

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

FORM 8-K

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

Date of Report (Date of earliest event reported): January 8, 2021

**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.)

**9540 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.

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

<u>Title of each class</u>	<u>Trading Symbol(s)</u>	<u>Name of each exchange on which registered</u>
Common Stock, \$0.0001 par value per share	BNGO	The Nasdaq Stock Market LLC
Warrants to purchase Common Stock	BNGOW	The Nasdaq Stock Market LLC

## Item 8.01 Other Events.

On January 8, 2021, Bionano Genomics, Inc. (the “Company”) entered into an underwriting agreement (the “Underwriting Agreement”) with Oppenheimer & Co. Inc., as representative of the several underwriters named therein (collectively, the “Underwriters”), relating to the issuance and sale in a public offering of 29,016,393 shares of the Company’s common stock, par value \$0.0001 per share. The price to the public in the offering is \$3.05 per share and the Underwriters have agreed to purchase the shares from the Company pursuant to the Underwriting Agreement at a price of \$2.867 per share. The net proceeds to the Company from the offering are expected to be approximately \$82.8 million, after deducting underwriting discounts and commissions and estimated offering expenses payable by the Company. The closing of the offering is expected to occur on January 12, 2021, subject to customary closing conditions. In addition, the Company granted the Underwriters a 30-day option to purchase up to 4,352,458 shares of the Company’s common stock at the public offering price, less the underwriting discounts and commissions.

The Underwriting Agreement contains customary representations, warranties and agreements by the Company, customary conditions to closing, indemnification obligations of the Company and the Underwriters, including for liabilities under the Securities Act of 1933, as amended, other obligations of the parties and termination provisions. The representations, warranties and covenants contained in the Underwriting Agreement were made only for purposes of such agreement and as of specific dates, were solely for the benefit of the parties to such agreement, and may be subject to limitations agreed upon by such parties.

The offering is being made pursuant to the Company’s effective registration statements on Form S-3 (Registration Statement Nos. 333-245762 and 333-251956), as previously filed with the Securities and Exchange Commission (“SEC”), and a related prospectus and prospectus supplement. A copy of the Underwriting Agreement is filed as Exhibit 1.1 hereto, and the foregoing description of the terms of the Underwriting Agreement does not purport to be complete and is qualified in its entirety by reference to such exhibit.

A copy of the opinion of Cooley LLP relating to the legality of the issuance and sale of the shares in the offering is attached as Exhibit 5.1 hereto.

On January 7, 2021, the Company issued a press release announcing the commencement of the offering and on January 8, 2021 the Company issued a press release announcing that the Company had priced the offering. Copies of these press releases are attached as Exhibits 99.1 and 99.2 hereto, respectively.

## Forward-Looking Statements

Certain statements contained in this report are forward-looking statements that involve a number of risks and uncertainties. Such forward-looking statements include, without limitation, statements regarding the completion, timing and expected net proceeds from the offering. Words such as “will,” “expect,” “may,” “goal,” “potential” and similar expressions are intended to identify forward-looking statements, though not all forward-looking statements necessarily contain these identifying words. For such statements, the Company claims the protection of the Private Securities Litigation Reform Act of 1995. Actual events or results may differ materially from the Company’s expectations. Factors that could cause actual results to differ materially from the forward-looking statements include, but are not limited to, risks and uncertainties associated with market conditions, the satisfaction of customary closing conditions related to the public offering and the COVID-19 global pandemic. Additional factors that could cause actual results to differ materially from those stated or implied by the Company’s forward-looking statements are disclosed in the Company’s filings with the SEC, including in the section captioned “Risk Factors” in the Company’s quarterly report on Form 10-Q for the quarterly period ended September 30, 2020. These forward-looking statements represent the Company’s judgment as of the filing date hereof. The Company disclaims any intent or obligation to update these forward-looking statements, other than as may be required under applicable law.

## Item 9.01 Financial Statements and Exhibits.

(d) Exhibits.

