ANY COURT. THIS WAIVER IS IRREVOCABLE. THIS WAIVER MAY NOT BE MODIFIED EITHER ORALLY OR IN WRITING. THE WAIVER ALSO SHALL APPLY TO ANY SUBSEQUENT AMENDMENTS, RENEWALS, SUPPLEMENTS OR MODIFICATIONS TO THIS AGREEMENT, ANY OTHER LOAN DOCUMENTS, OR TO ANY OTHER DOCUMENTS OR AGREEMENTS RELATING TO THIS TRANSACTION OR ANY RELATED TRANSACTION. THIS AGREEMENT MAY BE FILED AS A WRITTEN CONSENT TO A TRIAL BY THE COURT.

11.2 Governing Law and Jurisdiction.

(a) THIS AGREEMENT, THE OTHER LOAN DOCUMENTS (EXCLUDING THOSE LOAN DOCUMENTS THAT BY THEIR OWN TERMS ARE EXPRESSLY GOVERNED BY THE LAWS OF ANOTHER JURISDICTION) AND THE RIGHTS AND OBLIGATIONS OF THE PARTIES HEREUNDER AND THEREUNDER SHALL IN ALL RESPECTS BE GOVERNED BY AND CONSTRUED IN ACCORDANCE WITH, THE INTERNAL LAWS OF THE STATE OF NEW YORK (WITHOUT REGARD TO THE CONFLICT OF LAWS PRINCIPLES THAT WOULD RESULT IN THE APPLICATION OF ANY LAWS OTHER THAN THE LAWS OF THE STATE OF NEW YORK), INCLUDING ALL MATTERS OF CONSTRUCTION, VALIDITY AND PERFORMANCE, REGARDLESS OF THE LOCATION OF THE COLLATERAL, PROVIDED, HOWEVER, THAT IF THE LAWS OF ANY JURISDICTION OTHER THAN NEW YORK SHALL GOVERN IN REGARD TO THE VALIDITY, PERFECTION OR EFFECT OF PERFECTION OF ANY LIEN OR IN REGARD TO PROCEDURAL MATTERS AFFECTING ENFORCEMENT OF ANY LIENS IN COLLATERAL, SUCH LAWS OF SUCH OTHER JURISDICTIONS SHALL CONTINUE TO APPLY TO THAT EXTENT.

(b) Submission to Jurisdiction. Any legal action or proceeding with respect to the Loan Documents shall be brought exclusively in the courts of the State of New York located in the City of New York, Borough of Manhattan, or of the United States of America for the Southern District of New York and, by execution and delivery of this Agreement, Borrower hereby accepts for itself and in respect of its Property, generally and unconditionally, the jurisdiction of the aforesaid courts. Notwithstanding the foregoing, Collateral Agent and Lenders shall have the right to bring any action or proceeding against Borrower (or any property of Borrower) in the court of any other jurisdiction Collateral Agent or Lenders deem necessary or appropriate in order to realize on the Collateral or other security for the Obligations. The parties hereto hereby irrevocably waive any objection, including any objection to the laying of venue or based on the grounds of forum non conveniens, that any of them may now or hereafter have to the bringing of any such action or proceeding in such jurisdictions.

(c) Service of Process. Borrower irrevocably waives personal service of any and all legal process, summons, notices and other documents and other service of process of any kind and consents to such service in any suit, action or proceeding brought in the United States of America with respect to or otherwise arising out of or in connection with any Loan Document by any means permitted by applicable requirements of law, including by the mailing thereof (by registered or certified mail, postage prepaid) to the address of Borrower specified herein (and shall be effective when such mailing shall be effective, as provided therein). Borrower agrees that a final judgment in any such action or proceeding shall be conclusive and may be enforced in other jurisdictions by suit on the judgment or in any other manner provided by law.

(d) Non-exclusive Jurisdiction. Nothing contained in this Section 11.2 shall affect the right of Collateral Agent or Lenders to serve process in any other manner permitted by applicable requirements of law or commence legal proceedings or otherwise proceed against Borrower in any other jurisdiction.

12. GENERAL PROVISIONS

12.1 Successors and Assigns. This Agreement binds and is for the benefit of the successors and permitted assigns of each party. Borrower may not transfer, pledge or assign this Agreement or any rights or obligations under it without Collateral Agent's prior written consent (which may be granted or withheld in Collateral Agent's discretion, subject to Section 12.5). The Lenders have the right, without the consent of or notice to Borrower, to sell, transfer, assign, pledge, negotiate, or grant participation in all or any part of, or any interest in, the Lenders' obligations, rights, and benefits under this Agreement and the other Loan Documents.

12.2 Indemnification. Borrower agrees to indemnify, defend and hold Collateral Agent and the Lenders and their respective directors, officers, employees, consultants, agents, attorneys, or any other Person affiliated with or representing Collateral Agent or the Lenders (each, an "**Indemnified Person**") harmless against: (a) all obligations, demands, claims, and liabilities (collectively, "**Claims**") asserted by any other party in connection with; related to; following; or arising from, out of or under, the transactions contemplated by the Loan Documents; and (b) all losses or Lenders' Expenses incurred, or paid by Indemnified Person in connection with; related to; following; or arising from, out of or under, the transactions contemplated by the Loan Documents between Collateral Agent, and/or the Lenders and Borrower (including reasonable attorneys' fees and expenses), except for Claims and/or losses directly caused by such Indemnified Person's gross negligence or willful misconduct. Borrower hereby further indemnifies, defends and holds each Indemnified Person harmless from and against any and all liabilities, obligations, losses, damages, penalties, actions, judgments, suits, claims, costs, expenses and disbursements of any kind or nature whatsoever (including the fees and disbursements of counsel for such Indemnified Person) in connection with any investigative, response, remedial, administrative or judicial matter or proceeding, whether or not such Indemnified Person shall be designated a party thereto and including any such proceeding initiated by or on behalf of Borrower, and the reasonable expenses of investigation by engineers, environmental consultants and similar technical personnel and any commission, fee or compensation claimed by any broker (other than any broker retained by Collateral Agent or Lenders) asserting any right to payment for the transactions contemplated hereby which may be imposed on, incurred by or asserted against such Indemnified Person as a result of or in connection with the transactions contemplated hereby and the use or intended use of the proceeds of the loan proceeds except for liabilities, obligations, losses, damages, penalties, actions, judgments, suits, claims, costs, expenses and disbursements directly caused by such Indemnified Person's gross negligence or willful misconduct.

12.3 Severability of Provisions. Each provision of this Agreement is severable from every other provision in determining the enforceability of any provision.

12.4 Correction of Loan Documents. Collateral Agent may correct patent errors and fill in any blanks in this Agreement and the other Loan Documents consistent with the agreement of the parties.

12.5 Amendments in Writing; Integration.

(a) No amendment, modification, termination or waiver of any provision of this Agreement or any other Loan Document, no approval or consent thereunder, or any consent to any departure by Borrower or any of

its Subsidiaries therefrom, shall in any event be effective unless the same shall be in writing and signed by Borrower, Collateral Agent and the Required Lenders provided that:

(i) no such amendment, waiver or other modification that would have the effect of increasing or reducing a Lender's Commitment Amount or Commitment Percentage shall be effective as to such Lender without such Lender's written consent;

(ii) no such amendment, waiver or modification that would affect the rights and duties of Collateral Agent shall be effective without Collateral Agent's written consent or signature; and

(iii) no such amendment, waiver or other modification shall, unless signed by all the Lenders directly affected thereby, (A) reduce the principal of, rate of interest on or any fees with respect to any Credit Extension or forgive any principal, interest (other than default interest) or fees (other than late charges) with respect to any Credit Extension (B) postpone the date fixed for, or waive, any payment of principal of any Credit Extension or of interest on any Credit Extension (other than default interest) or any fees provided for hereunder (other than late charges or for any termination of any commitment); (C) change the definition of the term "Required Lenders" or the percentage of Lenders which shall be required for the Lenders to take any action hereunder; (D) release all or substantially all of any material portion of the Collateral, authorize Borrower to sell or otherwise dispose of all or substantially all or any material portion of the Collateral or release any Guarantor of all or any portion of the Obligations or its guaranty obligations with respect thereto, except, in each case with respect to this clause (D), as otherwise may be expressly permitted under this Agreement or the other Loan Documents (including in connection with any disposition permitted hereunder); (E) amend, waive or otherwise modify this Section 12.5 or the definitions of the terms used in this Section 12.5 insofar as the definitions affect the substance of this Section 12.5; (F) consent to the assignment, delegation or other transfer by Borrower of any of its rights and obligations under any Loan Document or release Borrower of its payment obligations under any Loan Document, except, in each case with respect to this clause (F), pursuant to a merger or consolidation permitted pursuant to this Agreement; (G) amend any of the provisions of Section 9.4 or amend any of the definitions of Pro Rata Share, Commitment Amount, Commitment Percentage or that provide for the Lenders to receive their Pro Rata Shares of any fees, payments, setoffs or proceeds of Collateral hereunder; (H) subordinate the Liens granted in favor of Collateral Agent securing the Obligations; or (I) amend any of the provisions of Section 12.5. It is hereby understood and agreed that all Lenders shall be deemed directly affected by an amendment, waiver or other modification of the type described in the preceding clauses (C), (D), (E), (F), (G) and (H) of the immediately preceding sentence.

(b) Other than as expressly provided for in Section 12.5(a)(i)-(iii), Collateral Agent may, if requested by the Required Lenders, from time to time designate covenants in this Agreement less restrictive by notification to a representative of Borrower.

(c) This Agreement and the Loan Documents represent the entire agreement about this subject matter and supersede prior negotiations or agreements with respect to such subject matter. All prior agreements, understandings, representations, warranties, and negotiations between the parties about the subject matter of this Agreement and the Loan Documents merge into this Agreement and the Loan Documents.

12.6 Counterparts. This Agreement may be executed in any number of counterparts and by different parties on separate counterparts, each of which, when executed and delivered, is an original, and all taken together, constitute one Agreement.

12.7 Survival. All covenants, representations and warranties made in this Agreement continue in full force and effect until this Agreement has terminated pursuant to its terms and all Obligations (other than inchoate indemnity obligations and any other obligations which, by their terms, are to survive the termination of this Agreement) have been satisfied. The obligation of Borrower in Section 12.2 to indemnify each Lender and Collateral Agent, as well as the confidentiality provisions in Section 12.8 below, shall survive until the statute of limitations with respect to such claim or cause of action shall have run.

12.8 Confidentiality. In handling any confidential information of Borrower, the Lenders and Collateral Agent shall exercise the same degree of care that it exercises for their own proprietary information, but disclosure of information may be made: (a) subject to the terms and conditions of this Agreement, to the Lenders' and Collateral

Agent's Subsidiaries or Affiliates; (b) to prospective transferees (other than those identified in (a) above) or purchasers of any interest in any Credit Extension (provided, however, the Lenders and Collateral Agent shall, except upon the occurrence and during the continuance of an Event of Default, obtain such prospective transferee's or purchaser's agreement to the terms of this provision or to similar confidentiality terms); (c) as required by law, regulation, subpoena, or other order; (d) to Lenders' or Collateral Agent's regulators or as otherwise required in connection with an examination or audit; (e) as Collateral Agent reasonably considers appropriate in exercising remedies under the Loan Documents; and (f) to third party service providers of the Lenders and/or Collateral Agent so long as such service providers have executed a confidentiality agreement or have agreed to similar confidentiality terms with the Lenders and Collateral Agent with terms no less restrictive than those contained herein. Confidential information does not include information that either: (i) is in the public domain or in the Lenders' and/or Collateral Agent's possession when disclosed to the Lenders and/or Collateral Agent, or becomes part of the public domain after disclosure to the Lenders and/or Collateral Agent at no fault of the Lenders or the Collateral Agent; or (ii) is disclosed to the Lenders and/or Collateral Agent by a third party, if the Lenders and/or Collateral Agent does not know that the third party is prohibited from disclosing the information. Collateral Agent and the Lenders may use confidential information for any purpose, so long as the identity of Borrower is not disclosed and the use is not for competing with the business of Borrower, including, without limitation, for the development of client databases, reporting purposes, and market analysis. The provisions of the immediately preceding sentence shall survive the termination of this Agreement. The agreements provided under this Section 12.8 supersede all prior agreements, understanding, representations, warranties, and negotiations between the parties about the subject matter of this Section 12.8.

12.9 Right of Set Off. Borrower hereby grants to Collateral Agent and to each Lender, a lien, security interest and right of set off as security for all Obligations to Collateral Agent and each Lender hereunder, whether now existing or hereafter arising upon and against all deposits, credits, collateral and property, now or hereafter in the possession, custody, safekeeping or control of Collateral Agent or the Lenders or any entity under the control of Collateral Agent or the Lenders (including a Collateral Agent affiliate) or in transit to any of them. At any time after the occurrence and during the continuance of an Event of Default, without demand or notice, Collateral Agent or the Lenders may set off the same or any part thereof and apply the same to any liability or obligation of Borrower even though unmatured and regardless of the adequacy of any other collateral securing the Obligations. ANY AND ALL RIGHTS TO REQUIRE COLLATERAL AGENT TO EXERCISE ITS RIGHTS OR REMEDIES WITH RESPECT TO ANY OTHER COLLATERAL WHICH SECURES THE OBLIGATIONS, PRIOR TO EXERCISING ITS RIGHT OF SETOFF WITH RESPECT TO SUCH DEPOSITS, CREDITS OR OTHER PROPERTY OF BORROWER ARE HEREBY KNOWINGLY, VOLUNTARILY AND IRREVOCABLY WAIVED BY BORROWER.

12.10 Cooperation of Borrower. If necessary, Borrower agrees to (i) execute any documents reasonably required to effectuate and acknowledge each assignment of a Commitment or Credit Extension to an assignee in accordance with Section 12.1, (ii) make Borrower's management available upon reasonable advance notice to meet with Collateral Agent and prospective participants and assignees of Commitments (which meetings shall be conducted no more often than twice every twelve months unless an Event of Default has occurred and is continuing), and (iii) assist Collateral Agent or the Lenders in the preparation of information relating to the financial affairs of Borrower as any prospective participant or assignee of a Commitment or Credit Extension reasonably may request. Subject to the provisions of Section 12.8, Borrower authorizes each Lender to disclose to any prospective participant or assignee of a Commitment, any and all information in such Lender's possession concerning Borrower and its financial affairs which has been delivered to such Lender by or on behalf of Borrower pursuant to this Agreement, or which has been delivered to such Lender by or on behalf of Borrower in connection with such Lender's credit evaluation of Borrower prior to entering into this Agreement.

12.11 Public Announcement. Borrower hereby agrees that Collateral Agent and each Lender may make a public announcement of the transactions contemplated by this Agreement, and may publicize the same in marketing

materials, newspapers and other publications, and otherwise, and in connection therewith may use Borrower's name, tradenames and logos.

12.12 Collateral Agent and Lender Agreement. Collateral Agent and each Lender hereby agree to the terms and conditions set forth on Annex I attached hereto. Borrower acknowledges and agrees to the terms and conditions set forth on Annex I attached hereto.

12.13 Intercreditor Agreement. The parties (a) consent to the subordination of Liens provided for in the Intercreditor Agreement and (b) agree that they will be bound by, and will take no actions contrary to, the provisions of the Intercreditor Agreement.

13. DEFINITIONS

As used in this Agreement, the following terms have the following meanings:

"Account" is any "account" as defined in the Code with such additions to such term as may hereafter be made, and includes, without limitation, all accounts receivable and other sums owing to Borrower.

"Account Debtor" is any "account debtor" as defined in the Code with such additions to such term as may hereafter be made under the Code.

"Advance" or **"Advances"** means a cash advance or cash advances under the Revolving Line.

"Affiliate" of any Person is a Person that owns or controls directly or indirectly the Person, any Person that controls or is controlled by or is under common control with the Person, and each of that Person's senior executive officers, directors, partners if such Person is a partnership and, for any Person that is a limited liability company, that Person's managers and members.

"Aggregate Equity Value" of Borrower on any given day is the sum of (i) the closing price of Borrower's Common Stock on Nasdaq Stock Market LLC on such day (or the then last trading day on the Nasdaq Stock Market LLC, if such day is not a trading day) multiplied by the then outstanding number of shares of common stock of Borrower, (ii) if warrants to purchase Common Stock of Borrower (currently traded under the symbol BNGOW) are then traded on Nasdaq Stock Market LLC, the closing price on Nasdaq Stock Market LLC on such day (or the then last trading day on the Nasdaq Stock Market LLC, if such day is not a trading day) of one such warrant multiplied by the then outstanding number of such warrants and (iii) the aggregate Stock Option Values of all then issued and outstanding In Money Stock Options.

"Amortization Date" is the earlier of (i) the date of an Event of Default occurring (the **"Early Amortization Date"**), and (ii) the thirty sixth (36th) Payment Date following the Effective Date.

"Anti-Terrorism Laws" are any laws relating to terrorism or money laundering, including without limitation Executive Order No. 13224 (effective September 24, 2001), the USA PATRIOT Act, the laws comprising or implementing the Bank Secrecy Act, and the laws administered by OFAC.

"Bank" is defined in the preamble to this Agreement.

"Blocked Person" is any Person: (a) listed in the annex to, or is otherwise subject to the provisions of, Executive Order No. 13224, (b) a Person owned or controlled by, or acting for or on behalf of, any Person that is listed in the annex to, or is otherwise subject to the provisions of, Executive Order No. 13224, (c) a Person with which any Lender is prohibited from dealing or otherwise engaging in any transaction by any Anti-Terrorism Law, (d) a Person that commits, threatens or conspires to commit or supports "terrorism" as defined in Executive Order No. 13224, or (e) a Person that is named a "specially designated national" or "blocked person" on the most current list published by OFAC or other similar list.

"Borrower's Books" are Borrower's or any of its Subsidiaries' books and records including ledgers, federal,

and state tax returns, records regarding Borrower's or its Subsidiaries' assets or liabilities, the Collateral, business operations or financial condition, and all computer programs or storage or any equipment containing such information.

"Borrowing Base" means an amount equal to eighty percent (80.00%) of Eligible Accounts, as determined by Bank with reference to the most recent Borrowing Base Certificate delivered by Borrower; provided that Bank may, with prior notice to Borrower, change the advance rate in Bank's reasonable discretion based upon the results of Collateral audits; provided, further, that Borrowing Base shall be no greater than One Million Five Hundred Thousand Dollars (\$1,500,000.00), if on the Funding Date of the Advance, the Debt To Equity Ratio (the calculation of which must be acceptable to Bank) is equal to or greater than 38.75%.

"Borrowing Base Certificate" is that certain certificate in substantially the form attached hereto as Exhibit D.

"Business Day" is any day that is not a Saturday, Sunday or a day on which Collateral Agent is closed.

"Cash Burn" is the cash used by Borrower in its operations and in investing activities.

"Cash Equivalents" are (a) marketable direct obligations issued or unconditionally guaranteed by the United States or any agency or any State thereof having maturities of not more than one (1) year from the date of acquisition; (b) commercial paper maturing no more than one (1) year after its creation and having the highest rating from either Standard & Poor's Ratings Group or Moody's Investors Service, Inc.; and (c) certificates of deposit maturing no more than one (1) year after issue provided that the account in which any such certificate of deposit is maintained is subject to a Control Agreement in favor of Collateral Agent.

"Code" is the Uniform Commercial Code, as the same may, from time to time, be enacted and in effect in the State of New York; provided, that, to the extent that the Code is used to define any term herein or in any Loan Document and such term is defined differently in different Articles or Divisions of the Code, the definition of such term contained in Article or Division 9 shall govern; provided further, that in the event that, by reason of mandatory provisions of law, any or all of the attachment, perfection, or priority of, or remedies with respect to, Collateral Agent's Lien on any Collateral is governed by the Uniform Commercial Code in effect in a jurisdiction other than the State of New York, the term **"Code"** shall mean the Uniform Commercial Code as enacted and in effect in such other jurisdiction solely for purposes of the provisions thereof relating to such attachment, perfection, priority, or remedies and for purposes of definitions relating to such provisions.

"Collateral" is any and all properties, rights and assets of Borrower described on Exhibit A.

"Collateral Account" is any Deposit Account, Securities Account, or Commodity Account, or any other bank account maintained by Borrower or any Subsidiary at any time.

"Commitment Amount" is set forth in Schedule 1.1, as amended from time to time.

"Commitment Percentage" is set forth in Schedule 1.1, as amended from time to time.

"Commitments" means, collectively, the Revolving Line Commitments and the Term Loan Commitments.

"Commodity Account" is any "commodity account" as defined in the Code with such additions to such term as may hereafter be made under the Code.