<b>Exhibit Number</b>	<b>Description</b>
<a href="#">1.1</a>	Underwriting Agreement, dated January 8, 2021, by and among Bionano Genomics, Inc. and Oppenheimer & Co. Inc., as representatives of the several underwriters named therein.
<a href="#">5.1</a>	Opinion of Cooley LLP.
<a href="#">23.1</a>	Consent of Cooley LLP (included in Exhibit 5.1).
<a href="#">99.1</a>	Press Release, dated January 7, 2021
<a href="#">99.2</a>	Press Release, dated January 8, 2021
104	Cover Page Interactive Data File (embedded within the Inline XBRL document)

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## 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.

### **Bionano Genomics, Inc.**

Date: January 11, 2021

By: /s/ R. Erik Holmlin, Ph.D.  
R. Erik Holmlin, Ph.D.  
President and Chief Executive Officer  
(Principal Executive Officer)

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29,016,393 Shares of Common Stock

BIONANO GENOMICS, INC.

UNDERWRITING AGREEMENT

January 8, 2021

Oppenheimer & Co. Inc.  
as Representative of the several  
Underwriters named on Schedule I hereto

c/o Oppenheimer & Co. Inc.  
85 Broad Street  
New York, New York 10004

Ladies and Gentlemen:

Bionano Genomics, Inc., a Delaware corporation (the "Company"), proposes, subject to the terms and conditions stated herein, to issue and sell to Oppenheimer & Co. Inc., as representative (the "Representative") of the several underwriters named in Schedule I hereto (each, an "Underwriter" and collectively, the "Underwriters"), an aggregate of 29,016,393 shares (the "Firm Shares") of the Company's common stock, \$0.0001 par value per share (the "Common Stock"). The respective amounts of the Firm Shares to be purchased by each of the several Underwriters are set forth opposite their names on Schedule I hereto. In addition, the Company proposes to grant to the Underwriters an option to purchase up to an additional 4,352,458 shares (the "Company Option Shares") of Common Stock from the Company for the purpose of covering over-allotments in connection with the sale of the Firm Shares. The Firm Shares and the Company Option Shares are collectively called the "Shares."

The Company and the Underwriters hereby confirm their agreement as follows:

**1. Registration Statement and Prospectus.** The Company has prepared and filed in conformity with the requirements of the Securities Act of 1933, as amended (the "Securities Act"), and the published rules and regulations thereunder (the "Rules and Regulations") adopted by the Securities and Exchange Commission (the "Commission") a registration statement on Form S-3 (No. 333-245762), including a base prospectus (the "Base Prospectus") relating to common stock, preferred stock, debt securities, and/or warrants of the Company that may be sold from time to time by the Company in accordance with Rule 415 of the Securities Act, and such amendments thereof as may have been required to the date of this Agreement.

The term "Registration Statement" as used in this Agreement means the registration statement, including all exhibits, financial schedules and all documents and information deemed to be part of the Registration Statement by incorporation by reference or otherwise, as amended from time to time, including the information (if any) contained in the form of final prospectus filed with the Commission pursuant to Rule 424(b) of the Rules and Regulations and deemed to be part thereof, in each case, at the Effective Date (as defined below) pursuant to Rule 430A and 430B of the Rules and Regulations.

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If the Company has filed an abbreviated registration statement to register additional Shares pursuant to Rule 462(b) under the Rules and Regulations relating to the offering of the Shares (the “462(b) Registration Statement”), then any reference herein to the Registration Statement shall also be deemed to include such 462(b) Registration Statement. The term “Preliminary Prospectus” means the Base Prospectus, together with any preliminary prospectus supplement used or filed with the Commission pursuant to Rule 424 of the Rules and Regulations, in the form provided to the Underwriters by the Company for use in connection with the offering of the Shares. The term “Prospectus” means the Base Prospectus, any Preliminary Prospectus and any amendments or further supplements to such prospectus, and including, without limitation, the final prospectus supplement, filed pursuant to and within the limits described in Rule 424(b) with the Commission in connection with the proposed sale of the Shares contemplated by this Agreement through the date of such Prospectus Supplement. The term “Effective Date” shall mean each date that the Registration Statement and any post-effective amendment or amendments thereto became or become effective. Unless otherwise stated herein, any reference herein to the Registration Statement, any Preliminary Prospectus, the Statutory Prospectus (as hereinafter defined) and the Prospectus shall be deemed to refer to and include the documents incorporated by reference therein, including pursuant to Item 12 of Form S-3 under the Securities Act, which were filed under the Securities Exchange Act of 1934, as amended (the “Exchange Act”) on or before the date hereof or are so filed hereafter. Any reference herein to the terms “amend,” “amendment” or “supplement” with respect to the Registration Statement, any Preliminary Prospectus, the Statutory Prospectus or the Prospectus shall be deemed to refer to and include any such document filed or to be filed under the Exchange Act after the date of the Registration Statement, any such Preliminary Prospectus, the Statutory Prospectus or Prospectus, as the case may be, and deemed to be incorporated therein by reference.