"Compliance Certificate" is that certain certificate in substantially the form attached hereto as Exhibit C.

"Contingent Obligation" is, for any Person, any direct or indirect liability, contingent or not, of that Person for (a) any indebtedness, lease, dividend, letter of credit or other obligation of another Person such as an obligation directly or indirectly guaranteed, endorsed, co-made, discounted or sold with recourse by that Person, or for which that Person is directly or indirectly liable; (b) any obligations for undrawn letters of credit for the account of that Person; and (c) all obligations from any interest rate, currency or commodity swap agreement, interest rate cap or

collar agreement, or other agreement or arrangement designated to protect a Person against fluctuation in interest rates, currency exchange rates or commodity prices; but “Contingent Obligation” does not include endorsements in the ordinary course of business. The amount of a Contingent Obligation is the stated or determined amount of the primary obligation for which the Contingent Obligation is made or, if not determinable, the maximum reasonably anticipated liability for it determined by the Person in good faith; but the amount may not exceed the maximum of the obligations under any guarantee or other support arrangement.

“**Control Agreement**” is any control agreement entered into among the depository institution at which Borrower or any of its Subsidiaries maintains a Deposit Account or the securities intermediary or commodity intermediary at which Borrower or any of its Subsidiaries maintains a Securities Account or a Commodity Account, Borrower and such Subsidiary, and Collateral Agent pursuant to which Collateral Agent, for the benefit of the Lenders, obtains “control” (within the meaning of the Code) over such Deposit Account, Securities Account, or Commodity Account.

“**Copyrights**” are any and all copyright rights, copyright applications, copyright registrations and like protections in each work of authorship and derivative work thereof, whether published or unpublished and whether or not the same also constitutes a trade secret.

“**Credit Extension**” is each Advance, Term Loan or any other extension of credit by any Lender to or for the benefit of Borrower hereunder.

“**Debt To Equity Ratio**” is at any given time the ratio of aggregate outstanding Indebtedness of Borrower (including, without limitation, the Indebtedness outstanding under this Agreement and the aggregate amount of all Credit Extensions then requested by Borrower hereunder but not as yet funded by Lenders) at such time to the Aggregate Equity Value of Borrower at such time, expressed as a percentage.

“**Deposit Account**” is any “deposit account” as defined in the Code with such additions to such term as may hereafter be made.

“**Disbursement Letter**” is that certain form attached hereto as EXHIBIT B-2.

“**Domestic Subsidiary**” means any Subsidiary which is not a Foreign Subsidiary.

“**DOJ**” means the U.S. Department of Justice or any successor thereto or any other comparable Governmental Authority.

“**Dollars**,” “dollars” and “\$” each mean lawful money of the United States.

“**Eligible Accounts**” means those Accounts that arise in the ordinary course of Borrower’s business that comply with all of Borrower’s representations and warranties set forth in Section 5.2; provided, that Bank may, in its reasonable discretion, change the standards of eligibility immediately by giving Borrower a written notice of the effectiveness of any such change. Unless otherwise agreed to by Bank, Eligible Accounts shall not include the following:

- (a) Accounts that the Account Debtor has failed to pay in full within ninety (90) days of invoice date;
- (b) Uninsured Accounts with respect to which the Account Debtor does not have its principal place of business in the United States;
- (c) Credit balances over ninety (90) days;
- (d) Accounts with respect to an Account Debtor, twenty-five percent (25%) of whose Accounts the Account Debtor has failed to pay within ninety (90) days of invoice date, except as approved in writing by Bank;

- (e) Accounts with respect to an Account Debtor, including Subsidiaries and Affiliates, whose total obligations to Borrower exceed twenty-five percent (25%) of all Accounts, to the extent such obligations exceed the aforementioned percentage, except as approved in writing by Bank;
- (f) Accounts with respect to which the goods have not been shipped or delivered, or the services have not been rendered, to the Account Debtor;
- (g) Accounts consisting of non-trade claims, i.e., freight claims, insurance claims, warranty claims, claims against government, etc.;
- (h) Accounts arising from cash sales or from collect on delivery sales of inventory;
- (i) Accrued finance charges on Account;
- (j) Accounts which consists of progress billings;
- (k) Accounts with respect to which the Account Debtor is the United States or any department, agency, or instrumentality of the United States, except for (i) Accounts of the United States, or (ii) Accounts with the United States Department of Veterans Affairs (and related hospitals), if in each case Borrower has assigned its payment rights to Bank and the assignment has been acknowledged under the Assignment of Claims Act of 1940 (31 U.S.C, 3727);
- (l) Accounts with respect to which Borrower is liable to the Account Debtor for goods sold or services rendered by the Account Debtor to Borrower, but only to the extent of any amounts owing to the Account Debtor against amounts owed to Borrower;
- (m) Accounts with respect to which goods are placed on consignment, guaranteed sale, sale or return, sale on approval, bill and hold, demo or promotional, or other terms by reason of which the payment by the Account Debtor may be conditional;
- (n) Accounts with respect to which the Account Debtor is an officer, employee, agent or Affiliate of Borrower;
- (o) Accounts that have not yet been billed to the Account Debtor or that relate to deposits (such as good faith deposits) or other property of the Account Debtor held by Borrower for the performance of services or delivery of goods which Borrower has not yet performed or delivered;
- (p) Accounts with respect to which the Account Debtor disputes liability or makes any claim with respect thereto as to which Bank believes, in its sole reasonable discretion, that there may be a basis for dispute (but only to the extent of the amount subject to such dispute or claim), or is subject to any Insolvency Proceeding, has filed for bankruptcy protection, is or becomes Insolvent, or goes out of business;
- (q) Accounts the collection of which Bank reasonably determines after inquiry and consultation with Borrower to be doubtful; and
- (r) Retentions and hold-backs.

“**Equipment**” is all “equipment” as defined in the Code with such additions to such term as may hereafter be made, and includes without limitation all machinery, fixtures, goods, vehicles (including motor vehicles and trailers), and any interest in any of the foregoing.

“**ERISA**” is the Employee Retirement Income Security Act of 1974, as amended, and its regulations.

“**Exigent Circumstance**” means any event or circumstance that, in the reasonable judgment of Collateral Agent, imminently threatens the ability of Collateral Agent to realize upon all or any material portion of the Collateral,

such as, without limitation, fraudulent removal, concealment, or abscondment thereof, destruction or material waste thereof, or failure of Borrower or any of its Subsidiaries after reasonable demand to maintain or reinstate adequate casualty insurance coverage, or which, in the judgment of Collateral Agent, could reasonably be expected to result in a material diminution in value of the Collateral.

“**Existing Indebtedness**” is the indebtedness of Borrower to MidCap Financial Trust in the aggregate principal outstanding amount as of the Effective Date of approximately Ten Million Eight Hundred Sixty Thousand Eight Hundred Thirty-Seven and 44/100 Dollars (\$10,860,837.44) pursuant to that certain Credit and Security Agreement, dated June 29, 2018, entered into by and between MidCap Financial Trust and Borrower.

“**FDA**” means the U.S. Food and Drug Administration or any successor thereto or any other comparable Governmental Authority.

“**Final Fee**” is a payment (in addition to and not a substitution for the regular monthly payments of principal plus accrued interest or any other fee payable hereunder) due on the earliest to occur of (a) the Maturity Date, or (b) the acceleration of any Term Loan, or (c) the prepayment of the Term Loan pursuant to Section 2.2(c) or (d), in each case equal to Three and Seventy-Five Hundredths percent (3.75%) *multiplied* by the aggregate amount of the Term Loans funded, payable to Lenders in accordance with their respective Pro Rata Shares.

“**Foreign Currency**” means lawful money of a country other than the United States.

“**Foreign Subsidiary**” is a Subsidiary that is not an entity organized under the laws of the United States or any state thereof.

“**Funding Date**” is any date on which the Credit Extension is made to or on account of Borrower which shall be a Business Day.

“**GAAP**” is generally accepted accounting principles set forth in the opinions and pronouncements of the Accounting Principles Board of the American Institute of Certified Public Accountants and statements and pronouncements of the Financial Accounting Standards Board or in such other statements by such other Person as may be approved by a significant segment of the accounting profession in the United States, which are applicable to the circumstances as of the date of determination.

“**General Intangibles**” are all “general intangibles” as defined in the Code in effect on the date hereof with such additions to such term as may hereafter be made, and includes without limitation, all copyright rights, copyright applications, copyright registrations and like protections in each work of authorship and derivative work, whether published or unpublished, any patents, trademarks, service marks and, to the extent permitted under applicable law, any applications therefor, whether registered or not, any trade secret rights, including any rights to unpatented inventions, payment intangibles, royalties, contract rights, goodwill, franchise agreements, purchase orders, customer lists, route lists, telephone numbers, domain names, claims, income and other tax refunds, security and other deposits, options to purchase or sell real or personal property, rights in all litigation presently or hereafter pending (whether in contract, tort or otherwise), insurance policies (including without limitation key man, property damage, and business interruption insurance), payments of insurance and rights to payment of any kind.

“**Governmental Approval**” is any consent, authorization, approval, order, license, franchise, permit, certificate, accreditation, registration, filing or notice, of, issued by, from or to, or other act by or in respect of, any Governmental Authority.

“**Governmental Authority**” is any nation or government, any state or other political subdivision thereof, any agency, authority, instrumentality, regulatory body (including, without limitation, the FDA and any state board of pharmacy or state pharmacy licensing authority), court, central bank or other entity exercising executive, legislative, judicial, taxing, regulatory or administrative functions of or pertaining to government, any securities exchange and any self-regulatory organization.

“**Guarantor**” is any Person providing a Guaranty in favor of Collateral Agent for the benefit of the Lenders.

“**Guaranty**” is any guarantee of all or any part of the Obligations, as the same may from time to time be amended, restated, modified or otherwise supplemented.

“**In Money Stock Option**” is an option to purchase shares of Borrower’s Common Stock at a strike price per share that is less than the then last closing price of one share of Borrower’s Common Stock on the Nasdaq Stock Market LLC.

“**Indebtedness**” is (a) indebtedness for borrowed money or the deferred price of property or services, such as reimbursement and other obligations for surety bonds and letters of credit, (b) obligations evidenced by notes, bonds, debentures or similar instruments, (c) capital lease obligations, and (d) Contingent Obligations.

“**Insolvency Proceeding**” is any proceeding by or against any Person under the United States Bankruptcy Code, or any other bankruptcy or insolvency law, including assignments for the benefit of creditors, compositions or proceedings seeking reorganization, arrangement, or other relief.

“**Insolvent**” means not Solvent.

“**Intellectual Property**” means all of Borrower’s or any of its Subsidiaries’ right, title and interest in and to the following:

- (a) its Copyrights, Trademarks and Patents;
- (b) any and all trade secrets and trade secret rights, including, without limitation, any rights to unpatented inventions, know-how, operating manuals;
- (c) any and all source code;
- (d) any and all design rights which may be available to Borrower;
- (e) any and all claims for damages by way of past, present and future infringement of any of the foregoing, with the right, but not the obligation, to sue for and collect such damages for said use or infringement of the Intellectual Property rights identified above;
- (f) all amendments, renewals and extensions of any of the Copyrights, Trademarks or Patents; and
- (g) all licenses, sublicenses or other contracts under which Borrower or any Subsidiary is granted rights by third parties in any Intellectual Property asset.

“**Intercreditor Agreement**” means that certain Intercreditor Agreement, as modified, amended and or restated from time to time in the sole discretion of Collateral Agent, by and between the Bank and Collateral Agent.

“**Inventory**” is all “inventory” as defined in the Code in effect on the date hereof with such additions to such term as may hereafter be made under the Code, and includes without limitation all merchandise, raw materials, parts, supplies, packing and shipping materials, work in process and finished products, including without limitation such inventory as is temporarily out of any Person’s custody or possession or in transit and including any returned goods and any documents of title representing any of the above.

“**Investment**” is any beneficial ownership interest in any Person (including stock, partnership interest or other securities), and any loan, advance or capital contribution to any Person.

“**IP Security Agreement**” is that certain Intellectual Property Security Agreement executed and delivered by Borrower to Collateral Agent and dated as of the date of the first Credit Extension made under this Agreement, as may be amended, restated, or otherwise modified or supplemented from time to time.

“**Key Person**” is each of Borrower’s (i) President and Chief Executive Officer, who is Erik Holmlin as of the Effective Date and (ii) Chief Financial Officer, who is Mike Ward as of the Effective Date.

“**Knowledge**” means to the “best of” Borrower’s knowledge, or with a similar qualification, knowledge or awareness means the actual knowledge, after reasonable investigation, of the Responsible Officers.

“**Lender**” is any one of the Lenders.

“**Lenders**” are the Persons identified on Schedule 1.1 hereto and each assignee that becomes a party to this Agreement pursuant to Section 12.1.

“**Lenders’ Expenses**” are all audit fees and expenses, costs, and expenses (including reasonable and documented attorneys’ fees and expenses (provided, however, neither any Lender nor the Collateral Agent will be obligated to provide detailed or itemized invoices for such fees and expenses), as well as appraisal fees, fees incurred on account of lien searches, inspection fees, and filing fees) for preparing, amending, negotiating, administering, defending and enforcing the Loan Documents (including, without limitation, those incurred in connection with appeals or Insolvency Proceedings) or otherwise incurred by Collateral Agent and/or the Lenders in connection with the Loan Documents.

“**Lien**” is a claim, mortgage, deed of trust, levy, charge, pledge, security interest, or other encumbrance of any kind, whether voluntarily incurred or arising by operation of law or otherwise against any property.

“**Loan Documents**” are, collectively, this Agreement, the IP Security Agreement, the Intercreditor Agreement, each Secured Promissory Note, each Warrant, the Perfection Certificate(s), each Control Agreement, each Compliance Certificate, each Loan Payment Request Form, each Disbursement Letter, any subordination agreements, any note, or notes or guaranties executed by Borrower or any other Person, and any other present or future agreement entered into by Borrower, any Guarantor or any other Person for the benefit of the Lenders and Collateral Agent in connection with this Agreement; all as amended, restated, or otherwise modified or supplemented from time to time.

“**Loan Payment Request Form**” is that certain form attached hereto as EXHIBIT B-1.

“**Management Plan**” is Borrower’s projected revenue attached hereto as Annex X.

“**Material Adverse Change**” is (a) a material adverse change in the business, operations or condition (financial or otherwise) of Borrower or any Subsidiary, when taken as a whole; (b) a material impairment of the prospect of repayment of any portion of the Obligations, or (c) a material adverse effect on the Collateral.

“**Material Agreement**” is any license, agreement or other contractual arrangement with a Person or Governmental Authority whereby Borrower or any of its Subsidiaries is reasonably likely to be required to transfer, either in-kind or in cash, prior to the Maturity Date, assets or property valued (book or market) at more than Two Hundred Fifty Thousand Dollars (\$250,000.00) in the aggregate or any license, agreement or other contractual arrangement conveying rights in or to any intellectual property necessary to make, use or sell any Inventory, products or services of Borrower or any Subsidiary.

“**Maturity Date**” is the earlier of (i) March 1, 2024 and (ii) twenty-four (24) months following the Early Amortization Date, if triggered.

“**Obligations**” are all of Borrower’s obligations to pay when due any debts, principal, interest, Lenders’ Expenses, the Prepayment Fee, the Final Fee, and other amounts Borrower owes the Lenders now or later, in connection with, related to, following, or arising from, out of or under, this Agreement or, the other Loan Documents (other than the Warrant), or otherwise, including, without limitation, all obligations relating to letters of credit (including reimbursement obligations for drawn and undrawn letters of credit), cash management services, and foreign exchange contracts, if any, and including interest accruing after Insolvency Proceedings begin (whether or not allowed) and debts, liabilities, or obligations of Borrower assigned to the Lenders and/or Collateral Agent, and the performance of Borrower’s duties under the Loan Documents (other than the Warrant).

“OFAC” is the U.S. Department of Treasury Office of Foreign Assets Control.

“OFAC Lists” are, collectively, the Specially Designated Nationals and Blocked Persons List maintained by OFAC pursuant to Executive Order No. 13224, 66 Fed. Reg. 49079 (Sept. 25, 2001) and/or any other list of terrorists or other restricted Persons maintained pursuant to any of the rules and regulations of OFAC or pursuant to any other applicable Executive Orders.

“Operating Documents” are, for any Person, such Person’s formation documents, as certified by the Secretary of State (or equivalent agency) of such Person’s jurisdiction of organization on a date that is no earlier than thirty (30) days prior to the Effective Date, and, (a) if such Person is a corporation, its bylaws in current form, (b) if such Person is a limited liability company, its limited liability company agreement (or similar agreement), and (c) if such Person is a partnership, its partnership agreement (or similar agreement), each of the foregoing with all current amendments or modifications thereto.

“Patents” means all patents, patent applications and like protections including without limitation improvements, divisions, continuations, renewals, reissues, re-examination certificates, utility models, extensions and continuations-in-part of the same.

“Payment Date” is the first (1st) calendar day of each calendar month, commencing on April 1, 2019.

“Permitted Indebtedness” is:

- (a) Borrower’s Indebtedness to the Lenders and Collateral Agent under this Agreement and the other Loan Documents;
- (b) Indebtedness existing on the Effective Date and disclosed on the Perfection Certificate(s);
- (c) Subordinated Debt;
- (d) unsecured Indebtedness to trade creditors and Indebtedness in connection with credit cards incurred in the ordinary course of business;
- (e) Indebtedness consisting of capitalized lease obligations and purchase money Indebtedness, in each case incurred by Borrower or any of its Subsidiaries to finance the acquisition, repair, improvement or construction of fixed or capital assets of such Person, provided that (i) the aggregate outstanding principal amount of all such Indebtedness does not exceed Fifty Thousand Dollars (\$50,000.00) at any time and (ii) the principal amount of such Indebtedness does not exceed the lower of the cost or fair market value of the property so acquired or built or of such repairs or improvements financed with such Indebtedness (each measured at the time of such acquisition, repair, improvement or construction is made);
- (f) Indebtedness incurred as a result of endorsing negotiable instruments received in the ordinary course of Borrower’s business;
- (g) extensions, refinancings, modifications, amendments and restatements of any items of Permitted Indebtedness (a) through (e) above, provided that the principal amount thereof is not increased or the terms thereof are not modified to impose materially more burdensome terms upon Borrower, or its Subsidiary, as the case may be; and
- (h) any other unsecured Indebtedness in an amount not to exceed One Hundred Fifty Thousand Dollars (\$150,000.00) in the aggregate at any time outstanding.

“Permitted Investments” are:

- (a) Investments disclosed on the Perfection Certificate(s) and existing on the Effective Date;

(b) (i) Investments consisting of cash and Cash Equivalents, and (ii) any Investments permitted by Borrower's investment policy, as amended from time to time, provided that such investment policy (and any such amendment thereto) has been approved in writing by Collateral Agent;

(c) Investments consisting of the endorsement of negotiable instruments for deposit or collection or similar transactions in the ordinary course of Borrower;

(d) Investments consisting of Deposit Accounts in which Collateral Agent has a perfected security interest;

(e) Investments in connection with Transfers permitted by Section 7.1;

(f) Investments consisting of (i) travel advances and employee relocation loans and other employee loans and advances in the ordinary course of business, and (ii) loans to employees, officers or directors relating to the purchase of equity securities of Borrower or its Subsidiaries pursuant to employee stock purchase plans or agreements approved by Borrower's board of directors, not to exceed Fifty Thousand Dollars (\$50,000.00) in the aggregate for (i) and (ii) in any fiscal year;

(g) Investments (including debt obligations) received in connection with the bankruptcy or reorganization of customers or suppliers and in settlement of delinquent obligations of, and other disputes with, customers or suppliers arising in the ordinary course of business;

(h) Investments consisting of notes receivable of, or prepaid royalties and other credit extensions, to customers and suppliers who are not Affiliates, in the ordinary course of business; provided that this paragraph (h) shall not apply to Investments of Borrower in any Subsidiary;

(i) Investments in Subsidiaries, not to exceed Fifty Thousand Dollars (\$50,000.00) per fiscal year;

(j) Investments in joint ventures or strategic alliances in the ordinary course of Borrower's business consisting of the non-exclusive licensing of technology, the development of technology or the providing of technical support, provided that any such cash Investments by Borrower do not exceed Two Hundred Fifty Thousand Dollars (\$250,000.00) in the aggregate in any fiscal year; and

(k) any other Investments in an amount not to exceed Two Hundred Fifty Thousand Dollars (\$250,000.00) in the aggregate in any fiscal year.