The Company understands that the Underwriters propose to make a public offering of the Shares, as set forth in and pursuant to the Statutory Prospectus and the Prospectus, as soon after the Effective Date and the date of this Agreement as the Representative deems advisable. The Company hereby confirms that the Underwriters and dealers have been authorized to distribute or cause to be distributed each Preliminary Prospectus, and, if applicable, each Issuer Free Writing Prospectus (as hereinafter defined), and are authorized to distribute the Prospectus (as from time to time amended or supplemented if the Company furnishes amendments or supplements thereto to the Underwriters).

## **2. Representations and Warranties of the Company Regarding the Offering.**

(a) The Company represents and warrants to, and agrees with, the Representative, as of the date hereof and as of each Closing Date (as defined in Section 4(b) below) as follows:

(i) **No Material Misstatements or Omissions.** The Company was at the time of the filing of the Registration Statement eligible to use Form S-3. As of the date of this Agreement, the Company is eligible to use Form S-3, including the transaction requirements set forth in General Instruction 1.B.1 of such form. The Company filed with the Commission the Registration Statement on such Form S-3, including a Base Prospectus, for registration under the Securities Act of the offering and sale of the Shares, and the Company has prepared and used a Preliminary Prospectus in connection with the offer and sale of the Shares. When the Registration Statement or any amendment thereof or supplement thereto was or is declared effective and as of the date of the most recent amendment to the Registration Statement, it (i) complied or will comply, in all material respects, with the requirements of the Securities Act and the Rules and Regulations and the Exchange Act and the rules and regulations of the Commission thereunder and (ii) did not or will not contain any untrue statement of a material fact or omit to state any material fact required to be stated therein or necessary in order to make the statements therein not misleading. When any Preliminary Prospectus or Prospectus was first filed with the Commission (whether filed as part of the Registration Statement or any amendment thereto or pursuant to Rule 424 of the Rules and Regulations) and when any amendment thereof or supplement thereto was first filed with the Commission, such Preliminary Prospectus or Prospectus, as amended or supplemented, complied in all material respects with the applicable provisions of the Securities Act and the Rules and Regulations and did not or will not, contain any untrue statement of a material fact or omit to state any material fact required to be stated therein or necessary in order to make the statements therein not misleading. If applicable, each Preliminary Prospectus and the Prospectus delivered to the Underwriters for use in connection with this offering was identical to the electronically transmitted copies thereof filed with the Commission pursuant to the Electronic Data Gathering, Analysis and Retrieval system (“EDGAR”), except to the extent permitted by Regulation S-T. Notwithstanding the foregoing, none of the representations and warranties in this paragraph 2(a)(i) shall apply to statements in, or omissions from, the Registration Statement, any Preliminary Prospectus or the Prospectus made in reliance upon, and in conformity with, information herein or otherwise furnished in writing by the Representative on behalf of the several Underwriters specifically for use in the Registration Statement, any Preliminary Prospectus or the Prospectus. With respect to the preceding sentence, the Company acknowledges that the only information furnished in writing by the Representative for use in the Registration Statement, any Preliminary Prospectus or the Prospectus is the statements contained in the (i) fourth and eleventh paragraphs under the caption “Underwriting” in the Preliminary Prospectus and (ii) the fourth and tenth paragraphs under the caption “Underwriting” in the final prospectus supplement to be filed pursuant to and within the limits described in Rule 424(b) with the Commission (collectively, the “Underwriting Information”).

As of the Applicable Time (as hereinafter defined), neither (i) the price to the public and the number of shares offered and sold, as indicated on the cover page of the Prospectus and the Statutory Prospectus, all considered together (collectively, the “Time of Sale Disclosure Package”), nor (ii) any individual Issuer Free Writing Prospectus when considered together with the Time of Sale Disclosure Package, included, includes or will include any untrue statement of a material fact or omitted, omits or will omit to state any material fact required to be stated therein or necessary in order to make the statements therein, in the light of the circumstances under which they were made, not misleading; provided, however, that this representation and warranty shall not apply to statements in or omissions in the Time of Sale Disclosure Package made in reliance upon and in conformity with the Underwriting Information.