"Permitted Licenses" are (A) licenses of over-the-counter software that is commercially available to the public and (B) non-exclusive licenses for the use of the Intellectual Property of Borrower or any of its Subsidiaries entered into in the ordinary course of business, provided, that, with respect to each such license described in clause (B), the license constitutes an arm's-length transaction, the terms of which, on their face, do not provide for a sale or assignment of any Intellectual Property and do not restrict the ability of Borrower or any of its Subsidiaries, as applicable, to pledge, grant a security interest in or lien on, or assign or otherwise Transfer any Intellectual Property.

"Permitted Liens" are:

(a) Liens existing on the Effective Date and disclosed on the Perfection Certificates or arising under this Agreement and the other Loan Documents;

(b) Liens for taxes, fees, assessments or other government charges or levies, either (i) not due and payable or (ii) being contested in good faith and for which Borrower maintains adequate reserves on its books, provided that no notice of any such Lien has been filed or recorded under the Internal Revenue Code of 1986, as amended, and the Treasury Regulations adopted thereunder;

(c) liens securing Indebtedness permitted under clause (e) of the definition of “Permitted Indebtedness,” provided that (i) such liens exist prior to the acquisition of, or attach substantially simultaneous with, or within twenty (20) days after the, acquisition, lease, repair, improvement or construction of, such property financed or leased by such Indebtedness and (ii) such liens do not extend to any property of Borrower other than the property (and proceeds thereof) acquired, leased or built, or the improvements or repairs, financed by such Indebtedness;

(d) Liens of carriers, warehousemen, suppliers, or other Persons that are possessory in nature arising in the ordinary course of business so long as such Liens attach only to Inventory, securing liabilities in the aggregate amount not to exceed Fifty Thousand Dollars (\$50,000.00), and which are not delinquent or remain payable without penalty or which are being contested in good faith and by appropriate proceedings which proceedings have the effect of preventing the forfeiture or sale of the property subject thereto;

(e) Liens to secure payment of workers’ compensation, employment insurance, old age pensions, social security and other like obligations incurred in the ordinary course of business (other than Liens imposed by ERISA);

(f) Liens incurred in the extension, renewal or refinancing of the indebtedness secured by Liens described in (a) through (c), but any extension, renewal or replacement Lien must be limited to the property encumbered by the existing Lien and the principal amount of the indebtedness may not increase;

(g) leases or subleases of real property granted in the ordinary course of Borrower’s business (or, if referring to another Person, in the ordinary course of such Person’s business), and leases, subleases, non-exclusive licenses or sublicenses of personal property (other than Intellectual Property) granted in the ordinary course of Borrower’s business (or, if referring to another Person, in the ordinary course of such Person’s business), if the leases, subleases, licenses and sublicenses do not prohibit granting Collateral Agent or any Lender a security interest therein;

(h) banker’s liens, rights of setoff and Liens in favor of financial institutions incurred in the ordinary course of business arising in connection with Borrower’s deposit accounts or securities accounts held at such institutions solely to secure payment of fees and similar costs and expenses and provided such accounts are maintained in compliance with Section 6.6 hereof;

(i) Liens arising from judgments, decrees or attachments in circumstances not constituting an Event of Default under Section 8.4 or 8.7; and

(j) Permitted Licenses.

“**Person**” is any individual, sole proprietorship, partnership, limited liability company, joint venture, company, trust, unincorporated organization, association, corporation, institution, public benefit corporation, firm, joint stock company, estate, entity or government agency.

“**Prepayment Fee**” is, with respect to any Term Loan subject to prepayment prior to the Maturity Date, whether by mandatory or voluntary prepayment, acceleration or otherwise, an additional fee payable to the Lenders in amount equal to:

(i) for a prepayment made pursuant to Section 2.2(c) on or after the Funding Date of the Term Loan through and including the first anniversary of the Funding Date of the Term Loan, three percent (3.00%) of the principal amount of the Term Loan prepaid;

(ii) for a prepayment made after the date which is the first anniversary of the Funding Date of the Term Loan through and including the date which is the second anniversary of the Funding Date of the Term Loan, two percent (2.00%) of the principal amount of the Term Loan prepaid;

(iii) for a prepayment made after the date which is the second anniversary of the Funding Date of the Term Loan through and including the date which is the third anniversary of the Funding Date of the Term Loan, one percent (1.00%) of the principal amount of the Term Loan prepaid; and

(iv) for a prepayment made after the date which is the third anniversary of the Funding Date of the Term Loan and prior to the Maturity Date, zero percent (0.00%) of the principal amount of the Term Loan prepaid.

For the purposes of clarification, no voluntary prepayment of a Term Loan may be made prior to the first anniversary of the Effective Date.

“**Prime Rate**” means the variable rate of interest, per annum, most recently announced by Bank, as its “prime rate,” whether or not such announced rate is the lowest rate available from Bank.

“**Pro Rata Share**” is, as of any date of determination, with respect to each Lender, a percentage (expressed as a decimal, rounded to the ninth decimal place) determined by dividing the outstanding principal amount of the Term Loan held by such Lender by the aggregate outstanding principal amount of the Term Loan.

“**Prohibited Territory**” is any country jurisdiction listed by the OFAC as to which transactions between a United States Person and that territory are prohibited.

“**Property**” means any interest in any kind of property or asset, whether real, personal or mixed, and whether tangible or intangible.

“**Registered Organization**” is any “registered organization” as defined in the Code with such additions to such term as may hereafter be made under the Code.

“**Registration**” means any registration, authorization, approval, license, permit, clearance, certificate, and exemption issued or allowed by the FDA or state pharmacy licensing authorities (including, without limitation, new drug applications, abbreviated new drug applications, biologics license applications, investigational new drug applications, over-the-counter drug monograph, device pre-market approval applications, device pre-market notifications, investigational device exemptions, product recertifications, manufacturing approvals, registrations and authorizations, CE Marks, pricing and reimbursement approvals, labeling approvals or their foreign equivalent, controlled substance registrations, and wholesale distributor permits).

“**Regulatory Action**” means an administrative, regulatory, or judicial enforcement action, proceeding, investigation or inspection, FDA Form 483 notice of inspectional observation, warning letter, untitled letter, other notice of violation letter, recall, seizure, Section 305 notice or other similar written communication, injunction or consent decree, issued by the FDA or a federal or state court.

“**Related Persons**” means, with respect to any Person, each Affiliate of such Person and each director, officer, employee, agent, trustee, representative, attorney, accountant and each insurance, environmental, legal, financial and other advisor and other consultants and agents of or to such Person or any of its Affiliates.

“**Required Lenders**” means (i) for so long as all of the Persons that are Lenders on the Effective Date (each an “**Original Lender**”) have not assigned or transferred any of their interests in the Term Loan, Lenders holding one hundred percent (100%) of the aggregate outstanding principal balance of the Term Loan, or (ii) at any time from and after any Original Lender has assigned or transferred any interest in its Term Loan, Lenders holding at least fifty one percent (51%) of the aggregate outstanding principal balance of the Term Loan.

“**Requirement of Law**” is as to any Person, the organizational or governing documents of such Person, and any law (statutory or common), treaty, rule or regulation or determination of an arbitrator or a court or other Governmental Authority, in each case applicable to or binding upon such Person or any of its property or to which such Person or any of its property is subject.

“**Responsible Officer**” is any of the President, Chief Executive Officer, or Chief Financial Officer of Borrower acting alone.

“**Revolving Facility Fee**” is a fee due on the Effective Date equal to Seventy-Five Hundredths percent (0.75%) of the Revolving Line; payable solely for the account of Bank.

“**Revolving Line**” means a Credit Extension by Bank of up to Five Million Dollars (\$5,000,000.00).

“**Revolving Line Commitments**” is, for any Lender, the obligation of such Lender to make Advances, up to the principal amount shown on Schedule 1.1; it being agreed and understood that neither INNOVATUS LIFE SCIENCES LENDING FUND I, LP nor any of its Affiliates has any Revolving Line Commitment.

“**Secured Promissory Note**” is defined in Section 2.6.

“**Secured Promissory Note Record**” is a record maintained by each Lender with respect to the outstanding Obligations owed by Borrower to Lender and credits made thereto.

“**Securities Account**” is any “securities account” as defined in the Code with such additions to such term as may hereafter be made under the Code.

“**Shares**” is (x) one hundred percent (100.00%) of the stock, units or other evidence of ownership held by Borrower or its Subsidiaries of any Subsidiary which is organized under the laws of the United States, and (y) sixty-five percent (65.00%) of the stock, units or other evidence of ownership held by Borrower or its Subsidiaries of any Subsidiary which is not organized under the laws of the United States.

“**Solvent**” is, with respect to any Person: the fair salable value of such Person’s consolidated assets (including goodwill minus disposition costs) exceeds the fair value of such Person’s liabilities; such Person is not left with unreasonably small capital after the transactions in this Agreement; and such Person is able to pay its debts (including trade debts) as they mature in the ordinary course (without taking into account any forbearance and extensions related thereto).

“**Stock Option Value**” of any In Money Stock Option is the number of shares of Common Stock of Borrower for which such In Money Stock Option can be exercised multiplied by the difference between the last closing price per share of Common Stock of Borrower on the Nasdaq Stock Market LLC and the strike per share of Borrower’s Common Stock for such In Money Stock Option.

“**Subordinated Debt**” is indebtedness incurred by Borrower or any of its Subsidiaries subordinated to all Indebtedness of Borrower and/or its Subsidiaries to the Lenders (pursuant to a subordination, intercreditor, or other similar agreement in form and substance satisfactory to Collateral Agent and the Lenders entered into between Collateral Agent, Borrower, and/or any of its Subsidiaries, and the other creditor), on terms acceptable to Collateral Agent and the Lenders.

“**Subsidiary**” is, with respect to any Person, any Person of which more than fifty percent (50%) of the voting stock or other equity interests (in the case of Persons other than corporations) is owned or controlled, directly or indirectly, by such Person or through one or more intermediaries. Unless otherwise specified, references herein to a Subsidiary means a Subsidiary of Borrower.

“**Term A-1 Draw Period**” is the period commencing on the Effective Date and ending on the earlier of (i) March 31, 2019 and (ii) the occurrence of the Event of Default.

“**Term A-1 Loan**” is defined in Section 2.2(a)(i) hereof.

“**Term A-2 Draw Period**” is the period commencing on the later of (i) Effective Date and (ii) the first date on which Debt to Equity Ratio for each of the last five consecutive trading days on the Nasdaq Stock Market LLC (based on the closing price of Borrower’s Common Stock on the Nasdaq Stock Market LLC on each such day) was

less than 38.75%, and ending on the earlier of (i) December 31, 2019 and (ii) the occurrence of the Event of Default.

“**Term A-2 Loan**” is defined in Section 2.2(a)(ii) hereof.

“**Term B Draw Period**” is the period commencing on the achievement of the Term B Milestone and ending on the earlier of (i) January 31, 2020 and (ii) the occurrence of an Event of Default; provided, however, that the Term B Draw Period shall not commence if Borrower does not achieve the Term B Milestone and/or on January 31, 2020, an Event of Default has occurred and is continuing.

“**Term B Loan**” is defined in Section 2.2(a)(iii) hereof.

“**Term B Milestone**” means, as of the Funding Date of the Term B Loan, (a) TTM Revenue of Borrower of greater than Thirteen Million Dollars (\$13,000,000), (b) TTM Gross Margin of Borrower of at least forty percent (40%) and (c) Debt To Equity Ratio of less than 38.75%; in each case, subject to delivery of evidence of the same, in form and content satisfactory, to Collateral Agent and the Lenders.

“**Term Loan**” is defined in Section 2.2(a)(iii) hereof.

“**Term Loan Basic Rate**” is with respect to Term Loan, the floating per annum rate of interest (based on a year of three hundred sixty five (365) days) equal to the sum of (a) the greater of (i) Five and one-half percent (5.50%) and (ii) Prime Rate, subject to Section 2.5(g), and (b) Four and seventy-five hundredths percent (4.75%).

“**Term Loan Commitment**” is, for any Lender, the obligation of such Lender to make the Term Loan, up to the principal amount shown on Schedule 1.1. “**Term Loan Commitments**” means the aggregate amount of such commitments of all Lenders.

“**Term Loan Facility Fee**” is a fee due on the Effective Date equal to one and twenty-five hundredths percent (1.25%) of the total funded Term A-1 Loan; an additional one and twenty-five hundredths percent (1.25%) of the total funded Term A-2 Loan, if and when funded; and an additional one and twenty-five hundredths percent (1.25%) of the total funded Term B Loan, if and when funded; in each case, payable to Collateral Agent for the ratable benefit of the Lenders according to their Term Loan Commitments.

“**Trademarks**” means any trademark and servicemark rights, whether registered or not, applications to register and registrations of the same and like protections, and the entire goodwill of the business of Borrower and each of its Subsidiaries connected with and symbolized by such trademarks.

“**TTM Gross Margin**” means trailing twelve (12) months’ gross margin, determined in accordance with GAAP, as of any date of determination, excluding any one-time charge to cost of goods sold.

“**TTM Revenue**” means trailing twelve (12) months’ revenue, determined in accordance with GAAP, as of any date of determination.

“**Warrant**” means any of that certain Warrant to Purchase Stock dated the Effective Date issued by Borrower in favor of each Lender or such Lender’s Affiliates or any other warrant entered into in connection with the Term Loan, all as may be amended, restated, or otherwise modified or supplemented from time to time.

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IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed as of the Effective Date.

BORROWER:

BIONANO GENOMICS, INC.

By /s/ Robert Erik Holmlin
Name: Robert Erik Holmlin
Title: Chief Executive Officer

COLLATERAL AGENT AND LENDER:

INNOVATUS LIFE SCIENCES LENDING FUND I, LP

By: Innovatus Life Sciences GP, LP
Its: General Partner

By /s/ Andrew Dym
Name: Andrew Dym
Title: Authorized Signatory

EAST WEST BANK:

EAST WEST BANK

By /s/ James Tai
Name: James Tai
Title: Managing Director/Head of Life Sciences

SCHEDULE 1.1

Lenders and Commitments

Term A-1 Loans

<u>Lender</u>	<u>Term A-1 Loan Commitment</u>	<u>Commitment Percentage</u>
INNOVATUS LIFE SCIENCES LENDING FUND I, LP	\$ 17,500,000.00	100.00%
TOTAL	\$ 17,500,000.00	100.00%

Term A-2 Loans

<u>Lender</u>	<u>Term A-2 Loan Commitment</u>	<u>Commitment Percentage</u>
INNOVATUS LIFE SCIENCES LENDING FUND I, LP	\$ 2,500,000.00	100.00%
TOTAL	\$ 2,500,000.00	100.00%

Term B Loans

<u>Lender</u>	<u>Term B Loan Commitment</u>	<u>Commitment Percentage</u>
INNOVATUS LIFE SCIENCES LENDING FUND I, LP	\$ 5,000,000.0	100.00%
TOTAL	\$ 5,000,000.00	100.00%

Aggregate (All Term Loans)

<u>Lender</u>	<u>Term Loan Commitment</u>	<u>Commitment Percentage</u>
INNOVATUS LIFE SCIENCES LENDING FUND I, LP	\$ 25,000,000.00	100.00%
TOTAL	\$ 25,000,000.00	100.00%

Revolving Line

<u>Lender</u>	<u>Revolving Line Commitment</u>	<u>Commitment Percentage</u>
EAST WEST BANK	\$ 5,000,000.00	100.00%
TOTAL	\$ 5,000,000.00	100.00%

EXHIBIT A

Description of Collateral

The Collateral consists of all of Borrower's right, title and interest in and to the following property:

All goods, Accounts (including health-care receivables), Equipment, Inventory, contract rights or rights to payment of money, leases, license agreements, franchise agreements, General Intangibles (including Intellectual Property), commercial tort claims, documents, instruments (including any promissory notes), chattel paper (whether tangible or electronic), cash, deposit accounts and other Collateral Accounts, all certificates of deposit, fixtures, letters of credit rights (whether or not the letter of credit is evidenced by a writing), securities, and all other investment property, supporting obligations, and financial assets, whether now owned or hereafter acquired, wherever located; and

All Borrower's Books relating to the foregoing, and any and all claims, rights and interests in any of the above and all substitutions for, additions, attachments, accessories, accessions and improvements to and replacements, products, proceeds and insurance proceeds of any or all of the foregoing.

EXHIBIT B-1

Loan Payment Request Form

Fax To:

Date: _____

LOAN PAYMENT:

BIONANO GENOMICS, INC.

From Account # _____ To Account # _____
(Deposit Account #) (Loan Account #)
Principal \$ _____ and/or Interest \$ _____
Authorized Signature: _____ Phone Number: _____
Print Name/Title: _____

LOAN ADVANCE:

Complete Outgoing Wire Request section below if all or a portion of the funds from this loan advance are for an outgoing wire.

From Account # _____ To Account # _____
(Loan Account #) (Deposit Account #)
Amount of Advance \$ _____

All Borrower's representations and warranties in the Loan and Security Agreement are true, correct and complete in all material respects on the date of the request for an advance; provided, however, that such materiality qualifier shall not be applicable to any representations and warranties that already are qualified or modified by materiality in the text thereof; and provided, further that those representations and warranties expressly referring to a specific date shall be true, accurate and complete in all material respects as of such date:

Authorized Signature: _____ Phone Number: _____
Print Name/Title: _____

OUTGOING WIRE REQUEST:

Complete only if all or a portion of funds from the loan advance above is to be wired.

Beneficiary Name: _____ Amount of Wire: \$ _____
Beneficiary Bank: _____ Account Number: _____
City and State: _____
Beneficiary Bank Transit (ABA) #: _____ Beneficiary Bank Code (Swift, Sort, Chip, etc.): _____
(For International Wire Only)
Intermediary Bank: _____ Transit (ABA) #: _____
For Further Credit to: _____

Special Instruction: _____
By signing below, I (we) acknowledge and agree that my (our) funds transfer request shall be processed in accordance with and subject to the terms and conditions set forth in the agreements(s) covering funds transfer service(s), which agreements(s) were previously received and executed by me (us).

Authorized Signature: _____ 2nd Signature (if required): _____
Print Name/Title: _____ Print Name/Title: _____
Telephone #: _____ Telephone #: _____

EXHIBIT B-2

Form of Disbursement Letter

[see attached]

DISBURSEMENT LETTER

[DATE]

The undersigned, being the duly elected and acting _____ of BIONANO GENOMICS, INC., a Delaware corporation (“**Borrower**”), does hereby certify to **INNOVATUS LIFE SCIENCES LENDING FUND I, LP** (“**Innovatus**” and “**Lender**”), as collateral agent (the “**Collateral Agent**”) in connection with that certain Loan and Security Agreement dated as of [DATE], by and among Borrower, Collateral Agent and the Lenders from time to time party thereto (the “**Loan Agreement**”; with other capitalized terms used below having the meanings ascribed thereto in the Loan Agreement) that:

1. The representations and warranties made by Borrower in Section 5 of the Loan Agreement and in the other Loan Documents are true and correct in all material respects as of the date hereof.
2. No event or condition has occurred that would constitute an Event of Default under the Loan Agreement or any other Loan Document.
3. Borrower is in compliance with the covenants and requirements contained in Sections 4, 6 and 7 of the Loan Agreement.
4. All conditions referred to in Section 3 of the Loan Agreement to the making of the Credit Extension to be made on or about the date hereof have been satisfied or waived by Collateral Agent.
5. No Material Adverse Change has occurred.
6. The undersigned is a Responsible Officer.

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7. The proceeds of the Term [A-1][A-2][B] Loan shall be disbursed as follows:

Disbursement from Innovatus:	
Loan Amount	\$ _____
Plus:	
—Deposit Received	\$ _____
Less:	
—Facility Fee	(\$ _____)
—Existing Debt Payoff to be remitted to MidCap Financial Trust per the Payoff Letter dated March [], 2019	(\$ _____)
[—Interim Interest	(\$ _____)]
—Lender’s Legal Fees (Greenberg Traurig, LLP)	(\$ _____)*
—Lender’s IP Due Diligence Fees (Leason Ellis LLP)	(\$ _____)
—Lender’s Technology Due Diligence Fees (Equitas Life Sciences, LLC)	(\$ _____)
—Lender’s Management Background Check Fees (Exiger)	(\$ _____)
—Lender’s Expert Calls (Coleman Research Group)	(\$ _____)
—Lender’s Expert Calls (AlphaSights)	(\$ _____)
—Lender’s T&E	(\$ _____)
Net Proceeds due from Innovatus:	\$ _____
TOTAL TERM [A-1][A-2][B] LOAN NET PROCEEDS FROM INNOVATUS	\$ _____

8. The [initial][Term Loan][Term A-1 Loan][Term A-2 Loan][Term B Loan] shall amortize in accordance with the Loan Interest Rate And Payment Of Principal schedule attached as Annex Y (as amended or restated from time to time) to the Loan Agreement.