Each Issuer Free Writing Prospectus (as hereinafter defined), including any Road Show (as hereinafter defined) (i) is identified in Schedule III hereto and (ii) complied when issued, and complies, in all material respects with the requirements of the Securities Act and the Rules and Regulations and the Exchange Act and the rules and regulations of the Commission thereunder.

As used in this Section 2 and elsewhere in this Agreement:

“Applicable Time” means 7:45 a.m. (Eastern time) on the date of this Underwriting Agreement.

“Statutory Prospectus” as of any time means the Preliminary Prospectus relating to the Shares that is included in the Registration Statement immediately prior to the Applicable Time, including any document incorporated by reference therein and any prospectus supplement deemed to be a part thereof.

“Issuer Free Writing Prospectus” means each “free writing prospectus” (as defined in Rule 405 of the Rules and Regulations) prepared by or on behalf of the Company or used or referred to by the Company in connection with the offering of the Shares, including, without limitation, each Road Show.

“Road Show” means any electronic road show (including without limitation any “bona fide electronic road show” as defined in Rule 433(h)(5) under the Securities Act).

(ii) **No Stop Orders.** The Registration Statement is effective under the Securities Act and no stop order preventing or suspending the effectiveness or use of the Registration Statement or suspending or preventing the use of any Preliminary Prospectus, the Prospectus or any “free writing prospectus”, as defined in Rule 405 under the Rules and Regulations, has been issued by the Commission and no proceedings for that purpose have been instituted or are pending or, to the knowledge of the Company, are contemplated or threatened under the Securities Act. Any required filing of any Preliminary Prospectus and/or the Prospectus and any supplement thereto pursuant to Rule 424(b) of the Rules and Regulations has been or will be made in the manner and within the time period required by such Rule 424(b). Any material required to be filed by the Company pursuant to Rule 433(d) of the Rules and Regulations has been or will be made in the manner and within the time period required by such Rules and Regulations.

(iii) **Accurate Disclosure.** The documents incorporated by reference in the Registration Statement, any Preliminary Prospectus and the Prospectus, at the time they became effective or were filed with the Commission, as the case may be, complied in all material respects with the requirements of the Securities Act or the Exchange Act, as applicable, and the rules and regulations of the Commission thereunder, and none of such documents contained an 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 the light of the circumstances under which they were made, not misleading, and any further documents so filed and incorporated by reference in the Registration Statement, any Preliminary Prospectus and the Prospectus, when such documents become effective or are filed with the Commission, as the case may be, will conform in all material respects to the requirements of the Securities Act or the Exchange Act, as applicable, and the rules and regulations of the Commission thereunder and will not contain an untrue statement of a material fact or omit to state a material fact required to be stated therein or necessary to make the statements therein, in light of the circumstances under which they are made, not misleading.

The Company has provided a copy to the Underwriters of each Issuer Free Writing Prospectus used in the sale of the Shares, if any. The Company has filed all Issuer Free Writing Prospectuses required to be so filed with the Commission, and no order preventing or suspending the effectiveness or use of any Issuer Free Writing Prospectus is in effect and no proceedings for such purpose have been instituted or are pending, or, to the knowledge of the Company, are contemplated or threatened by the Commission. Each Issuer Free Writing Prospectus, as of its issue date and at all subsequent times through the completion of the public offer and sale of the Shares or until any earlier date that the Company notified or notifies the Representative as described in the next sentence, did not, does not and will not include any information that conflicted, conflicts or will conflict with the information contained in the Registration Statement, including any document incorporated by reference therein and any prospectus supplement deemed to be a part thereof that has not been superseded or modified, the Statutory Prospectus or the Prospectus.

If at any time following issuance of an Issuer Free Writing Prospectus there occurred or occurs an event or development as a result of which such Issuer Free Writing Prospectus conflicted or would conflict with the information contained in the Registration Statement, the Statutory Prospectus or the Prospectus or included or would include an untrue statement of a material fact or omitted or would omit to state a material fact required to be stated therein or necessary in order to make the statements therein, in the light of the circumstances prevailing at the subsequent time, not misleading, the Company has promptly notified or will promptly notify the Representative and has promptly amended or will promptly amend or supplement, at its own expense, such Issuer Free Writing Prospectus to eliminate or correct such conflict, untrue statement or omission.

(iv) **Marketing Materials.** The Company has not distributed any prospectus or other offering material in connection with the offering and sale of the Shares other than the Time of Sale Disclosure Package and the roadshow or investor presentations delivered to and approved by the Representative for use in connection with the marketing of the offering of the Shares (the “Marketing Materials”).

(v) **Emerging Growth Company.** The Company is an “emerging growth company,” as defined in Section 2(a) of the Securities Act (an “Emerging Growth Company”).

(vi) [Reserved]

(vii) **Financial Statements.** The financial statements of the Company, together with the related notes and schedules, included or incorporated by reference in the Registration Statement, the Time of Sale Disclosure Package, the Statutory Prospectus and the Prospectus, comply in all material respects with the applicable requirements of the Securities Act and the Exchange Act, and the Rules and Regulations of the Commission thereunder, and fairly present the financial condition of the Company as of the dates indicated and the results of operations and changes in cash flows for the periods therein specified in conformity with U.S. generally accepted accounting principles (“GAAP”) consistently applied throughout the periods involved. No other financial statements, pro forma financial information or schedules are required under the Securities Act, the Exchange Act, or the Rules and Regulations to be included in the Registration Statement, the Time of Sale Disclosure Package, the Statutory Prospectus or the Prospectus.

(viii) **Independent Accountants.**

A. To the Company’s knowledge, BDO USA, LLP, which has expressed its opinion with respect to certain financial statements included or incorporated by reference as part of the Registration Statement, the Time of Sale Disclosure Package, the Statutory Prospectus and the Prospectus, is an independent public accounting firm with respect to the Company within the meaning of the Securities Act and the Rules and Regulations.

B. To the Company’s knowledge, Deloitte & Touche, LLP, which has expressed its opinion with respect to certain financial statements included or incorporated by reference as part of the Registration Statement, the Time of Sale Disclosure Package, the Statutory Prospectus and the Prospectus, is an independent public accounting firm with respect to the Company within the meaning of the Securities Act and the Rules and Regulations.

(ix) **Accounting Controls.** The Company and its subsidiaries maintain systems of “internal control over financial reporting” (as defined under Rules 13a-15 and 15d-15 under the Exchange Act) 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 and principal financial officers, or persons performing similar functions, 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 (A) transactions are executed in accordance with management’s general or specific authorizations; (B) transactions are recorded as necessary to permit preparation of financial statements in conformity with GAAP and to maintain asset accountability; (C) access to assets is permitted only in accordance with management’s general or specific authorization; and (D) the recorded accountability for assets is compared with the existing assets at reasonable intervals and appropriate action is taken with respect to any differences. Since the date of the latest audited financial statements included in the Registration Statement, the Time of Sale Disclosure Package, the Statutory Prospectus and the Prospectus, there has been no change in the Company’s internal control over financial reporting that has materially affected, or is reasonably likely to materially affect, the Company’s internal control over financial reporting.

(x) **Forward-Looking Statements.** The Company had a reasonable basis for, and made in good faith, each “forward-looking statement” (within the meaning of Section 27A of the Securities Act or Section 21E of the Exchange Act) included or incorporated by reference in the Registration Statement, the Time of Sale Disclosure Package, the Statutory Prospectus the Prospectus or the Marketing Materials.



(xi) **Statistical and Marketing-Related Data.** Nothing has come to the attention of the Company that has caused the Company to believe that the statistical or market-related data included in the Registration Statement, the Time of Sale Disclosure Package, the Statutory Prospectus or the Prospectus, or included in the Marketing Materials, are not based on or derived from sources that the Company reasonably believes to be reliable and accurate in all material respects. The Company has obtained the written consent of its customers for the use of any applicable case study data included in the Registration Statement, Time of Sale Disclosure Package or the Prospectus, to the extent required, other than such consents the failure of which to obtain is not reasonably likely to result in a Material Adverse Effect.