9. The aggregate net proceeds of the Term Loans shall be transferred to the Designated Deposit Account as follows:

Account Name: [BIONANO GENOMICS, INC.]

Bank Name: _____

Bank Address: _____

Account Number: _____

ABA Number: _____

[Balance of Page Intentionally Left Blank]

* Legal fees and costs are through the Effective Date. Post-closing legal fees and costs, payable after the Effective Date, to be invoiced and paid post-closing.

Dated as of the date first set forth above.

BORROWER:

BIONANO GENOMICS, INC.

By _____
Name: _____
Title: _____

COLLATERAL AGENT AND LENDER:

INNOVATUS LIFE SCIENCES LENDING FUND I, LP

By: Innovatus Life Sciences GP, LP
Its: General Partner

By _____
Name: _____
Title: _____

EXHIBIT C

Compliance Certificate

TO: INNOVATUS LIFE SCIENCES LENDING FUND I, LP, as Collateral Agent and Lender
EAST WEST BANK, as Lender

FROM: BIONANO GENOMICS, INC., as Borrower

The undersigned authorized officer (“**Officer**”) of BIONANO GENOMICS, INC. (“**Borrower**”), hereby certifies that in accordance with the terms and conditions of the Loan and Security Agreement dated as of [DATE], by and among Borrower, Collateral Agent, and the Lenders from time to time party thereto (the “**Loan Agreement**,” capitalized terms used but not otherwise defined herein shall have the meanings given them in the Loan Agreement),

- (a) Borrower is in complete compliance for the period ending _____ with all required covenants except as noted below;
- (b) There are no Defaults or Events of Default, except as noted below;
- (c) Except as noted below, all representations and warranties of Borrower stated in the Loan Documents are true and correct in all material respects on this date and for the period described in (a), above; provided, however, that such materiality qualifier shall not be applicable to any representations and warranties that already are qualified or modified by materiality in the text thereof; and provided, further that those representations and warranties expressly referring to a specific date shall be true, accurate and complete in all material respects as of such date.
- (d) Borrower, and each of Borrower’s Subsidiaries, has timely filed all required tax returns and reports, Borrower, and each of Borrower’s Subsidiaries, has timely paid all foreign, federal, state, and local taxes, assessments, deposits and contributions owed by Borrower, or Subsidiary, except as otherwise permitted pursuant to the terms of Section 5.8 of the Loan Agreement;
- (e) No Liens have been levied or claims made against Borrower or any of its Subsidiaries relating to unpaid employee payroll or benefits of which Borrower has not previously provided written notification to Collateral Agent and the Lenders.

Attached are the required documents, if any, supporting our certification(s). The Officer, on behalf of Borrower, further certifies that the attached financial statements are prepared in accordance with Generally Accepted Accounting Principles (GAAP) and are consistently applied from one period to the next except as explained in an accompanying letter or footnotes and except, in the case of unaudited financial statements, for the absence of footnotes and subject to year-end audit adjustments as to the interim financial statements.

Please indicate compliance status since the last Compliance Certificate by circling Yes, No, or N/A under “Complies” column.

	Reporting Covenant	Requirement	Actual	Complies	
1)	Financial statements	Monthly within 30 days and quarterly within 45 days	Yes	No	N/A
2)	Annual (CPA Audited) statements	Within 120 days after FYE	Yes	No	N/A
3)	Annual Financial Projections/Budget (prepared on a monthly basis)	Annually (within earlier 10 days of approval or 45 days of FYE), and when revised (no later than 7 days of approval)	Yes	No	N/A
4)	8-K, 10-K and 10-Q Filings	If applicable, within 5 days of filing	Yes	No	N/A

5)	Month-end account statements	Monthly within 30 days		Yes	No	N/A
6)	Compliance Certificate	Monthly within 30 days		Yes	No	N/A
7)	IP Report	When required		Yes	No	N/A
8)	Total amount of Borrower's cash and cash equivalents at the last day of the measurement period		\$_____	Yes	No	N/A
9)	Total amount of Borrower's Subsidiaries' cash and cash equivalents at the last day of the measurement period		\$_____	Yes	No	N/A
10)	Loan confirmation submitted to the fund administrator for Innovatus Life Sciences Lending Fund I, LP (see Exhibit C-2 to the Loan Agreement)			Yes	No	N/A
11)	Perfection Certificate	Quarterly within 45 days		Yes	No	N/A
12)	Borrowing Base Certificate	Monthly within 30 days		Yes	No	N/A
13)	A/R & A/P agings	If applicable		Yes	No	N/A
	Financial Covenant	Requirement	Actual		Complies	
1)	Minimum TTM Revenue	FQs ending in 2019, 85% of Management Plan, FQs thereafter, 75% of Management Plan	____%	Yes	No	N/A
2)	Minimum Liquidity	Greater of \$3,000,0000 or trailing 3 months cash burn <i>less</i> capacity under the Revolving Line; provided, however, must not be less than Two Million Dollars (\$2,000,000.00)	\$_____	Yes	No	N/A

Negative Covenant Compliance

		Negative Covenant		Complies	
1)	Dispositions (§ 7.1)		Yes	No	N/A
2)	Changes in Business, Management, Ownership, or Business Locations (§ 7.2)		Yes	No	N/A
3)	Mergers or Acquisitions (§ 7.3)		Yes	No	N/A
4)	Indebtedness (§ 7.4)		Yes	No	N/A
5)	Encumbrance (§ 7.5)		Yes	No	N/A
6)	Maintenance of Collateral Accounts (§ 7.6)		Yes	No	N/A
7)	Restricted Payments (§ 7.7)		Yes	No	N/A

8)	Investments (§ 7.8)	Yes	No	N/A
9)	Transactions with Affiliates (§ 7.9)	Yes	No	N/A
10)	Subordinated Debt (§ 7.10)	Yes	No	N/A
11)	Compliance (§ 7.11)	Yes	No	N/A
12)	Compliance with Anti-Terrorism Laws (§ 7.12)	Yes	No	N/A
13)	Material Agreements (§ 7.13)	Yes	No	N/A

Deposit and Securities Accounts

(Please list all accounts; attach separate sheet if additional space needed)

	Institution Name	Account Number	New Account?		Account Control Agreement in place?	
			Yes	No	Yes	No
1)			Yes	No	Yes	No
2)			Yes	No	Yes	No
3)			Yes	No	Yes	No
4)			Yes	No	Yes	No

Other Matters

1)	Have there been any changes in any Key Person since the last Compliance Certificate?	Yes	No
2)	Have there been any transfers/sales/disposals/retirement of Collateral or IP prohibited by the Loan Agreement?	Yes	No
3)	Have there been any new or pending claims or causes of action against Borrower that involve more than Two Hundred Fifty Thousand Dollars (\$250,000.00)?	Yes	No
4)	Have there been any amendments of or other changes to the capitalization table of Borrower and to the Operating Documents of Borrower or any of its Subsidiaries? If yes, provide copies of any such amendments or changes with this Compliance Certificate.	Yes	No
5)	Has Borrower or any Subsidiary entered into or amended any Material Agreement? If yes, please explain and provide a copy of the Material Agreement(s) and/or amendment(s).	Yes	No
6)	Has Borrower provided the Collateral Agent with all notices required to be delivered under Sections 6.2(a) and 6.2(b) of the Loan Agreement?	Yes	No
7)	Have there been any material updates to the contents of the Perfection Certificate last delivered? If yes, please explain.	Yes	No

Exceptions

Please explain any exceptions with respect to the certification above: (If no exceptions exist, state "No exceptions." Attach separate sheet if additional space needed.)

BIONANO GENOMICS, INC.

By: _____
Name: _____
Title: _____
Date: _____

COLLATERAL AGENT USE ONLY

Received by: _____ Date: _____

Verified by: _____ Date: _____

Compliance Status: Yes No

Exhibit C-2

Loan Confirmation

In accordance with the loan documents, Innovatus Life Sciences Lending Fund I, LP and Innovatus Life Sciences Offshore Fund I, LP (collectively, the "Funds"), managed by Innovatus Capital Partners, LLC, please complete the information below on a quarterly basis and sign and date this confirmation. Please then send directly to the Funds administrator, SS&C Technologies Inc., the following information related to the Funds' total investment in Bionano Genomics, Inc.:

- 1) Please provide the following information as it relates to the Funds (Include: Date, Loan Description, Principal Outstanding): Please see table below

Date – For the Quarter Ended	Loan Description	Principal Outstanding
Total		

Please sign, date, and email a copy of your response to SS&C Technologies at innovatuscp.pe@sscinc.com and copy kbergen@innovatuscp.com no later than 30 days after quarter end.

CONFIRMATION:

Signature: _____
Print Name: _____
Title: _____
Date: _____
Phone: _____

EXHIBIT D

BORROWING BASE CERTIFICATE

Form to be provided by Bank upon the completion of successful and satisfactory (to Bank) collateral audit of Borrower by Bank

EXHIBIT E

Form of Secured Promissory Note

[see attached]

SECURED PROMISSORY NOTE
(Term [A-1][A-2][B] Loan)

§

Dated: [DATE]

FOR VALUE RECEIVED, the undersigned, BIONANO GENOMICS, INC., a Delaware corporation (“**Borrower**”) HEREBY PROMISES TO PAY to the order of [INNOVATUS LIFE SCIENCES LENDING FUND I, LP][EAST WEST BANK] (“**Lender**”) the principal amount of [] MILLION DOLLARS (\$) or such lesser amount as shall equal the outstanding principal balance of the Term [A-1][A-2][B] Loan made to Borrower by Lender, plus interest on the aggregate unpaid principal amount of such Term [A-1][A-2][B] Loan, at the rates and in accordance with the terms of the Loan and Security Agreement dated [DATE] by and among Borrower, Lender, INNOVATUS LIFE SCIENCES LENDING FUND I, LP, as Collateral Agent, and the other Lenders from time to time party thereto (as amended, restated, supplemented or otherwise modified from time to time, the “**Loan Agreement**”). If not sooner paid, the entire principal amount and all accrued and unpaid interest hereunder shall be due and payable on the Maturity Date as set forth in the Loan Agreement. Any capitalized term not otherwise defined herein shall have the meaning attributed to such term in the Loan Agreement.

Principal, interest and all other amounts due with respect to the Term [A-1][A-2][B] Loan, are payable in lawful money of the United States of America to Lender as set forth in the Loan Agreement and this Secured Promissory Note (this “**Note**”). The principal amount of this Note and the interest rate applicable thereto, and all payments made with respect thereto, shall be recorded by Lender and, prior to any transfer hereof, endorsed on the grid attached hereto which is part of this Note.

The Loan Agreement, among other things, (a) provides for the making of a secured Term [A-1][A-2][B] Loan by Lender to Borrower, and (b) contains provisions for acceleration of the maturity hereof upon the happening of certain stated events.

This Note may not be prepaid except as set forth in Section 2.2 (c) and Section 2.2(d) of the Loan Agreement.

This Note and the obligation of Borrower to repay the unpaid principal amount of the Term [A-1][A-2][B] Loan, interest on the Term [A-1][A-2][B] Loan and all other amounts due Lender under the Loan Agreement is secured under the Loan Agreement.

Presentment for payment, demand, notice of protest and all other demands and notices of any kind in connection with the execution, delivery, performance and enforcement of this Note are hereby waived.

Borrower shall pay all reasonable fees and expenses, including, without limitation, reasonable attorneys’ fees and costs, incurred by Lender in the enforcement or attempt to enforce any of Borrower’s obligations hereunder not performed when due.

This Note shall be governed by, and construed and interpreted in accordance with, the internal laws of the State of New York.

The ownership of an interest in this Note shall be registered on a record of ownership maintained by Lender or its agent. Notwithstanding anything else in this Note to the contrary, the right to the principal of, and stated interest on, this Note may be transferred only if the transfer is registered on such record of ownership and the transferee is identified as the owner of an interest in the obligation. Borrower shall be entitled to treat the registered holder of this Note (as recorded on such record of ownership) as the owner in fact thereof for all purposes and shall not be bound to recognize any equitable or other claim to or interest in this Note on the part of any other person or entity.

[Balance of Page Intentionally Left Blank]

IN WITNESS WHEREOF, Borrower has caused this Note to be duly executed by one of its officers thereunto duly authorized on the date hereof.

BORROWER:

BIONANO GENOMICS, INC.

By _____
Name: _____
Title: _____

**SECURED PROMISSORY NOTE
(Revolving Line)**

\$5,000,000.00

Dated: [DATE]

FOR VALUE RECEIVED, the undersigned, BIONANO GENOMICS, INC., a Delaware corporation (“**Borrower**”) HEREBY PROMISES TO PAY to the order of EAST WEST BANK (“**Lender**”) the principal amount of FIVE MILLION DOLLARS (\$5,000,000.00) or such lesser amount as shall equal the outstanding principal balance of the Revolving Line made to Borrower by Lender, plus interest on the aggregate unpaid principal amount of such Revolving Line, at the rates and in accordance with the terms of the Loan and Security Agreement dated [DATE] by and among Borrower, Lender, INNOVATUS LIFE SCIENCES LENDING FUND I, LP, as Collateral Agent, and the other Lenders from time to time party thereto (as amended, restated, supplemented or otherwise modified from time to time, the “**Loan Agreement**”). If not sooner paid, the entire principal amount and all accrued and unpaid interest hereunder shall be due and payable on the Maturity Date as set forth in the Loan Agreement. Any capitalized term not otherwise defined herein shall have the meaning attributed to such term in the Loan Agreement.

Principal, interest and all other amounts due with respect to the Revolving Line, are payable in lawful money of the United States of America to Lender as set forth in the Loan Agreement and this Secured Promissory Note (this “**Note**”). The principal amount of this Note and the interest rate applicable thereto, and all payments made with respect thereto, shall be recorded by Lender and, prior to any transfer hereof, endorsed on the grid attached hereto which is part of this Note.

The Loan Agreement, among other things, (a) provides for the making of secured Advances by Lender to Borrower, and (b) contains provisions for acceleration of the maturity hereof upon the happening of certain stated events.

This Note may not be prepaid except as set forth in Section 2.2 (c) and Section 2.2(d) of the Loan Agreement.

This Note and the obligation of Borrower to repay the unpaid principal amount of the Revolving Line, interest on the Revolving Line and all other amounts due Lender under the Loan Agreement is secured under the Loan Agreement.

Presentment for payment, demand, notice of protest and all other demands and notices of any kind in connection with the execution, delivery, performance and enforcement of this Note are hereby waived.

Borrower shall pay all reasonable fees and expenses, including, without limitation, reasonable attorneys’ fees and costs, incurred by Lender in the enforcement or attempt to enforce any of Borrower’s obligations hereunder not performed when due.

This Note shall be governed by, and construed and interpreted in accordance with, the internal laws of the State of New York.

The ownership of an interest in this Note shall be registered on a record of ownership maintained by Lender or its agent. Notwithstanding anything else in this Note to the contrary, the right to the principal of, and stated interest on, this Note may be transferred only if the transfer is registered on such record of ownership and the transferee is identified as the owner of an interest in the obligation. Borrower shall be entitled to treat the registered holder of this Note (as recorded on such record of ownership) as the owner in fact thereof for all purposes and shall not be bound to recognize any equitable or other claim to or interest in this Note on the part of any other person or entity.

[Balance of Page Intentionally Left Blank]

IN WITNESS WHEREOF, Borrower has caused this Note to be duly executed by one of its officers thereunto duly authorized on the date hereof.

BORROWER:

BIONANO GENOMICS, INC.

By _____
Name: _____
Title: _____

CORPORATE BORROWING CERTIFICATE

BORROWER: BIONANO GENOMICS, INC., a Delaware corporation

DATE: [DATE]

LENDERS: INNOVATUS LIFE SCIENCES LENDING FUND I, LP, as Collateral Agent and Lender
EAST WEST BANK, as Lender

I hereby certify as follows, as of the date set forth above:

1. I am the Secretary, Assistant Secretary or other officer of Borrower. My title is as set forth below.
2. Borrower's exact legal name is set forth above. Borrower is a corporation existing under the laws of the State of Delaware.
3. Attached hereto as Exhibit A and Exhibit B, respectively, are true, correct and complete copies of (i) Borrower's Articles/Certificate of Incorporation (including amendments), as filed with the Secretary of State of the state in which Borrower is incorporated as set forth in paragraph 2 above; and (ii) Borrower's bylaws. Neither such Articles/Certificate of Incorporation nor such bylaws have been amended, annulled, rescinded, revoked or supplemented, and such Articles/Certificate of Incorporation and such bylaws remain in full force and effect as of the date hereof.
4. The following resolutions were duly and validly adopted by Borrower's Board of Directors at a duly held meeting of such directors (or pursuant to a unanimous written consent or other authorized corporate action). Such resolutions are in full force and effect as of the date hereof and have not been in any way modified, repealed, rescinded, amended or revoked, and the Lenders may rely on them until each Lender receives written notice of revocation from Borrower.

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RESOLVED, that **any one** of the following officers or employees of Borrower, whose names, titles and signatures are below, may act on behalf of Borrower:

<u>Name</u>	<u>Title</u>	<u>Signature</u>	<u>Authorized to Add or Remove Signatories</u>
_____	_____	_____	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>
_____	_____	_____	<input type="checkbox"/>

RESOLVED FURTHER, that **any one** of the persons designated above with a checked box beside his or her name may, from time to time, add or remove any individuals to and from the above list of persons authorized to act on behalf of Borrower.

RESOLVED FURTHER, that such individuals may, on behalf of Borrower:

Borrow Money. Borrow money from the Lenders.

Execute Loan Documents. Execute any loan documents any Lender requires.

Grant Security. Grant Collateral Agent a security interest in any of Borrower's assets.

Negotiate Items. Negotiate or discount all drafts, trade acceptances, promissory notes, or other indebtedness in which Borrower has an interest and receive cash or otherwise use the proceeds.

[Issue Warrants. Issue warrants for Borrower's capital stock.]

Further Acts. Designate other individuals to request advances, pay fees and costs and execute other documents or agreements (including documents or agreement that waive Borrower's right to a jury trial) they believe to be necessary to effectuate such resolutions.

RESOLVED FURTHER, that all acts authorized by the above resolutions and any prior acts relating thereto are ratified.

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5. The persons listed above are Borrower's officers or employees with their titles and signatures shown next to their names.

By: _____
Name: _____
Title: _____

*** *If the Secretary, Assistant Secretary or other certifying officer executing above is designated by the resolutions set forth in paragraph 4 as one of the authorized signing officers, this Certificate must also be signed by a second authorized officer or director of Borrower.*

I, the _____ of Borrower, hereby certify as to paragraphs 1 through 5 above, as
[print title]
of the date set forth above.

By: _____
Name: _____
Title: _____

[Signature Page to Corporate Borrowing Certificate]

EXHIBIT A

Articles/Certificate of Incorporation (including amendments)

[see attached]

EXHIBIT B

Bylaws

[see attached]

ANNEX I

Collateral Agent and Lender Terms

1. Appointment of Collateral Agent.

(a) Each Lender hereby appoints INNOVATUS LIFE SCIENCES LENDING FUND I, LP (together with any successor Collateral Agent pursuant to Section 7 of this Annex I) as Collateral Agent under the Loan Documents and authorizes Collateral Agent to (i) execute and deliver the Loan Documents and accept delivery thereof on its behalf from Borrower, (ii) take such action on its behalf and to exercise all rights, powers and remedies and perform the duties as are expressly delegated to Collateral Agent under such Loan Documents and (iii) exercise such powers as are reasonably incidental thereto.

(b) Without limiting the generality of clause (a) above, Collateral Agent shall have the sole and exclusive right and authority (to the exclusion of the Lenders), and is hereby authorized, to (i) act as the disbursing and collecting agent for the Lenders with respect to all payments and collections arising in connection with the Loan Documents (including in any other bankruptcy, insolvency or similar proceeding), and each Person making any payment in connection with any Loan Document to any Lender is hereby authorized to make such payment to Collateral Agent, (ii) file and prove claims and file other documents necessary or desirable to allow the claims of Collateral Agent and Lenders with respect to any Obligation in any bankruptcy, insolvency or similar proceeding (but not to vote, consent or otherwise act on behalf of such Lender), (iii) act as collateral agent for Collateral Agent and each Lender for purposes of the perfection of all Liens created by the Loan Documents and all other purposes stated therein, (iv) manage, supervise and otherwise deal with the Collateral, (v) take such other action as is necessary or desirable to maintain the perfection and priority of the Liens created or purported to be created by the Loan Documents, (vi) except as may be otherwise specified in any Loan Document, exercise all remedies given to Collateral Agent and the other Lenders with respect to the Borrower and/or the Collateral, whether under the Loan Documents, applicable Requirements of Law or otherwise and (vii) execute any amendment, consent or waiver under the Loan Documents on behalf of any Lender that has consented in writing to such amendment, consent or waiver; provided, however, that Collateral Agent hereby appoints, authorizes and directs each Lender to act as collateral sub-agent for Collateral Agent and the Lenders for purposes of the perfection of all Liens with respect to the Collateral, including any Deposit Account maintained by Borrower with, and cash and Cash Equivalents held by, such Lender, and may further authorize and direct the Lenders to take further actions as collateral sub-agents for purposes of enforcing such Liens or otherwise to transfer the Collateral subject thereto to Collateral Agent, and each Lender hereby agrees to take such further actions to the extent, and only to the extent, so authorized and directed. Collateral Agent may, upon any term or condition it specifies, delegate or exercise any of its rights, powers and remedies under, and delegate or perform any of its duties or any other action with respect to, any Loan Document by or through any trustee, co-agent, employee, attorney-in-fact and any other Person (including any Lender). Any such Person shall benefit from this Annex I to the extent provided by Collateral Agent.

(c) Under the Loan Documents, Collateral Agent (i) is acting solely on behalf of the Lenders, with duties that are entirely administrative in nature, notwithstanding the use of the defined term "Collateral Agent", the terms "agent", "Collateral Agent" and "collateral agent" and similar terms in any Loan Document to refer to Collateral Agent, which terms are used for title purposes only, (ii) is not assuming any obligation under any Loan Document other than as expressly set forth therein or any role as agent, fiduciary or trustee of or for any Lender or any other Person and (iii) shall have no implied functions, responsibilities, duties, obligations or other liabilities under any Loan Document, and each Lender, by accepting the benefits of the Loan Documents, hereby waives and agrees not to assert any claim against Collateral Agent based on the roles, duties and legal relationships expressly disclaimed in clauses (i) through (iii) above. Except as expressly set forth in the Loan Documents, Collateral Agent shall not have any duty to disclose, and shall not be liable for failure to disclose, any information relating to Borrower or any of its Subsidiaries that is communicated to or obtained by any other Lender or any of its Affiliates in any capacity.

2. Binding Effect; Use of Discretion; E-Systems.

(a) Each Lender, by accepting the benefits of the Loan Documents, agrees that (i) any action taken by Collateral Agent or Required Lenders (or, if expressly required in any Loan Document, a greater proportion of the Lenders) in accordance with the provisions of the Loan Documents, (ii) any action taken by Collateral Agent in

reliance upon the instructions of Required Lenders (or, where so required, such greater proportion) and (iii) the exercise by Collateral Agent or Required Lenders (or, where so required, such greater proportion) of the powers set forth herein or therein, together with such other powers as are reasonably incidental thereto, shall be authorized and binding upon all of Lenders.

(b) If Collateral Agent shall request instructions from Required Lenders or all affected Lenders with respect to any act or action (including failure to act) in connection with any Loan Document, then Collateral Agent shall be entitled to refrain from such act or taking such action unless and until Collateral Agent shall have received instructions from Required Lenders or all affected Lenders, as the case may be, and Collateral Agent shall not incur liability to any Person by reason of so refraining. Collateral Agent shall be fully justified in failing or refusing to take any action under any Loan Document (i) if such action would, in the opinion of Collateral Agent, be contrary to any Requirement of Law or any Loan Document, (ii) if such action would, in the opinion of Collateral Agent, expose Collateral Agent to any potential liability under any Requirement of Law or (iii) if Collateral Agent shall not first be indemnified to its satisfaction against any and all liability and expense which may be incurred by it by reason of taking or continuing to take any such action. Without limiting the foregoing, no Lender shall have any right of action whatsoever against Collateral Agent as a result of Collateral Agent acting or refraining from acting under any Loan Document in accordance with the instructions of Required Lenders or all affected Lenders, as applicable.

(c) Collateral Agent is hereby authorized by Borrower and each Lender to establish procedures (and to amend such procedures from time to time) to facilitate administration and servicing of the Term Loan and other matters incidental thereto. Without limiting the generality of the foregoing, Collateral Agent is hereby authorized to establish procedures to make available or deliver, or to accept, notices, documents (including, without limitation, borrowing base certificates) and similar items on, by posting to or submitting and/or completion, on E-Systems. Borrower and each Lender acknowledges and agrees that the use of transmissions via an E-System or electronic mail is not necessarily secure and that there are risks associated with such use, including risks of interception, disclosure and abuse, and Borrower and each Lender assumes and accepts such risks by hereby authorizing the transmission via E-Systems or electronic mail. Each "e-signature" on any such posting shall be deemed sufficient to satisfy any requirement for a "signature", and each such posting shall be deemed sufficient to satisfy any requirement for a "writing", in each case including pursuant to any Loan Document, any applicable provision of any Code, the federal Uniform Electronic Transactions Act, the Electronic Signatures in Global and National Commerce Act and any substantive or procedural Requirement of Law governing such subject matter. All uses of an E-System shall be governed by and subject to, in addition to this Section, the separate terms, conditions and privacy policy posted or referenced in such E-System (or such terms, conditions and privacy policy as may be updated from time to time, including on such E-System) and related contractual obligations executed by Collateral Agent, Borrower and/or Lenders in connection with the use of such E-System. ALL E-SYSTEMS AND ELECTRONIC TRANSMISSIONS SHALL BE PROVIDED "AS IS" AND "AS AVAILABLE". NO REPRESENTATION OR WARRANTY OF ANY KIND IS MADE BY AGENT, ANY LENDER OR ANY OF THEIR RELATED PERSONS IN CONNECTION WITH ANY E-SYSTEMS.

3. Collateral Agent's Reliance, Etc. Collateral Agent may, without incurring any liability hereunder, (a) consult with any of its Related Persons and, whether or not selected by it, any other advisors, accountants and other experts (including advisors to, and accountants and experts engaged by, Borrower) and (b) rely and act upon any document and information (including those transmitted by electronic transmission) and any telephone message or conversation, in each case believed by it to be genuine and transmitted, signed or otherwise authenticated by the appropriate parties. None of Collateral Agent and its Related Persons shall be liable for any action taken or omitted to be taken by any of them under or in connection with any Loan Document, and each Lender and Borrower hereby waives and shall not assert (and Borrower shall cause its Subsidiaries to waive and agree not to assert) any right, claim or cause of action based thereon, except to the extent of liabilities resulting from the gross negligence or willful misconduct of Collateral Agent or, as the case may be, such Related Person (each as determined in a final, non-appealable judgment of a court of competent jurisdiction) in connection with the duties of Collateral Agent expressly set forth herein. Without limiting the foregoing, Collateral Agent: (i) shall not be responsible or otherwise incur liability for any action or omission taken in reliance upon the instructions of the Required Lenders or for the actions or omissions of any of its Related Persons, except to the extent that a court of competent jurisdiction determines in a final non-appealable judgment that Collateral Agent acted with gross negligence or willful misconduct in the selection of such Related Person; (ii) shall not be responsible to any Lender or other Person for the due execution, legality,

validity, enforceability, effectiveness, genuineness, sufficiency or value of, or the attachment, perfection or priority of any Lien created or purported to be created under or in connection with, any Loan Document; (iii) makes no warranty or representation, and shall not be responsible, to any Lender or other Person for any statement, document, information, representation or warranty made or furnished by or on behalf of Borrower or any Related Person of Borrower in connection with any Loan Document or any transaction contemplated therein or any other document or information with respect to Borrower, whether or not transmitted or (except for documents expressly required under any Loan Document to be transmitted to the Lenders) omitted to be transmitted by Collateral Agent, including as to completeness, accuracy, scope or adequacy thereof, or for the scope, nature or results of any due diligence performed by Collateral Agent in connection with the Loan Documents; and (iv) shall not have any duty to ascertain or to inquire as to the performance or observance of any provision of any Loan Document, whether any condition set forth in any Loan Document is satisfied or waived, as to the financial condition of Borrower or as to the existence or continuation or possible occurrence or continuation of any Event of Default, and shall not be deemed to have notice or Knowledge of such occurrence or continuation unless it has received a notice from Borrower or any Lender describing such Event of Default that is clearly labeled "notice of default" (in which case Collateral Agent shall promptly give notice of such receipt to all Lenders, provided that Collateral Agent shall not be liable to any Lender for any failure to do so, except to the extent that such failure is attributable to Collateral Agent's gross negligence or willful misconduct as determined by a final non-appealable judgment of a court of competent jurisdiction); and, for each of the items set forth in clauses (i) through (iv) above, each Lender and Borrower hereby waives and agrees not to assert (and Borrower shall cause its Subsidiaries to waive and agree not to assert) any right, claim or cause of action it might have against Collateral Agent based thereon.

4. Collateral Agent Individually. Collateral Agent and its Affiliates may make loans and other extensions of credit to, acquire stock and stock equivalents of, engage in any kind of business with, Borrower or any Affiliate of Borrower as though it were not acting as Collateral Agent and may receive separate fees and other payments therefor. To the extent Collateral Agent or any of its Affiliates makes the Term Loan or otherwise becomes a Lender hereunder, it shall have and may exercise the same rights and powers hereunder and shall be subject to the same obligations and liabilities as any other Lender and the terms "Lender", "Required Lender" and any similar terms shall, except where otherwise expressly provided in any Loan Document, include, without limitation, Collateral Agent or such Affiliate, as the case may be, in its individual capacity as Lender, or as one of the Required Lenders.

5. Lender Credit Decision; Collateral Agent Report. Each Lender acknowledges that it shall, independently and without reliance upon Collateral Agent, any Lender or any of their Related Persons or upon any document solely or in part because such document was transmitted by Collateral Agent or any of its Related Persons, conduct its own independent investigation of the financial condition and affairs of Borrower and make and continue to make its own credit decisions in connection with entering into, and taking or not taking any action under, any Loan Document or with respect to any transaction contemplated in any Loan Document, in each case based on such documents and information as it shall deem appropriate. Except for documents expressly required by any Loan Document to be transmitted by Collateral Agent to the Lenders, Collateral Agent shall not have any duty or responsibility to provide any Lender with any credit or other information concerning the business, prospects, operations, Property, financial and other condition or creditworthiness of Borrower or any Affiliate of Borrower that may come in to the possession of Collateral Agent or any of its Related Persons. Each Lender agrees that it shall not rely on any field examination, audit or other report provided by Collateral Agent or its Related Persons (a "Collateral Agent Report"). Each Lender further acknowledges that any Collateral Agent Report (a) is provided to the Lenders solely as a courtesy, without consideration, and based upon the understanding that such Lender will not rely on such Collateral Agent Report, (b) was prepared by Collateral Agent or its Related Persons based upon information provided by Borrower solely for Collateral Agent's own internal use, and (c) may not be complete and may not reflect all information and findings obtained by Collateral Agent or its Related Persons regarding the operations and condition of Borrower. Neither Collateral Agent nor any of its Related Persons makes any representations or warranties of any kind with respect to (i) any existing or proposed financing, (ii) the accuracy or completeness of the information contained in any Collateral Agent Report or in any related documentation, (iii) the scope or adequacy of Collateral Agent's and its Related Persons' due diligence, or the presence or absence of any errors or omissions contained in any Collateral Agent Report or in any related documentation, and (iv) any work performed by Collateral Agent or Collateral Agent's Related Persons in connection with or using any Collateral Agent Report or any related documentation. Neither Collateral Agent nor any of its Related Persons shall have any duties or obligations in connection with or as a result of any Lender receiving a copy of any Collateral Agent Report. Without limiting the generality of the foregoing, neither Collateral Agent nor any of its Related Persons shall have any responsibility for the

accuracy or completeness of any Collateral Agent Report, or the appropriateness of any Collateral Agent Report for any Lender's purposes, and shall have no duty or responsibility to correct or update any Collateral Agent Report or disclose to any Lender any other information not embodied in any Collateral Agent Report, including any supplemental information obtained after the date of any Collateral Agent Report. Each Lender releases, and agrees that it will not assert, any claim against Collateral Agent or its Related Persons that in any way relates to any Collateral Agent Report or arises out of any Lender having access to any Collateral Agent Report or any discussion of its contents, and agrees to indemnify and hold harmless Collateral Agent and its Related Persons from all claims, liabilities and expenses relating to a breach by any Lender arising out of such Lender's access to any Collateral Agent Report or any discussion of its contents.

6. Indemnification. Each Lender agrees to reimburse Collateral Agent and each of its Related Persons (to the extent not reimbursed by Borrower as required under the Loan Documents) promptly upon demand for its Pro Rata Share of any out-of-pocket costs and expenses (including, without limitation, fees, charges and disbursements of financial, legal and other advisors and any taxes or insurance paid in the name of, or on behalf of, Borrower) incurred by Collateral Agent or any of its Related Persons in connection with the preparation, syndication, execution, delivery, administration, modification, amendment, consent, waiver or enforcement of, or the taking of any other action (whether through negotiations, through any work-out, bankruptcy, restructuring or other legal or other proceeding (including, without limitation, preparation for and/or response to any subpoena or request for document production relating thereto) or otherwise) in respect of, or legal advice with respect to, its rights or responsibilities under, any Loan Document. Each Lender further agrees to indemnify Collateral Agent and each of its Related Persons (to the extent not reimbursed by Borrower as required under the Loan Documents), ratably according to its Pro Rata Share, from and against any and all liabilities, obligations, losses, damages, penalties, actions, judgments, suits, costs, expenses or disbursements of any kind or nature whatsoever (including, to the extent not indemnified by the applicable Lender, taxes, interests and penalties imposed for not properly withholding or backup withholding on payments made to or for the account of any Lender) that may be imposed on, incurred by, or asserted against Collateral Agent or any of its Related Persons in any matter relating to or arising out of, in connection with or as a result of any Loan Document or any other act, event or transaction related, contemplated in or attendant to any such document, or, in each case, any action taken or omitted to be taken by Collateral Agent or any of its Related Persons under or with respect to the foregoing; provided that no Lender shall be liable to Collateral Agent or any of its Related Persons under this Section 6 of this Annex I to the extent such liability has resulted from the gross negligence or willful misconduct of Collateral Agent or, as the case may be, such Related Person, as determined by a final non-appealable judgment of a court of competent jurisdiction. To the extent required by any applicable Requirement of Law, Collateral Agent may withhold from any payment to any Lender under a Loan Document an amount equal to any applicable withholding tax. If the Internal Revenue Service or any other Governmental Authority asserts a claim that Collateral Agent did not properly withhold tax from amounts paid to or for the account of any Lender for any reason, or if Collateral Agent reasonably determines that it was required to withhold taxes from a prior payment to or for the account of any Lender but failed to do so, such Lender shall promptly indemnify Collateral Agent fully for all amounts paid, directly or indirectly, by Collateral Agent as tax or otherwise, including penalties and interest, and together with all expenses incurred by Collateral Agent. Collateral Agent may offset against any payment to any Lender under a Loan Document, any applicable withholding tax that was required to be withheld from any prior payment to such Lender but which was not so withheld, as well as any other amounts for which Collateral Agent is entitled to indemnification from such Lender under the immediately preceding sentence of this Section 6 of this Annex I.

7. Successor Collateral Agent. Collateral Agent may resign at any time by delivering notice of such resignation to the Lenders and Borrower, effective on the date set forth in such notice or, if no such date is set forth therein, upon the date such notice shall be effective, in accordance with the terms of this Section 7 of this Annex I. If Collateral Agent delivers any such notice, the Required Lenders shall have the right to appoint a successor Collateral Agent. If, after 30 days after the date of the retiring Collateral Agent's notice of resignation, no successor Collateral Agent has been appointed by the Required Lenders that has accepted such appointment, then the retiring Collateral Agent may, on behalf of the Lenders, appoint a successor Collateral Agent from among the Lenders. Effective immediately upon its resignation, (a) the retiring Collateral Agent shall be discharged from its duties and obligations under the Loan Documents, (b) the Lenders shall assume and perform all of the duties of Collateral Agent until a successor Collateral Agent shall have accepted a valid appointment hereunder, (c) the retiring Collateral Agent and its Related Persons shall no longer have the benefit of any provision of any Loan Document other than with respect to any actions taken or omitted to be taken while such retiring Collateral Agent was, or because such Collateral Agent had been, validly acting as Collateral Agent under the Loan Documents, and (d) subject to its rights under Section

2(b) of this Annex I, the retiring Collateral Agent shall take such action as may be reasonably necessary to assign to the successor Collateral Agent its rights as Collateral Agent under the Loan Documents. Effective immediately upon its acceptance of a valid appointment as Collateral Agent, a successor Collateral Agent shall succeed to, and become vested with, all the rights, powers, privileges and duties of the retiring Collateral Agent under the Loan Documents.

8. Release of Collateral. Each Lender hereby consents to the release and hereby directs Collateral Agent to release (or in the case of clause (b)(ii) below, release or subordinate) the following:

(a) any Guarantor or Subsidiary “co-borrower” if all of the stock of such Subsidiary owned by Borrower is sold or transferred in a transaction permitted under the Loan Documents (including pursuant to a valid waiver or consent), to the extent that, after giving effect to such transaction, such Subsidiary would not be required to guaranty any Obligations pursuant to any Loan Document; and

(b) any Lien held by Collateral Agent for the benefit of itself and the Lenders against (i) any Collateral that is sold or otherwise disposed of by Borrower in a transaction permitted by the Loan Documents (including pursuant to a valid waiver or consent), (ii) any Collateral subject to a Lien that is expressly permitted under clause (c) of the definition of the term “Permitted Lien” and (iii) all of the Collateral and Borrower, upon (A) termination of all of the Commitments, (B) payment in full in cash of all of the Obligations that Collateral Agent has theretofore been notified in writing by the holder of such Obligation are then due and payable, and (C) to the extent requested by Collateral Agent, receipt by Collateral Agent and Lenders of liability releases from Borrower in form and substance acceptable to Collateral Agent (the satisfaction of the conditions in this clause (iii), the “**Termination Date**”).

9. Setoff and Sharing of Payments. In addition to any rights now or hereafter granted under any applicable requirement of law and not by way of limitation of any such rights, upon the occurrence and during the continuance of any Event of Default and subject to Section 10(d) of this Annex I, each Lender is hereby authorized at any time or from time to time upon the direction of Collateral Agent, without notice to Borrower or any other Person, any such notice being hereby expressly waived, to setoff and to appropriate and to apply any and all balances held by it at any of its offices for the account of Borrower (regardless of whether such balances are then due to Borrower) and any other properties or assets at any time held or owing by that Lender or that holder to or for the credit or for the account of Borrower against and on account of any of the Obligations that are not paid when due. Any Lender exercising a right of setoff or otherwise receiving any payment on account of the Obligations in excess of its Pro Rata Share thereof shall purchase for cash (and the other Lenders or holders shall sell) such participations in each such other Lender’s or holder’s Pro Rata Share of the Obligations as would be necessary to cause such Lender to share the amount so offset or otherwise received with each other Lender or holder in accordance with their respective Pro Rata Shares of the Obligations. Borrower agrees, to the fullest extent permitted by law, that (a) any Lender may exercise its right to offset with respect to amounts in excess of its Pro Rata Share of the Obligations and may purchase participations in accordance with the preceding sentence and (b) any Lender so purchasing a participation in the Term Loan made or other Obligations held by other Lenders or holders may exercise all rights of offset, bankers’ lien, counterclaim or similar rights with respect to such participation as fully as if such Lender or holder were a direct holder of the Term Loan and the other Obligations in the amount of such participation. Notwithstanding the foregoing, if all or any portion of the offset amount or payment otherwise received is thereafter recovered from the Lender that has exercised the right of offset, the purchase of participations by that Lender shall be rescinded and the purchase price restored without interest.

10. Advances; Payments; Non-Funding Lenders; Actions in Concert.

(a) Advances; Payments. If Collateral Agent receives any payment with respect to the Term Loan for the account of Lenders on or prior to 2:00 p.m. (New York time) on any Business Day, Collateral Agent shall pay to each applicable Lender such Lender’s Pro Rata Share of such payment on such Business Day. If Collateral Agent receives any payment with respect to the Term Loan for the account of Lenders after 2:00 p.m. (New York time) on any Business Day, Collateral Agent shall pay to each applicable Lender such Lender’s Pro Rata Share of such payment on the next Business Day.

(b) Return of Payments.