(xii) **Trading Market.** The Common Stock is registered pursuant to Section 12(b) of the Exchange Act and is approved for listing on The Nasdaq Capital Market (“Nasdaq”). As of each Closing Date, the Shares will have been duly authorized for listing on Nasdaq.

(xiii) **Absence of Manipulation.** The Company has not taken, directly or indirectly, any action that is designed to or that has constituted or that would reasonably be expected to cause or result in the stabilization or manipulation of the price of any security of the Company to facilitate the sale or resale of the Shares.

(xiv) **Investment Company Act.** The Company is not and, after giving effect to the offering and sale of the Shares and the application of the net proceeds thereof, will not be an “investment company,” as such term is defined in the Investment Company Act of 1940, as amended.

(xv) **Lock-Up Agreements.** Schedule IV hereto contains a complete and accurate list of the Company’s officers, directors and each beneficial owner of the Company’s outstanding shares of Common Stock (or securities convertible or exercisable into shares of Common Stock) that the Company has caused to deliver to the Representative an executed Lock-Up Agreement (collectively, the “Lock-Up Parties”), in the form attached hereto as Schedule III (the “Lock-Up Agreement”), prior to the execution of this Agreement.

(xvi) **Disclosure of Agreements.** The agreements and documents described in the Registration Statement, the Time of Sale Disclosure Package, the Statutory Prospectus and the Prospectus conform in all material respects to the descriptions thereof contained therein and there are no agreements or other documents required by the Securities Act and the Rules and Regulations to be described in the Registration Statement, the Time of Sale Disclosure Package, the Statutory Prospectus and the Prospectus or to be filed with the Commission as exhibits to the Registration Statement, that have not been so described or filed. Each agreement or other instrument (however characterized or described) to which the Company or any of its subsidiaries is a party or by which it is or may be bound or affected and that is referred to in the Registration Statement, the Time of Sale Disclosure Package, the Statutory Prospectus and the Prospectus has been duly authorized and validly executed by the Company or its subsidiaries and is in full force and effect in all material respects and is enforceable against the Company or its subsidiaries and, to the Company’s knowledge, the other parties thereto, in accordance with its terms, except (x) as such enforceability may be limited by bankruptcy, insolvency, reorganization or similar laws affecting creditors’ rights generally, (y) as enforceability of any indemnification or contribution provision may be limited under the federal and state securities laws, and (z) that the remedy of specific performance and injunctive and other forms of equitable relief may be subject to the equitable defenses and to the discretion of the court before which any proceeding therefor may be brought. None of such agreements or instruments has been assigned by the Company or its subsidiaries, and neither the Company, its subsidiaries nor, to the Company’s knowledge, any other party is in default thereunder and, to the Company’s knowledge, no event has occurred that, with the lapse of time or the giving of notice, or both, would constitute a default thereunder. To the best of the Company’s knowledge, performance by the Company or its subsidiaries of the material provisions of such agreements or instruments will not result in a violation of any existing applicable law, rule, regulation, judgment, order or decree of any governmental authority, agency or court, domestic or foreign, having jurisdiction over the Company or its subsidiaries or any of its assets or businesses, including, without limitation, those relating to Environmental Laws (as defined below).

(xvii) **Effectiveness of Registration Statement.** The Registration Statement initially became effective within three years of the date hereof. If, immediately prior to the third anniversary of the initial effective date of the Registration Statement, any of the Shares remain unsold by the Underwriters, the Company will, prior to that third anniversary file, if it has not already done so, a new shelf registration statement relating to the Shares, in a form satisfactory to the Representative, will use its best efforts to cause such registration statement to be declared effective within 180 days after that third anniversary, and will take all other action necessary or appropriate to permit the public offering and sale of the Shares to continue as contemplated in the expired Registration Statement. References herein to the registration statement relating to the Shares shall include such new shelf registration statement.

(b) Any certificate from any officer of the Company and delivered to the Representative or to the Representative's counsel shall be deemed a representation and warranty by the Company to the Underwriters as to the matters covered thereby.