(i) If Collateral Agent pays an amount to a Lender under this Agreement in the belief or expectation that a related payment has been or will be received by Collateral Agent from Borrower and such related payment is not received by Collateral Agent, then Collateral Agent will be entitled to recover such amount (including interest accruing on such amount at the rate otherwise applicable to such Obligation) from such Lender on demand without setoff, counterclaim or deduction of any kind.

(ii) If Collateral Agent determines at any time that any amount received by Collateral Agent under any Loan Document must be returned to Borrower or paid to any other Person pursuant to any insolvency law or otherwise, then, notwithstanding any other term or condition of any Loan Document, Collateral Agent will not be required to distribute any portion thereof to any Lender. In addition, each Lender will repay to Collateral Agent on demand any portion of such amount that Collateral Agent has distributed to such Lender, together with interest at such rate, if any, as Collateral Agent is required to pay to Borrower or such other Person, without setoff, counterclaim or deduction of any kind and Collateral Agent will be entitled to set off against future distributions to such Lender any such amounts (with interest) that are not repaid on demand.

(c) Non-Funding Lenders.

(i) Unless Collateral Agent shall have received notice from a Lender prior to the date of any Term Loan that such Lender will not make available to Collateral Agent such Lender's Pro Rata Share of such Term Loan, Collateral Agent may assume that such Lender will make such amount available to it on the date of such Term Loan in accordance with Section 2(b) of this Annex I, and Collateral Agent may (but shall not be obligated to), in reliance upon such assumption, make available a corresponding amount for the account of Borrower on such date. If and to the extent that such Lender shall not have made such amount available to Collateral Agent, such Lender and Borrower severally agree to repay to Collateral Agent forthwith on demand such corresponding amount together with interest thereon, for each day from the day such amount is made available to Borrower until the day such amount is repaid to Collateral Agent, at a rate per annum equal to the interest rate applicable to the Obligation that would have been created when Collateral Agent made available such amount to Borrower had such Lender made a corresponding payment available. If such Lender shall repay such corresponding amount to Collateral Agent, the amount so repaid shall constitute such Lender's portion of such Term Loan for purposes of this Agreement.

(ii) To the extent that any Lender has failed to fund any Term Loan or any other payments required to be made by it under the Loan Documents after any such Term Loan is required to be made or such payment is due (a "**Non-Funding Lender**"), Collateral Agent shall be entitled to set off the funding short-fall against that Non-Funding Lender's Pro Rata Share of all payments received from Borrower. The failure of any Non-Funding Lender to make any Term Loan or any payment required by it hereunder shall not relieve any other Lender (each such other Lender, an "**Other Lender**") of its obligations to make such Term Loan, but neither any Other Lender nor Collateral Agent shall be responsible for the failure of any Non-Funding Lender to make such Term Loan or make any other payment required hereunder. Notwithstanding anything set forth herein to the contrary, a Non-Funding Lender shall not have any voting or consent rights under or with respect to any Loan Document or constitute a "Lender" (or be included in the calculation of "Required Lender" hereunder) for any voting or consent rights under or with respect to any Loan Document. At Borrower's request, Collateral Agent or a Person reasonably acceptable to Collateral Agent shall have the right with Collateral Agent's consent and in Collateral Agent's sole discretion (but Collateral Agent or any such Person shall have no obligation) to purchase from any Non-Funding Lender, and each Lender agrees that if it becomes a Non-Funding Lender it shall, at Collateral Agent's request, sell and assign to Collateral Agent or such Person, all of the Term Loan Commitment (if any), and all of the outstanding Term Loan of that Non-Funding Lender for an amount equal to the aggregate outstanding principal balance of the Term Loan held by such Non-Funding Lender and all accrued interest with respect thereto through the date of sale, such purchase and sale to be consummated pursuant to an executed assignment agreement in form and substance reasonably satisfactory to, and acknowledged by, Collateral Agent.

(d) Actions in Concert. Anything in this Agreement to the contrary notwithstanding, each Lender hereby agrees with each other Lender that no Lender shall take any action to protect or enforce its rights arising out of any Loan Document (including exercising any rights of setoff) without first obtaining the prior written consent of Collateral Agent or Required Lenders, it being the intent of Lenders that any such action to protect or enforce rights under any Loan Document shall be taken in concert and at the direction or with the consent of Collateral Agent or Required Lenders.

ANNEX X
MANAGEMENT PLAN
PLEASE SEE ATTACHED

ANNEX Y

**LOAN INTEREST RATE AND PAYMENT OF PRINCIPAL
(Term Loan)**

**PLEASE SEE ATTACHED
WHICH WILL BE UPDATED ON THE DATE OF THE FUNDING OF THE TERM A-1 LOAN**

Month	Beginning Date	Ending Date	Payment Date	Beginning Loan Balance	Prime Rate	Interest Rate	Interest Earned	PIK Interest	Cash Interest	Principal Amortization	Total Payment	Tranche A2/ B Funding	Ending Loan Balance
—	3/14/19	3/31/19		\$ 17,500,000.00	5.50%	10.25%	\$ 88,458.90	\$ 25,890.41	—	—	—	—	\$ 17,525,890.41
1	4/1/19	4/30/19	5/1/19	\$ 17,525,890.41	5.50%	10.25%	\$ 147,649.62	\$ 43,214.52	\$ 104,435.10	—	\$ 104,435.10	—	\$ 17,569,104.94
2	5/1/19	5/31/19	6/1/19	\$ 17,569,104.94	5.50%	10.25%	\$ 152,947.48	\$ 44,765.12	\$ 108,182.37	—	\$ 108,182.37	—	\$ 17,613,870.05
3	6/1/19	6/30/19	7/1/19	\$ 17,613,870.05	5.50%	10.25%	\$ 148,390.82	\$ 43,431.46	\$ 104,959.36	—	\$ 104,959.36	—	\$ 17,657,301.51
4	7/1/19	7/31/19	8/1/19	\$ 17,657,301.51	5.50%	10.25%	\$ 153,715.28	\$ 44,989.84	\$ 108,725.44	—	\$ 108,725.44	—	\$ 17,702,291.35
5	8/1/19	8/31/19	9/1/19	\$ 17,702,291.35	5.50%	10.25%	\$ 154,106.93	\$ 45,104.47	\$ 109,002.47	—	\$ 109,002.47	—	\$ 17,747,395.82
6	9/1/19	9/30/19	10/1/19	\$ 17,747,395.82	5.50%	10.25%	\$ 149,515.73	\$ 43,760.70	\$ 105,755.03	—	\$ 105,755.03	—	\$ 17,791,156.52
7	10/1/19	10/31/19	11/1/19	\$ 17,791,156.52	5.50%	10.25%	\$ 154,880.55	\$ 45,330.89	\$ 109,549.66	—	\$ 109,549.66	—	\$ 17,836,487.41
8	11/1/19	11/30/19	12/1/19	\$ 17,836,487.41	5.50%	10.25%	\$ 150,266.30	\$ 43,980.38	\$ 106,285.92	—	\$ 106,285.92	—	\$ 17,880,467.79
9	12/1/19	12/31/19	1/1/20	\$ 17,880,467.79	5.50%	10.25%	\$ 155,658.04	\$ 45,558.45	\$ 110,099.59	—	\$ 110,099.59	—	\$ 17,926,026.24
10	1/1/20	1/31/20	2/1/20	\$ 17,926,026.24	5.50%	10.25%	\$ 156,054.65	\$ 45,674.53	\$ 110,380.12	—	\$ 110,380.12	—	\$ 17,971,700.78
11	2/1/20	2/29/20	3/1/20	\$ 17,971,700.78	5.50%	10.25%	\$ 146,358.58	\$ 42,836.66	\$ 103,521.92	—	\$ 103,521.92	—	\$ 18,014,537.43
12	3/1/20	3/31/20	4/1/20	\$ 18,014,537.43	5.50%	10.25%	\$ 156,825.19	\$ 45,900.05	\$ 110,925.13	—	\$ 110,925.13	—	\$ 18,060,437.49
13	4/1/20	4/30/20	5/1/20	\$ 18,060,437.49	5.50%	10.25%	\$ 152,153.00	\$ 44,532.59	\$ 107,620.42	—	\$ 107,620.42	—	\$ 18,104,970.07
14	5/1/20	5/31/20	6/1/20	\$ 18,104,970.07	5.50%	10.25%	\$ 157,612.44	\$ 46,130.47	\$ 111,481.97	—	\$ 111,481.97	—	\$ 18,151,100.54
15	6/1/20	6/30/20	7/1/20	\$ 18,151,100.54	5.50%	10.25%	\$ 152,916.81	\$ 44,756.14	\$ 108,160.67	—	\$ 108,160.67	—	\$ 18,195,856.68
16	7/1/20	7/31/20	8/1/20	\$ 18,195,856.68	5.50%	10.25%	\$ 158,403.66	\$ 46,362.05	\$ 112,041.61	—	\$ 112,041.61	—	\$ 18,242,218.73
17	8/1/20	8/31/20	9/1/20	\$ 18,242,218.73	5.50%	10.25%	\$ 158,807.26	\$ 46,480.17	\$ 112,327.09	—	\$ 112,327.09	—	\$ 18,288,698.90
18	9/1/20	9/30/20	10/1/20	\$ 18,288,698.90	5.50%	10.25%	\$ 154,076.02	\$ 45,095.42	\$ 108,980.60	—	\$ 108,980.60	—	\$ 18,333,794.32
19	10/1/20	10/31/20	11/1/20	\$ 18,333,794.32	5.50%	10.25%	\$ 159,604.47	\$ 46,713.50	\$ 112,890.97	—	\$ 112,890.97	—	\$ 18,380,507.83
20	11/1/20	11/30/20	12/1/20	\$ 18,380,507.83	5.50%	10.25%	\$ 154,849.48	\$ 45,321.80	\$ 109,527.68	—	\$ 109,527.68	—	\$ 18,425,829.63
21	12/1/20	12/31/20	1/1/21	\$ 18,425,829.63	5.50%	10.25%	\$ 160,405.68	\$ 46,948.00	\$ 113,457.68	—	\$ 113,457.68	—	\$ 18,472,777.63
22	1/1/21	1/31/21	2/1/21	\$ 18,472,777.63	5.50%	10.25%	\$ 160,814.39	\$ 47,067.63	\$ 113,746.76	—	\$ 113,746.76	—	\$ 18,519,845.26
23	2/1/21	2/28/21	3/1/21	\$ 18,519,845.26	5.50%	10.25%	\$ 145,621.80	\$ 42,621.01	\$ 103,000.78	—	\$ 103,000.78	—	\$ 18,562,466.27
24	3/1/21	3/31/21	4/1/21	\$ 18,562,466.27	5.50%	10.25%	\$ 161,595.17	\$ 47,296.15	\$ 114,299.02	—	\$ 114,299.02	—	\$ 18,609,762.42
25	4/1/21	4/30/21	5/1/21	\$ 18,609,762.42	5.50%	10.25%	\$ 156,780.88	—	\$ 156,780.88	—	\$ 156,780.88	—	\$ 18,609,762.42
26	5/1/21	5/31/21	6/1/21	\$ 18,609,762.42	5.50%	10.25%	\$ 162,006.90	—	\$ 162,006.90	—	\$ 162,006.90	—	\$ 18,609,762.42
27	6/1/21	6/30/21	7/1/21	\$ 18,609,762.42	5.50%	10.25%	\$ 156,780.88	—	\$ 156,780.88	—	\$ 156,780.88	—	\$ 18,609,762.42
28	7/1/21	7/31/21	8/1/21	\$ 18,609,762.42	5.50%	10.25%	\$ 162,006.90	—	\$ 162,006.90	—	\$ 162,006.90	—	\$ 18,609,762.42
29	8/1/21	8/31/21	9/1/21	\$ 18,609,762.42	5.50%	10.25%	\$ 162,006.90	—	\$ 162,006.90	—	\$ 162,006.90	—	\$ 18,609,762.42
30	9/1/21	9/30/21	10/1/21	\$ 18,609,762.42	5.50%	10.25%	\$ 156,780.88	—	\$ 156,780.88	—	\$ 156,780.88	—	\$ 18,609,762.42
31	10/1/21	10/31/21	11/1/21	\$ 18,609,762.42	5.50%	10.25%	\$ 162,006.90	—	\$ 162,006.90	—	\$ 162,006.90	—	\$ 18,609,762.42
32	11/1/21	11/30/21	12/1/21	\$ 18,609,762.42	5.50%	10.25%	\$ 156,780.88	—	\$ 156,780.88	—	\$ 156,780.88	—	\$ 18,609,762.42
33	12/1/21	12/31/21	1/1/22	\$ 18,609,762.42	5.50%	10.25%	\$ 162,006.90	—	\$ 162,006.90	—	\$ 162,006.90	—	\$ 18,609,762.42
34	1/1/22	1/31/22	2/1/22	\$ 18,609,762.42	5.50%	10.25%	\$ 162,006.90	—	\$ 162,006.90	—	\$ 162,006.90	—	\$ 18,609,762.42
35	2/1/22	2/28/22	3/1/22	\$ 18,609,762.42	5.50%	10.25%	\$ 146,328.82	—	\$ 146,328.82	—	\$ 146,328.82	—	\$ 18,609,762.42
36	3/1/22	3/31/22	4/1/22	\$ 18,609,762.42	5.50%	10.25%	\$ 162,006.90	—	\$ 162,006.90	—	\$ 162,006.90	—	\$ 18,609,762.42
37	4/1/22	4/30/22	5/1/22	\$ 18,609,762.42	5.50%	10.25%	\$ 156,780.88	—	\$ 156,780.88	\$ 775,406.77	\$ 932,187.64	—	\$ 17,834,355.65
38	5/1/22	5/31/22	6/1/22	\$ 17,834,355.65	5.50%	10.25%	\$ 155,256.62	—	\$ 155,256.62	\$ 775,406.77	\$ 930,663.38	—	\$ 17,058,948.88
39	6/1/22	6/30/22	7/1/22	\$ 17,058,948.88	5.50%	10.25%	\$ 143,715.80	—	\$ 143,715.80	\$ 775,406.77	\$ 919,122.57	—	\$ 16,283,542.12
40	7/1/22	7/31/22	8/1/22	\$ 16,283,542.12	5.50%	10.25%	\$ 141,756.04	—	\$ 141,756.04	\$ 775,406.77	\$ 917,162.81	—	\$ 15,508,135.35
41	8/1/22	8/31/22	9/1/22	\$ 15,508,135.35	5.50%	10.25%	\$ 135,005.75	—	\$ 135,005.75	\$ 775,406.77	\$ 910,412.52	—	\$ 14,732,728.58
42	9/1/22	9/30/22	10/1/22	\$ 14,732,728.58	5.50%	10.25%	\$ 124,118.19	—	\$ 124,118.19	\$ 775,406.77	\$ 899,524.96	—	\$ 13,957,321.81
43	10/1/22	10/31/22	11/1/22	\$ 13,957,321.81	5.50%	10.25%	\$ 121,505.18	—	\$ 121,505.18	\$ 775,406.77	\$ 896,911.95	—	\$ 13,181,915.05
44	11/1/22	11/30/22	12/1/22	\$ 13,181,915.05	5.50%	10.25%	\$ 111,053.12	—	\$ 111,053.12	\$ 775,406.77	\$ 886,459.89	—	\$ 12,406,508.28
45	12/1/22	12/31/22	1/1/23	\$ 12,406,508.28	5.50%	10.25%	\$ 108,004.60	—	\$ 108,004.60	\$ 775,406.77	\$ 883,411.37	—	\$ 11,631,101.51
46	1/1/23	1/31/23	2/1/23	\$ 11,631,101.51	5.50%	10.25%	\$ 101,254.32	—	\$ 101,254.32	\$ 775,406.77	\$ 876,661.08	—	\$ 10,855,694.74
47	2/1/23	2/28/23	3/1/23	\$ 10,855,694.74	5.50%	10.25%	\$ 85,358.48	—	\$ 85,358.48	\$ 775,406.77	\$ 860,765.24	—	\$ 10,080,287.98
48	3/1/23	3/31/23	4/1/23	\$ 10,080,287.98	5.50%	10.25%	\$ 87,753.74	—	\$ 87,753.74	\$ 775,406.77	\$ 863,160.51	—	\$ 9,304,881.21
49	4/1/23	4/30/23	5/1/23	\$ 9,304,881.21	5.50%	10.25%	\$ 78,390.44	—	\$ 78,390.44	\$ 775,406.77	\$ 853,797.20	—	\$ 8,529,474.44
50	5/1/23	5/31/23	6/1/23	\$ 8,529,474.44	5.50%	10.25%	\$ 74,253.16	—	\$ 74,253.16	\$ 775,406.77	\$ 849,659.93	—	\$ 7,754,067.67
51	6/1/23	6/30/23	7/1/23	\$ 7,754,067.67	5.50%	10.25%	\$ 65,325.36	—	\$ 65,325.36	\$ 775,406.77	\$ 840,732.13	—	\$ 6,978,660.91
52	7/1/23	7/31/23	8/1/23	\$ 6,978,660.91	5.50%	10.25%	\$ 60,752.59	—	\$ 60,752.59	\$ 775,406.77	\$ 836,159.36	—	\$ 6,203,254.14
53	8/1/23	8/31/23	9/1/23	\$ 6,203,254.14	5.50%	10.25%	\$ 54,002.30	—	\$ 54,002.30	\$ 775,406.77	\$ 829,409.07	—	\$ 5,427,847.37
54	9/1/23	9/30/23	10/1/23	\$ 5,427,847.37	5.50%	10.25%	\$ 45,727.76	—	\$ 45,727.76	\$ 775,406.77	\$ 821,134.52	—	\$ 4,652,440.60
55	10/1/23	10/31/23	11/1/23	\$ 4,652,440.60	5.50%	10.25%	\$ 40,501.73	—	\$ 40,501.73	\$ 775,406.77	\$ 815,908.49	—	\$ 3,877,033.84
56	11/1/23	11/30/23	12/1/23	\$ 3,877,033.84	5.50%	10.25%	\$ 32,662.68	—	\$ 32,662.68	\$ 775,406.77	\$ 808,069.45	—	\$ 3,101,627.07
57	12/1/23	12/31/23	1/1/24	\$ 3,101,627.07	5.50%	10.25%	\$ 27,001.15	—	\$ 27,001.15	\$ 775,406.77	\$ 802,407.92	—	\$ 2,326,220.30
58	1/1/24	1/31/24	2/1/24	\$ 2,326,220.30	5.50%	10.25%	\$ 20,250.86	—	\$ 20,250.86	\$ 775,406.77	\$ 795,657.63	—	\$ 1,550,813.53
59	2/1/24	2/29/24	3/1/24	\$ 1,550,813.53	5.50%	10.25%	\$ 12,629.57	—	\$ 12,629.57	\$ 775,406.77	\$ 788,036.34	—	\$ 775,406.77
60	3/1/24	3/14/24	3/14/24	\$ 775,406.77	5.50%	10.25%	\$ 3,048.52	—	\$ 3,048.52	\$ 775,406.77	\$ 778,455.28	—	(\$ 0.00)

COMMON STOCK PURCHASE AGREEMENT

This **COMMON STOCK PURCHASE AGREEMENT** (this “*Agreement*”), dated as of March 14, 2019, is made by and among **BIONANO GENOMICS, INC.**, a Delaware corporation (the “*Company*”), **INNOVATUS LIFE SCIENCES LENDING FUND I, LP** and **INNOVATUS LIFE SCIENCES OFFSHORE FUND I, LP** (collectively, “*Purchaser*”).

RECITALS:

A. The Company and Purchaser are executing and delivering this Agreement in reliance upon the exemption from securities registration afforded by Section 4(a)(2) of the Securities Act.

B. Purchaser desires to purchase and the Company desires to sell, upon the terms and conditions stated in this Agreement, an aggregate of \$1,500,000 of Common Stock of the Company.

C. The capitalized terms used herein and not otherwise defined have the meanings given them in Article 6.

AGREEMENT

In consideration of the premises and the mutual covenants contained herein and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Company and Purchaser hereby agree as follows:

ARTICLE 1**PURCHASE AND SALE OF COMMON STOCK**

1.1 Purchase and Sale of Common Stock. At the Closing, the Company will issue and sell to Purchaser, and Purchaser will purchase from the Company, 406,504 shares of Common Stock (the “*Securities*” or the “*Shares*”), of which 312,758 shares shall be allocated to Innovatus Life Sciences Lending Fund I, LP and 93,746 shares shall be allocated to Innovatus Life Sciences Offshore Fund I, LP. The purchase price for each Share shall be \$3.69 (the “*Purchase Price*”).

1.2 Payment. At the Closing, the Company will instruct its transfer agent to credit Purchaser the Shares against delivery of the aggregate Purchase Price of \$1,500,000, of which \$1,154,078.74 shall be allocated to Innovatus Life Sciences Lending Fund I, LP and \$345,921.26 shall be allocated to Innovatus Life Sciences Offshore Fund I, LP, by wire transfer of immediately available funds in accordance with wire instructions provided by the Company to Purchaser prior to the Closing. The Company will promptly, and no later than one business day after Closing, provide evidence to Purchaser of the issuance of the Shares.

1.3 Closing Date. The closing of the transaction contemplated by this Agreement will take place on the date of this Agreement (the “*Closing Date*”) and the closing (the “*Closing*”) will be held at the offices of Cooley LLP, 4401 Eastgate Mall, San Diego, CA 92121 or at such other time and place as shall be agreed upon by the Company and Purchaser.

ARTICLE 2**REPRESENTATIONS AND WARRANTIES OF THE COMPANY**

Except as specifically contemplated by this Agreement, the Company hereby represents and warrants to Purchaser that:

2.1 Organization and Qualification. Each of the Company and its Subsidiaries has been duly organized as a corporation or other entity and is validly existing and in good standing under the laws of its jurisdiction of incorporation or

organization. Each of the Company and its Subsidiaries has full corporate power and authority to own its properties and conduct its business as currently conducted as described in the SEC Documents. Each of the Company and its Subsidiaries is duly qualified to do business and is in good standing in every jurisdiction in which the nature of the business conducted by it or property owned by it makes such qualification necessary, except where the failure to be so qualified or in good standing, as the case may be, would not reasonably be expected to have a Material Adverse Effect.

2.2 Authorization; Enforcement. The Company has all requisite corporate power and authority to enter into and to perform its obligations under this Agreement and the Registration Rights Agreement (together, the “*Transaction Documents*”), to consummate the transactions contemplated hereby and thereby and to issue the Securities in accordance with the terms hereof. The execution, delivery and performance of the Transaction Documents by the Company and the consummation by it of the transactions contemplated hereby and thereby (including the issuance of the Securities) have been duly authorized by the Company’s Board of Directors and no further consent or authorization of the Company, its Board of Directors, or its stockholders is required. Each Transaction Document has been duly executed by the Company and constitutes a legal, valid and binding obligation of the Company enforceable against the Company in accordance with its terms, except as enforceability may be limited by applicable bankruptcy, insolvency, reorganization, or moratorium or similar laws affecting creditors’ and contracting parties’ rights generally and except as enforceability may be subject to general principles of equity and except as rights to indemnity and contribution may be limited by state or federal securities laws or public policy underlying such laws.

2.3 Capitalization. The authorized capital stock of the Company, as of December 31, 2018, consisted of 200,000,000 shares of Common Stock, \$0.0001 par value per share, of which 10,055,072 shares were issued and outstanding and 10,000,000 shares of blank check Preferred Stock, \$0.0001 par value per share, none of which have been designated. All of the issued and outstanding shares of Common Stock have been duly authorized, validly issued, fully paid, and nonassessable. Options to purchase an aggregate of 1,282,847 shares of Common Stock were outstanding as of December 31, 2018. Except as disclosed in or contemplated by the SEC Documents, the Company does not have outstanding any options to purchase, or any preemptive rights or other rights to subscribe for or to purchase, any securities or obligations convertible into, or any contracts or commitments to issue or sell, shares of its capital stock or any such options, rights, convertible securities or obligations other than options granted under the Company’s stock option plans and its employee stock purchase plan. The Company’s Amended and Restated Certificate of Incorporation (the “*Certificate of Incorporation*”), as in effect on the date hereof, and the Company’s Amended and Restated Bylaws (the “*Bylaws*”) as in effect on the date hereof, are each filed as exhibits to the SEC Documents.

2.4 Issuance of Securities. The Shares are duly authorized and, upon issuance in accordance with the terms of this Agreement, will be validly issued, fully paid and non-assessable, free and clear of all liens, other than restrictions on transfer imposed by applicable securities laws, and will not be subject to preemptive rights or other similar rights of stockholders of the Company.

2.5 No Conflicts; Government Consents and Permits.

(a) The execution, delivery and performance of the Transaction Documents by the Company and the consummation by the Company of the transactions contemplated hereby and thereby (including the issuance of the Securities) will not (i) conflict with or result in a violation of any provision of its Certificate of Incorporation or Bylaws or require the approval of the Company’s stockholders, (ii) violate or conflict with, or result in a breach of any provision of, or constitute a default under, any agreement, indenture, or instrument to which the Company or any of its Subsidiaries is a party, or (iii) result in a violation of any law, rule, regulation, order, judgment or decree (including United States federal and state securities laws and regulations and regulations of any self-regulatory organizations to which the Company or its securities are subject) applicable to the Company or any of its Subsidiaries, except in the case of clauses (ii) and (iii) only, for such conflicts, breaches, defaults, and violations as would not reasonably be expected to have a Material Adverse Effect.

(b) The Company is not required to obtain any consent, authorization or order of, or make any filing or registration with, any court or governmental agency or any regulatory or self regulatory agency in order for it to execute,

deliver or perform any of its obligations under this Agreement in accordance with the terms hereof, or to issue and sell the Securities in accordance with the terms hereof other than (i) such as have been made or obtained, (ii) any filings required to be made under federal or state securities laws, and (iii) any required filings or notifications regarding the issuance or listing of additional shares with Nasdaq.

(c) The Company has all franchises, permits, licenses, and any similar authority necessary for the conduct of its business as now being conducted by it and as currently proposed to be conducted as disclosed in the SEC Documents, except for such franchise, permit, license or similar authority, the lack of which would not reasonably be expected to have a Material Adverse Effect. The Company has not received any actual notice of any proceeding relating to revocation or modification of any such franchise, permit, license, or similar authority except where such revocation or modification would not reasonably be expected to have a Material Adverse Effect.

2.6 SEC Documents, Financial Statements. The Company has timely filed all reports, schedules, forms, statements and other documents required to be filed by it with the SEC since January 1, 2018, pursuant to the reporting requirements of the Exchange Act (all of the foregoing filed prior to the date hereof and all exhibits included therein and financial statements and schedules thereto and documents incorporated by reference therein, being hereinafter referred to as the “**SEC Documents**”). Except as otherwise expressly stated herein, all references in this Agreement to information disclosed or described in the SEC Documents shall include the disclosure set forth on **Exhibit A** hereto to the extent such disclosure is filed with the SEC on a Form 8-K on or before 9:30 a.m., New York local time, on March 15, 2019. The Company is eligible to register its Common Stock for resale using Form S-1 promulgated under the Securities Act. The Company has delivered to Purchaser, or Purchaser has had access to, true and complete copies of the SEC Documents. As of their respective dates, the SEC Documents complied in all material respects with the requirements of the Exchange Act or the Securities Act, as the case may be, and the rules and regulations of the SEC promulgated thereunder applicable to the SEC Documents, and none of the SEC Documents, at the time they were filed with the SEC, contained any untrue statement of a material fact or omitted to state a material fact required to be stated therein or necessary in order to make the statements therein, in light of the circumstances under which they were made, not misleading. As of their respective dates, the Financial Statements and the related notes complied in all material respects with applicable accounting requirements and the published rules and regulations of the SEC with respect thereto as in effect at the time of filing. The Financial Statements and the related notes have been prepared in accordance with accounting principles generally accepted in the United States (“**GAAP**”), consistently applied during the periods involved (except (i) as may be otherwise indicated in the Financial Statements or the notes thereto, or (ii) in the case of unaudited interim statements, to the extent they may not include footnotes, may be condensed or summary statements or may conform to the SEC’s rules and instructions for Quarterly Reports on Form 10-Q) and fairly present in all material respects the consolidated financial position of the Company as of the dates thereof and the consolidated results of its operations and cash flows for the periods then ended (subject, in the case of unaudited statements, to normal and recurring year-end audit adjustments). All material agreements that were required to be filed as exhibits to the SEC Documents under Item 601 of Regulation S-K (collectively, the “**Material Agreements**”) to which the Company or any Subsidiary of the Company is a party, or the property or assets of the Company or any Subsidiary of the Company are subject, have been filed as exhibits to the SEC Documents. All Material Agreements are valid and enforceable against the Company in accordance with their respective terms, except (i) as enforceability may be limited by applicable bankruptcy, insolvency, reorganization, or moratorium or similar laws affecting creditors’ and contracting parties’ rights generally, and (ii) as enforceability may be subject to general principles of equity and except as rights to indemnity and contribution may be limited by state or federal securities laws or public policy underlying such laws. The Company is not in material breach of or default under any material provision of any of the Material Agreements, and to the Company’s knowledge, no other party to a Material Agreement is in material breach of or default under any material provision of any Material Agreements. The Company has not received a notice of termination nor is the Company otherwise aware of any threats to terminate any of the Material Agreements.

2.7 Disclosure Controls and Procedures. The Company has established and maintains disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) that are effective in all material respects to ensure that material information relating to the Company, including any consolidated Subsidiaries, is made known to its chief executive officer and chief financial officer by others within those entities. The Company’s certifying officers have evaluated

the effectiveness of the Company's disclosure controls and procedures as of the end of the period covered by the most recently filed quarterly or annual periodic report under the Exchange Act (such date, the "**Evaluation Date**"). The Company presented in its most recently filed quarterly or annual periodic report under the Exchange Act the conclusions of the certifying officers about the effectiveness of the disclosure controls and procedures based on their evaluations as of the Evaluation Date. Since the Evaluation Date, there have been no significant changes in the Company's disclosure controls and procedures or, to the Company's knowledge, in other factors that could significantly affect the Company's disclosure controls and procedures.

2.8 Accounting Controls. The Company and its Subsidiaries maintain systems of "internal control over financial reporting" (as such term is defined in Exchange Act Rule 13a-15(f) and 15d-15(f)) that are designed to comply with the requirements of the Exchange Act and have been designed by, or under the supervision of, their respective principal executive officer and principal financial officer, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with GAAP, and are designed to ensure that (i) transactions are executed in accordance with management's general or specific authorization, (ii) transactions are recorded as necessary to permit preparation of financial statements in conformity with generally accepted accounting principles as applied in the United States 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. Since the Evaluation Date, there have been no significant changes in the Company's internal control over financial reporting (as such term is defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) or, to the Company's knowledge, in other factors that could significantly affect the Company's internal control over financial reporting.

2.9 Absence of Litigation. As of the date hereof, there is no action, suit, proceeding or investigation before or by any court, public board, government agency, self-regulatory organization or body pending or, to the Company's knowledge, threatened against the Company or any of its Subsidiaries that, if determined adversely to the Company or its Subsidiary, would reasonably be expected to have a Material Adverse Effect or would reasonably be expected to impair the ability of the Company to perform its obligations under this Agreement. Neither the Company, nor any director or officer thereof, is or has been the subject of any action involving a claim of violation of or liability under federal or state securities laws or a claim of breach of fiduciary duty relating to the Company. There has not been, and to the knowledge of the Company, there is not pending or contemplated, any investigation by the SEC of the Company or any current or former director or officer of the Company. The Company has not received any stop order or other order suspending the effectiveness of any registration statement filed by the Company under the Exchange Act or the Securities Act and, to the Company's knowledge, the SEC has not issued any such order.

2.10 Intellectual Property Rights. The Company and its Subsidiaries own or possess, or have a reasonable basis on which it believes it can obtain on reasonable terms, licenses or sufficient rights to use all patents, patent applications, patent rights, inventions, know-how, trade secrets, trademarks, trademark applications, service marks, service names, trade names and copyrights necessary to enable the Company and its Subsidiaries to conduct their business as conducted as of the date hereof and, to the Company's knowledge, as proposed to be conducted as described in the SEC Documents (the "**Intellectual Property**"). To the Company's knowledge, the Company has not infringed the intellectual property rights of third parties and no third party, to the Company's knowledge, is infringing the Intellectual Property of the Company, in each case, which could reasonably be expected to result in an adverse and material effect on the Company. Except as disclosed in the SEC Documents, there are no material options, licenses or agreements relating to the Intellectual Property, nor is the Company bound by or a party to any material options, licenses or agreements relating to the patents, patent applications, patent rights, inventions, know-how, trade secrets, trademarks, trademark applications, service marks, service names, trade names or copyrights of any other Person. There is no material claim or action or proceeding pending or, to the Company's knowledge, threatened that challenges any of the rights of the Company in or to, or otherwise with respect to, any Intellectual Property.

2.11 Placement Agents. The Company has taken no action that would give rise to any claim by any Person for brokerage commissions, placement agent's fees or similar payments relating to this Agreement or the transactions contemplated hereby.

2.12 Investment Company. The Company is not and, after giving effect to the offering and sale of the Securities, will not be an "investment company" as such term is defined in the Investment Company Act of 1940, as amended (the "*Investment Company Act*"). The Company shall conduct its business in a manner so that it will not become subject to the Investment Company Act.

2.13 No Material Adverse Change. Since December 31, 2018, except as described or referred to in the SEC Documents and except for cash expenditures in the ordinary course of business, there has not been any change in the assets, business, properties, financial condition or results of operations of the Company that would reasonably be expected to have a Material Adverse Effect. Since December 31, 2018, (i) there has not been any dividend or distribution of any kind declared, set aside for payment, paid or made by the Company on any class of capital stock, (ii) the Company has not sustained any material loss or interference with the Company's business from fire, explosion, flood or other calamity, whether or not covered by insurance, or from any labor disturbance or dispute or any action, order or decree of any court or arbitrator or governmental or regulatory authority and (iii) the Company has not incurred any material liabilities except in the ordinary course of business.

2.14 The Nasdaq Capital Market. The Common Stock is listed on The Nasdaq Capital Market, and, except as disclosed in the SEC Documents, to the Company's knowledge, there are no proceedings to revoke or suspend such listing or the listing of the Shares. Except as disclosed in the SEC Documents, the Company is in compliance with the requirements of Nasdaq for continued listing of the Common Stock thereon and any other Nasdaq listing and maintenance requirements.

2.15 Acknowledgment Regarding Purchaser's Purchase of Securities. The Company acknowledges and agrees that Purchaser is acting solely in the capacity of an arm's length purchaser with respect to this Agreement and the transactions contemplated hereby. The Company further acknowledges that Purchaser is not acting as a financial advisor or fiduciary of the Company (or in any similar capacity with respect to the Company) with respect to this Agreement and the transactions contemplated hereby and any advice given by Purchaser or any of its respective representatives or agents to the Company in connection with this Agreement and the transactions contemplated hereby is merely incidental to Purchaser's purchase of the Securities. The Company further represents to Purchaser that the Company's decision to enter into this Agreement has been based on the independent evaluation of the transactions contemplated hereby by the Company and its representatives.

2.16 Insurance. The Company and its Subsidiaries are insured by insurers of recognized financial responsibility against such losses and risks and in such amounts as the Company believes are prudent and customary for a company (i) in the businesses and location in which the Company or its Subsidiaries is engaged, (ii) with the resources of the Company, and (iii) at a similar stage of development as the Company. The Company has not received any written notice that the Company will not be able to renew existing insurance coverage for the Company or its Subsidiaries as and when such coverage expires. The Company believes it will be able to obtain similar coverage at reasonable cost from similar insurers as may be necessary to continue its business.

2.17 Foreign Corrupt Practices. Since January 1, 2012, neither the Company, nor to the Company's knowledge, any director, officer, agent, employee or other Person acting on behalf of the Company has, in the course of its actions for, or on behalf of, the Company (i) used any corporate funds for any unlawful contribution, gift, entertainment or other unlawful expenses relating to political activity; (ii) made any direct or indirect unlawful payment to any foreign or domestic government official or employee from corporate funds; (iii) violated or is in violation of in any material respect any provision of the U.S. Foreign Corrupt Practices Act of 1977, as amended; or (iv) made any unlawful bribe, rebate, payoff, influence payment, kickback or other unlawful payment to any foreign or domestic government official or employee.

2.18 Private Placement. None of the Company, its Subsidiaries, any of their affiliates, or any Person acting on its or their behalf, has, directly or indirectly, made any offers or sales of any security or solicited any offers to buy any security, under any circumstances that would require registration of the Securities under the Securities Act. Assuming the accuracy of the representations and warranties of Purchaser contained in Article 3 hereof, the issuance of the Securities is exempt from registration under the Securities Act.

2.19 Taxes. The Company and each of its Subsidiaries has made or filed (or has obtained an extension of time within which to file) all federal, state and foreign income and franchise tax returns, and all other material tax returns, reports and declarations required by an jurisdiction to which it is subject, and has paid all taxes and other governmental assessments and charges that are material in amount, shown or determined to be due on such tax returns, reports and declarations, except those being contested in good faith or where the failure to so file or the failure to so pay would not reasonably be expected to have a Material Adverse Effect. To the Company's knowledge, there are no unpaid taxes in any material amount claimed to be due by the taxing authority of any jurisdiction.

2.20 Real and Personal Property. The Company has good and marketable title to, or has valid rights to lease or otherwise use, all items of real and personal property that are material to the business of the Company free and clear of all liens, encumbrances, claims and defects and imperfections of title except those that (i) do not materially interfere with the use of such property by the Company or (ii) would not reasonably be expected to have a Material Adverse Effect.

2.21 Application of Takeover Protections. The execution and delivery of this Agreement and the consummation of the transactions contemplated hereby will not impose any restriction on Purchaser, or create in any party (including any current stockholder of the Company) any rights, under any share acquisition, business combination, poison pill (including any distribution under a rights agreement), or other similar anti-takeover provisions under the Company's charter documents or the laws of its state of incorporation.

2.22 No Manipulation of Stock. The Company has not taken, nor will it take, directly or indirectly any action designed to stabilize or manipulate the price of the Common Stock or any security of the Company to facilitate the sale or resale of any of the Shares.

2.23 Related Party Transactions. Except with respect to the transactions that are not required to be disclosed, all transactions that have occurred between or among the Company, on the one hand, and any of its officers or directors, or any affiliate or affiliates of any such officer or director, on the other hand, prior to the date hereof have been disclosed in the SEC Documents.

2.24 No Integrated Offering. Assuming the accuracy of the Purchaser's representations and warranties set forth in Article 3 hereof, none of the Company, its Subsidiaries nor, to the Company's knowledge, any of its affiliates or any Person acting on its behalf has, directly or indirectly, at any time within the past six months, made any offers or sales of any Company security or solicited any offers to buy any security under circumstances that would (i) cause such offers and sales to be integrated for purposes of Regulation D with the offer and sale by the Company of the Shares as contemplated hereby or that otherwise would cause the exemption from registration under Regulation D to be unavailable in connection with the offer and sale by the Company of the Shares as contemplated hereby or (ii) cause the offering of the Shares pursuant to the Transaction Documents to be integrated with prior offerings by the Company for purposes of any applicable law, regulation or stockholder approval provisions, including, without limitation, under the rules and regulations of Nasdaq.

ARTICLE 3

PURCHASER'S REPRESENTATIONS AND WARRANTIES

Purchaser represents and warrants to the Company, with respect to itself and its purchase hereunder, that:

3.1 Investment Purpose. Purchaser is purchasing the Securities for its own account and not with a present view toward the public sale or distribution thereof and has no intention of selling or distributing any of such Securities or any arrangement or understanding with any other Persons regarding the sale or distribution of such Securities except as would not result in a violation of the Securities Act. Purchaser will not, directly or indirectly, offer, sell, pledge, transfer or otherwise dispose of (or solicit any offers to buy, purchase or otherwise acquire or take a pledge of) any of the Securities except pursuant to and in accordance with the Securities Act.

3.2 Reliance on Exemptions. Purchaser understands that the Securities are being offered and sold to it in reliance upon specific exemptions from the registration requirements of United States federal and state securities laws and that the Company is relying upon the truth and accuracy of, and Purchaser's compliance with, the representations, warranties, agreements, acknowledgments and understandings of Purchaser set forth herein in order to determine the availability of such exemptions and the eligibility of Purchaser to acquire the Securities.

3.3 Information. Purchaser has had access to and the opportunity to review the SEC Documents. Neither such inquiries nor any other investigation conducted by or on behalf of Purchaser or its representatives or counsel shall modify, amend or affect Purchaser's right to rely on the truth, accuracy and completeness of the SEC Documents and the Company's representations and warranties contained in the Agreement.

3.4 Acknowledgement of Risk. Purchaser is able to bear the economic risk of holding the Securities for an indefinite period, and has knowledge and experience in financial and business matters such that it is capable of evaluating the risks of the investment in the Securities.

3.5 Governmental Review. Purchaser understands that no United States federal or state agency or any other government or governmental agency has passed upon or made any recommendation or endorsement of the Securities or an investment therein.