### 3. ***Representations and Warranties of the Company Regarding the Company.***

(a) The Company represents and warrants to, and agrees with, the Representative, as of the date hereof and as of each Closing Date, as follows:

(i) **Good Standing.** Each of the Company and its subsidiaries has been duly organized and is validly existing as a corporation or other entity in good standing under the laws of its jurisdiction of incorporation or organization. Each of the Company and its subsidiaries has the power and authority (corporate or otherwise) to own its properties and conduct its business as currently being carried on and as described in the Registration Statement, the Time of Sale Disclosure Package, the Statutory Prospectus and the Prospectus, and is duly qualified to do business as a foreign corporation or other entity in good standing in each jurisdiction in which it owns or leases real property or in which the conduct of its business makes such qualification necessary, except where the failure to so qualify would not have or be reasonably likely to result in a material adverse effect upon the business, properties, operations, financial position, results of operations or prospects of the Company and its subsidiaries, taken as a whole, or in its ability to perform its obligations under this Agreement ("Material Adverse Effect").

(ii) **Authorization.** The Company has the power and authority to enter into this Agreement and to authorize, issue and sell the Shares as contemplated by this Agreement. This Agreement has been duly authorized, executed and delivered by the Company and constitutes the valid, legal and binding obligations of the Company, enforceable against the Company in accordance with their respective terms, except as rights to indemnity hereunder may be limited by federal or state securities laws and except as such enforceability may be limited by bankruptcy, insolvency, reorganization or similar laws affecting the rights of creditors generally and subject to general principles of equity.

(iii) **Contracts.** The execution, delivery and performance of this Agreement by the Company and the consummation of the transactions herein contemplated will not (A) result in a breach or violation of any of the terms and provisions of, or constitute a default under, any law, order, rule or regulation to which the Company or any subsidiary is subject, or by which any property or asset of the Company or any subsidiary is bound or affected, (B) conflict with, result in any violation or breach of, or constitute a default (or an event that with notice or lapse of time or both would become a default) under, or give to others any right of termination, amendment, acceleration or cancellation (with or without notice, lapse of time or both) (a "Default Acceleration Event") of, any agreement, lease, credit facility, debt, note, bond, mortgage, indenture or other instrument (the "Contracts") or obligation or other understanding to which the Company or any subsidiary is a party or by which any property or asset of the Company or any subsidiary is bound or affected, except to the extent that such conflict, default, or Default Acceleration Event not reasonably likely to result in a Material Adverse Effect, or (C) result in a breach or violation of any of the terms and provisions of, or constitute a default under, the Company's certificate of incorporation or by-laws.

(iv) **No Violations of Governing Documents.** Neither the Company nor any of its subsidiaries is in violation, breach or default under its certificate of incorporation, by-laws or other equivalent organizational or governing documents.

(v) **Consents.** No consents, approvals, orders, authorizations or filings are required on the part of the Company in connection with the execution, delivery or performance of this Agreement or the issue and sale of the Shares, except (A) the registration under the Securities Act of the Shares, which has been effected, (B) the necessary filings and approvals from Nasdaq to list the Shares, (C) such consents, approvals, authorizations, registrations or qualifications as may be required under state or foreign securities or Blue Sky laws and the rules of the Financial Industry Regulatory Authority, Inc. ("FINRA") in connection with the purchase of the Shares and distribution of the Shares by the several Underwriters, (D) such consents and approvals as have been obtained and are in full force and effect, and (E) such consents, approvals, orders, authorizations and filings the failure of which to make or obtain is not reasonably likely to result in a Material Adverse Effect.

(vi) **SEC Reports.** The Company is subject to and in compliance in all material respects with the reporting requirements of Section 13 or Section 15(d) of the Exchange Act, and has timely filed all reports required to be filed pursuant to Sections 13(a), 13(e), 14 and 15(d) of the Exchange Act (the "SEC Reports") during the preceding twelve (12) months.