3.6 Transfer or Resale. Purchaser understands that:

(a) the Securities have not been and are not being registered under the Securities Act or any applicable state securities laws and, consequently, Purchaser may have to bear the risk of owning the Securities for an indefinite period of time because the Securities may not be transferred unless (i) the resale of the Securities is registered pursuant to an effective registration statement under the Securities Act; (ii) Purchaser has delivered to the Company an opinion of counsel (in form, substance and scope customary for opinions of counsel in comparable transactions) to the effect that the Securities to be sold or transferred may be sold or transferred pursuant to an exemption from such registration; or (iii) the Securities are sold or transferred pursuant to Rule 144;

(b) any sale of the Securities made in reliance on Rule 144 may be made only in accordance with the terms of Rule 144 and, if Rule 144 is not applicable, any resale of the Securities under circumstances in which the seller (or the Person through whom the sale is made) may be deemed to be an underwriter (as that term is defined in the Securities Act) may require compliance with some other exemption under the Securities Act or the rules and regulations of the SEC thereunder; and

(c) except as set forth in the Registration Rights Agreement, neither the Company nor any other Person is under any obligation to register the resale of the Shares under the Securities Act or any state securities laws or to comply with the terms and conditions of any exemption thereunder.

3.7 Legends.

(a) Purchaser understands the certificates representing the Securities will bear a restrictive legend in substantially the following form (and a stop-transfer order may be placed against transfer of the certificates for such Securities):

THE SECURITIES REPRESENTED BY THIS CERTIFICATE HAVE NOT BEEN REGISTERED UNDER THE SECURITIES ACT OF 1933, AS AMENDED, OR THE SECURITIES LAWS OF ANY STATE OF THE UNITED STATES. THE SECURITIES MAY NOT BE SOLD, OFFERED FOR SALE, PLEDGED, HYPOTHECATED, TRANSFERRED OR ASSIGNED IN THE ABSENCE OF AN EFFECTIVE REGISTRATION STATEMENT FOR THE SECURITIES UNDER APPLICABLE SECURITIES LAWS, OR UNLESS OFFERED, SOLD, PLEDGED, HYPOTHECATED OR TRANSFERRED PURSUANT TO AN AVAILABLE EXEMPTION FROM THE REGISTRATION REQUIREMENTS OF THOSE LAWS. THE COMPANY SHALL BE ENTITLED TO REQUIRE AN OPINION OF COUNSEL REASONABLY SATISFACTORY TO THE COMPANY THAT SUCH REGISTRATION IS NOT REQUIRED TO THE EXTENT THAT SUCH OPINION IS REQUIRED PURSUANT TO THAT CERTAIN COMMON STOCK PURCHASE AGREEMENT UNDER WHICH THE SECURITIES WERE ISSUED.

(b) Purchaser may request that the Company remove, and the Company agrees to authorize the removal of any legend from the Shares (i) in connection with any sale of the Shares pursuant to Rule 144, or (ii) if such Shares are eligible for sale under Rule 144 following the expiration of the one-year holding requirement under subparagraphs (b)(1)(i) and (d) thereof.

3.8 Authorization; Enforcement. Purchaser has the requisite power and authority to enter into this Agreement and to consummate the transactions contemplated hereby. Purchaser has taken all necessary action to authorize the execution, delivery and performance of this Agreement. Upon the execution and delivery of this Agreement, this Agreement shall constitute a valid and binding obligation of Purchaser enforceable in accordance with its terms, except as enforceability may be limited by applicable bankruptcy, insolvency, reorganization, moratorium or similar laws affecting creditors' and contracting parties' rights generally and except as enforceability may be subject to general principles of equity and except as rights to indemnity and contribution may be limited by state or federal securities laws or public policy underlying such laws.

3.9 Residency. Purchaser is a resident of the jurisdiction set forth immediately below Purchaser's name on the signature pages hereto.

3.10 Placement Agents. Purchaser has taken no action that would give rise to any claim by any Person for brokerage commissions, placement agent's fees or similar payments relating to this Agreement or the transactions contemplated hereby.

ARTICLE 4

COVENANTS

4.1 Securities Laws Disclosure. On or before March 15, 2019, the Company shall file a Current Report on Form 8-K with the SEC describing the terms of the transactions contemplated by this Agreement and including as an exhibit to such Current Report on Form 8-K this Agreement, in the form required by the Exchange Act.

4.2 Sales by Purchaser. Purchaser will sell any Securities acquired pursuant to this Agreement in compliance with applicable prospectus delivery requirements, if any, or otherwise in compliance with the requirements for an exemption from registration under the Securities Act and the rules and regulations promulgated thereunder. Purchaser will not make any sale, transfer or other disposition of such Securities in violation of federal or state securities laws.

4.3 Form D and Blue Sky. The Company agrees to timely file a Form D with respect to the Shares as required under Regulation D. The Company shall take such action as the Company shall reasonably determine is necessary in order to obtain an exemption for or to qualify the Shares for sale to the Purchaser at the Closing pursuant to this Agreement under

applicable securities or “Blue Sky” laws of the states of the United States (or to obtain an exemption from such qualification). The Company shall make all filings and reports relating to the offer and sale of the Shares required under applicable securities or “Blue Sky” laws of the states of the United States following the Closing Date.

4.4 Listing of Common Stock. The Company will use its reasonable best efforts to list the Shares and maintain the listing of the Common Stock on Nasdaq.

ARTICLE 5

CONDITIONS TO CLOSING

5.1 Conditions to Obligations of the Company. The Company’s obligation to complete the purchase and sale of the Securities to Purchaser is subject to the waiver by the Company or fulfillment as of the Closing Date of the following conditions:

(a) *Representations and Warranties.* The representations and warranties made by Purchaser in Article 3 shall be true and correct as of the Closing Date.

(b) *Covenants.* All covenants, agreements and conditions contained in this Agreement to be performed, satisfied or complied with by Purchaser on or prior to the Closing Date shall have been performed or complied with.

(c) *Blue Sky.* The Company shall have obtained all necessary blue sky law permits and qualifications, or secured exemptions therefrom, required by any state for the offer and sale of the Securities.

(d) *Absence of Litigation.* No proceeding challenging this Agreement or the transactions contemplated hereby, or seeking to prohibit, alter, prevent or materially delay the Closing, shall have been instituted or be pending before any court, arbitrator, governmental body, agency or official.

(e) *No Governmental Prohibition.* The sale of the Securities by the Company shall not be prohibited by any law or governmental order or regulation.

(f) *Registration Rights Agreement.* The Purchaser shall deliver the Registration Rights Agreement, duly executed by the Purchaser.

5.2 Conditions to Purchaser’s Obligations at the Closing. Purchaser’s obligation to complete the purchase and sale of the Securities is subject to the waiver by Purchaser or fulfillment as of the Closing Date of the following conditions:

(a) *Representations and Warranties.* The representations and warranties made by the Company in Article 2 shall be true and correct as of the Closing Date.

(b) *Covenants.* All covenants, agreements and conditions contained in this Agreement to be performed, satisfied or complied with by the Company on or prior to the Closing Date shall have been performed or complied with.

(c) *Blue Sky.* The Company shall have obtained all necessary blue sky law permits and qualifications, or secured exemptions therefrom, required by any state or foreign or other jurisdiction for the offer and sale of the Securities.

(d) *Transfer Agent Instructions.* The Company shall have delivered to its transfer agent irrevocable instructions to issue to Purchaser, or in such nominee name(s) as designated by Purchaser in writing, the Shares.

(e) *Listing.* The Common Stock shall not have been suspended, as of the Closing Date, by the SEC or Nasdaq from trading on Nasdaq nor shall suspension by the SEC or Nasdaq have been threatened, as of the Closing Date, either (i) in writing by the SEC or Nasdaq or (ii) by falling below the minimum listing maintenance requirements of Nasdaq.

(f) *Absence of Litigation.* No proceeding challenging this Agreement or the transactions contemplated hereby, or seeking to prohibit, alter, prevent or materially delay the Closing, shall have been instituted or be pending before any court, arbitrator, governmental body, agency or official.

(g) *No Governmental Prohibition.* The sale of the Shares by the Company shall not be prohibited by any law or governmental order or regulation.

(h) *Registration Rights Agreement.* The Company shall deliver the Registration Rights Agreement, duly executed by the Company.

ARTICLE 6

DEFINITIONS

6.1 “*Agreement*” has the meaning set forth in the preamble.

6.2 “*Bylaws*” has the meaning set forth in Section 2.3.

6.3 “*Certificate of Incorporation*” has the meaning set forth in Section 2.3.

6.4 “*Closing*” has the meaning set forth in Section 1.3.

6.5 “*Closing Date*” has the meaning set forth in Section 1.3.

6.6 “*Common Stock*” means the common stock, par value \$0.0001 per share, of the Company.

6.7 “*Company*” means Bionano Genomics, Inc.

6.8 “*Evaluation Date*” has the meaning set forth in Section 2.7.

6.9 “*Exchange Act*” means the Securities Exchange Act of 1934, as amended.

6.10 “*Financial Statements*” means the financial statements of the Company included in the SEC Documents.

6.11 “*GAAP*” has the meaning set forth in Section 2.6.

6.12 “*Intellectual Property*” has the meaning set forth in Section 2.10.

6.13 “*Investment Company Act*” has the meaning set forth in Section 2.12.

6.14 “*Material Adverse Effect*” means a material adverse effect on (a) the business, operations, assets, properties, results of operations or financial condition of the Company and its Subsidiaries, taken as a whole, or (b) the authority or ability of the Company to perform its obligations under the Transaction Documents.

- 6.15 **“Material Agreements”** has the meaning set forth in Section 2.6.
- 6.16 **“Nasdaq”** means The Nasdaq Stock Market LLC.
- 6.17 **“Offering”** means the private placement of the Company’s Securities contemplated by this Agreement.
- 6.18 **“Person”** means any person, individual, corporation, limited liability company, partnership, trust or other nongovernmental entity or any governmental agency, court, authority or other body (whether foreign, federal, state, local or otherwise).
- 6.19 **“Purchaser”** has the meaning set forth in the first paragraph of this Agreement.
- 6.20 **“Purchase Price”** has the meaning set forth in Section 1.1.
- 6.21 **“Registration Rights Agreement”** means the Registration Rights Agreement to be entered into between the Purchaser and the Company at Closing pursuant to which, among other things, the Company will agree to provide certain registration rights with respect to the Shares under the Securities Act and the rules and regulations promulgated thereunder and applicable state securities law.
- 6.22 **“Regulation D”** means Regulation D as promulgated by SEC under the Securities Act, or any successor rules.
- 6.23 **“Rule 144”** means Rule 144 promulgated under the Securities Act, or any successor rule.
- 6.24 **“SEC”** means the United States Securities and Exchange Commission.
- 6.25 **“SEC Documents”** has the meaning set forth in Section 2.6.
- 6.26 **“Securities”** has the meaning set forth in Section 1.1.
- 6.27 **“Securities Act”** means the Securities Act of 1933, as amended, and the rules and regulations thereunder, or any similar successor statute.
- 6.28 **“Shares”** has the meaning set forth in Section 1.1.
- 6.29 **“Subsidiary”** of any Person shall mean any corporation, partnership, limited liability company, joint venture or other legal entity of which such Person (either above or through or together with any other subsidiary) owns, directly or indirectly, more than 50% of the stock or other equity interests the holders of which are generally entitled to vote for the election of the board of directors or other governing body of such corporation or other legal entity.
- 6.30 **“Transaction Documents”** has the meaning set forth in Section 2.2.

ARTICLE 7

GOVERNING LAW; MISCELLANEOUS

7.1 Governing Law; Jurisdiction. This Agreement will be governed by and interpreted in accordance with the laws of the State of New York without regard to the principles of conflict of laws. EACH PARTY HERETO HEREBY IRREVOCABLY WAIVES, TO THE FULLEST EXTENT PERMITTED BY APPLICABLE LAW, ANY AND ALL

RIGHT TO TRIAL BY JURY IN ANY LEGAL PROCEEDING ARISING OUT OF OR RELATING TO THIS AGREEMENT OR THE TRANSACTIONS CONTEMPLATED HEREBY.

7.2 Counterparts; Signatures by Facsimile. This Agreement may be executed in two or more counterparts, all of which are considered one and the same agreement and will become effective when counterparts have been signed by each party and delivered to the other parties. This Agreement, once executed by a party, may be delivered to the other parties hereto by facsimile or e-mail transmission of a copy of this Agreement bearing the signature of the party so delivering this Agreement.

7.3 Headings. The headings of this Agreement are for convenience of reference only, are not part of this Agreement and do not affect its interpretation.

7.4 Severability. If any provision of this Agreement is invalid or unenforceable under any applicable statute or rule of law, then such provision will be deemed modified in order to conform with such statute or rule of law. Any provision hereof that may prove invalid or unenforceable under any law will not affect the validity or enforceability of any other provision hereof.

7.5 Entire Agreement; Amendments. The Transaction Documents (including all schedules and exhibits thereto) constitute the entire agreement among the parties hereto with respect to the subject matter hereof and thereof. The Transaction Documents supersede all prior agreements and understandings among the parties hereto with respect to the subject matter hereof and thereof. No provision of this Agreement may be waived or amended other than by an instrument in writing signed by the party to be charged with enforcement. Any amendment or waiver by a party effected in accordance with this Section 7.5 shall be binding upon such party, including with respect to any Securities purchased under this Agreement at the time outstanding and held by such party (including securities into which such Securities are convertible and for which such Securities are exercisable) and each future holder of all such securities.

7.6 Notices. All notices required or permitted hereunder shall be in writing and shall be deemed effectively given: (a) upon personal delivery to the party to be notified, (b) when sent by confirmed email, telex or facsimile if sent during normal business hours of the recipient, if not, then on the next business day, (c) five days after having been sent by registered or certified mail, return receipt requested, postage prepaid, or (d) one business day after deposit with a nationally recognized overnight courier, specifying next day delivery, with written verification of receipt. The addresses for such communications are:

If to the Company: Bionano Genomics, Inc.
9640 Towne Centre Drive, Suite 100
San Diego, CA 92121
Attn: Chief Executive Officer

With a copy to: Cooley LLP
4401 Eastgate Mall
San Diego, CA 92121
Attn: Thomas A. Coll, Esq.

If to Purchaser: Innovatus Life Sciences Lending Fund I, LP
777 Third Avenue, 25th Floor
New York, NY 10017
Attention: Claes Ekstrom

With a copy to: Greenberg Traurig, LLP
One International Place, Suite 2000

Each party will provide ten days' advance written notice to the other parties of any change in its address.

7.7 Successors and Assigns. This Agreement is binding upon and inures to the benefit of the parties and their successors and assigns. The Company will not assign this Agreement or any rights or obligations hereunder without the prior written consent of Purchaser.

7.8 Third Party Beneficiaries. This Agreement is intended for the benefit of the parties hereto, their respective permitted successors and assigns, and is not for the benefit of, nor may any provision hereof be enforced by, any other Person.

7.9 Further Assurances. Each party will do and perform, or cause to be done and performed, all such further acts and things, and will execute and deliver all other agreements, certificates, instruments and documents, as another party may reasonably request in order to carry out the intent and accomplish the purposes of this Agreement and the consummation of the transactions contemplated hereby.

7.10 No Strict Construction. The language used in this Agreement is deemed to be the language chosen by the parties to express their mutual intent, and no rules of strict construction will be applied against any party.

7.11 Equitable Relief. The Company recognizes that, if it fails to perform or discharge any of its obligations under this Agreement, any remedy at law may prove to be inadequate relief to Purchaser. The Company therefore agrees that Purchaser is entitled to seek temporary and permanent injunctive relief in any such case. Purchaser also recognizes that, if it fails to perform or discharge any of its obligations under this Agreement, any remedy at law may prove to be inadequate relief to the Company. Purchaser therefore agrees that the Company is entitled to seek temporary and permanent injunctive relief in any such case.

7.12 Survival of Representations and Warranties. Notwithstanding any investigation made by any party to this Agreement, all representations and warranties made by the Company and Purchaser herein shall survive for a period of two (2) years following the date hereof.

7.13 Expenses. Each of the Company and Purchaser is liable for, and will pay, its own expenses incurred in connection with the negotiation, preparation, execution and delivery of this Agreement, including, without limitation, attorneys' and consultants' fees and expenses.

[Signature Page Follows]

IN WITNESS WHEREOF, the undersigned has caused this Common Stock Purchase Agreement to be duly executed as of the date first above written.

PURCHASER:

INNOVATUS LIFE SCIENCES LENDING FUND I, LP

By: Innovatus Life Sciences GP, LP
Its: General Partner

By: Innovatus Flagship Parent GP, LLC
Its: General Partner

By: /s/ Andrew Dym
Name: Andrew Dym
Title: Authorized Signatory

Address: 777 Third Avenue
25th Floor
New York, NY 10017

Facsimile: _____

INNOVATUS LIFE SCIENCES OFFSHORE FUND I, LP

By: Innovatus Life Sciences Offshore GP, LP
Its: General Partner

By: Innovatus Flagship Offshore Parent GP, LLC
Its: General Partner

By: /s/ Andrew Dym
Name: Andrew Dym
Title: Authorized Signatory

Address: 777 Third Avenue
25th Floor
New York, NY 10017

Facsimile: _____

[Signature Page to Common Stock Purchase Agreement]

EXHIBIT A

FORM 8-K DISCLOSURE

Innovatus Common Stock Purchase Agreement and Registration Rights Agreement

In connection with the Loan Agreement, on March 14, 2019, the Company entered into a Common Stock Purchase Agreement (the “Innovatus Common Stock Purchase Agreement”) with Innovatus and certain of its affiliates (the “Innovatus Investors”), pursuant to which the Company agreed to issue and sell 406,504 shares of common stock at \$3.69 per share for proceeds of \$1.5 million (the “Innovatus Shares”). There are no limitations on use of proceeds, financial or business covenants, restrictions on future financing transactions, rights of first refusal, participation rights, penalties or liquidated damages in the Innovatus Purchase Agreement. The issuance of the Innovatus Shares to the Innovatus Investors under the Innovatus Purchase Agreement is exempt from registration under the Securities Act, pursuant to the exemption for transactions by an issuer not involving any public offering under Section 4(a)(2) of the Securities Act.

Concurrently with entering into the Innovatus Purchase Agreement, the Company also entered into a registration rights agreement with the Innovatus Investors (the “Innovatus Registration Rights Agreement”), in which the Company agreed, upon written request from the Innovatus Investors at any time on or after October 1, 2019 (the “Registration Request”), to prepare and file with the SEC a registration statement to facilitate the sale and distribution of all or such portion of the Innovatus Shares as specified in the Registration Request. Notwithstanding the receipt of a Registration Request, the Company is not obligated to effect such registration statement (a) if within 30 days of receipt of the Registration Request, the Company gives the Innovatus Investors notice of the Company’s intention to make a public offering within 90 days, provided, however, that the Company shall not utilize this right more than once in any 12 month period and may not register other shares during such 90-day period; (b) if the Company furnishes to Holder a certificate signed by the Chairman of the Company’s Board of Directors (the “Board”) stating that in the good faith judgment of the Board, it would be seriously detrimental to the Company and its stockholders for such registration statement to be effected at such time, in which event the Company will have the right to defer the filing of the registration statement for a period of not more than 90 days after receipt of the Registration Request; provided, that such right to delay a request will be exercised by the Company not more than once in any 12-month period and provided that the Company shall not register any other of its shares during such 90-day period; (c) if the Company has, within the 12-month period preceding the date of the Registration Request, already effected one registration statement for the Innovatus Investors or (d) in any particular jurisdiction in which the Company would be required to qualify to do business or to execute a general consent to service of process in effecting such registration, qualification or compliance, unless the Company is already subject to service in such jurisdiction and except as may be required by the Securities Act. In addition, if at any time the foregoing registration statement is not effective and the Company proposes to file a registration statement under the Securities Act for sale to the public, the Innovatus Investors are entitled to notice of the registration and have the right to include their shares in the registration, subject to limitations that the underwriters may impose on the number of shares included in the offering.

The foregoing is a summary description of certain terms of the Innovatus Purchase Agreement and the Innovatus Registration Rights Agreement and, by its nature, is incomplete. Copies of the Innovatus Purchase Agreement and Innovatus Registration Rights Agreement are filed herewith as Exhibits 10.3 and 4.3, respectively, to this Current Report on Form 8-K and are incorporated herein by reference. All readers are encouraged to read the entire text of the Purchase Agreement and the Registration Rights Agreement.

Item 3.02 Unregistered Sales of Equity Securities.

Please see the disclosure set forth under Item 1.01, which is incorporated by reference into this Item 3.02.