(vii) **Capitalization.** The Company has an authorized capitalization as set forth in the Registration Statement, the Time of Sale Disclosure Package, the Statutory Prospectus and the Prospectus. All of the issued and outstanding shares of capital stock of the Company are duly authorized and validly issued, fully paid and nonassessable, have been issued in compliance in all material respects with all applicable securities laws and conform in all material respects to the description thereof in the Registration Statement, the Time of Sale Disclosure Package, the Statutory Prospectus and the Prospectus. All of the issued shares of capital stock of each subsidiary of the Company have been duly and validly authorized and issued, are fully paid and non-assessable and, except as set forth in the Registration Statement, the Time of Sale Disclosure Package, the Statutory Prospectus and the Prospectus, are owned directly or indirectly by the Company, free and clear of all liens, encumbrances, equities or claims, except to the extent that such liens, encumbrances, equities or claims would not reasonably be expected to have a Material Adverse Effect. Except for the issuances of options or restricted stock in the ordinary course of business, since the respective dates as of which information is provided in the Registration Statement, the Time of Sale Disclosure Package, the Statutory Prospectus or the Prospectus, the Company has not entered into or granted any convertible or exchangeable securities, options, warrants, agreements, contracts or other rights in existence to purchase or acquire from the Company any shares of the capital stock of the Company. The Shares, when issued and paid for as provided herein, will be duly authorized and validly issued, fully paid and nonassessable, will be issued in compliance with all applicable securities laws, and will be free of preemptive, registration or similar rights and will conform in all material respects to the description of the capital stock of the Company contained in the Registration Statement, the Time of Sale Disclosure Package, the Statutory Prospectus and the Prospectus.

(viii) **No Registration Rights.** Except as described in the Registration Statement, the Time of Sale Disclosure Package, the Statutory Prospectus and the Prospectus, there are no contracts, agreements or understandings between the Company and any person granting such person the right (other than rights which have been waived in writing or otherwise satisfied) to require the Company to file a registration statement under the Securities Act with respect to any securities of the Company owned or to be owned by such person or to require the Company to include such securities with the Shares registered pursuant to the Registration Statement or with any securities being registered pursuant to any other registration statement filed by the Company under the Securities Act.

(ix) **No Preemptive Rights.** Except as otherwise stated in the Registration Statement, in the Time of Sale Disclosure Package, the Statutory Prospectus and in the Prospectus, there are no preemptive rights or other rights to subscribe for or to purchase, or any restrictions upon the voting or transfer of, any shares of Common Stock pursuant to the Company's certificate of incorporation, by-laws or any agreement or other instrument to which the Company or any of its subsidiaries is a party or by which the Company or any of its subsidiaries is bound.

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

(xi) **Taxes.** Except as would not reasonably be expected to result in a Material Adverse Effect, each of the Company and its subsidiaries has (A) filed all foreign, federal, state and local tax returns (as hereinafter defined) required to be filed with taxing authorities prior to the date hereof or has duly obtained extensions of time for the filing thereof and (B) paid all taxes (as hereinafter defined) shown as due and payable on such returns that were filed and has paid all taxes imposed on or assessed against the Company or such respective subsidiary. The provisions for taxes payable, if any, shown on the financial statements included in the Registration Statement, the Time of Sale Disclosure Package, the Statutory Prospectus and the Prospectus are sufficient for all accrued and unpaid taxes, whether or not disputed, and for all periods to and including the dates of such consolidated financial statements. To the knowledge of the Company, no issues have been raised (and are currently pending) by any taxing authority in connection with any of the returns or taxes asserted as due from the Company or its subsidiaries, and no waivers of statutes of limitation with respect to the returns or collection of taxes have been given by or requested from the Company or its subsidiaries. The term "taxes" mean all federal, state, local, foreign, and other net income, gross income, gross receipts, sales, use, ad valorem, transfer, franchise, profits, license, lease, service, service use, withholding, payroll, employment, excise, severance, stamp, occupation, premium, property, windfall profits, customs, duties or other taxes, fees, assessments, or charges of any kind whatever, together with any interest and any penalties, additions to tax, or additional amounts with respect thereto. The term "returns" means all returns, declarations, reports, statements, and other documents required to be filed in respect to taxes.

(xii) **Material Change.** Since the respective dates as of which information is given in the Registration Statement, the Time of Sale Disclosure Package, the Statutory Prospectus or the Prospectus, (A) neither the Company nor any of its subsidiaries has incurred any material liabilities or obligations, direct or contingent, or entered into any material transactions other than in the ordinary course of business, (B) the Company has not declared or paid any dividends or made any distribution of any kind with respect to its capital stock; (C) there has not been any change in the capital stock of the Company or any of its subsidiaries (other than a change in the number of outstanding shares of Common Stock due to the issuance of shares upon the exercise of outstanding options or warrants or upon the conversion of outstanding shares of preferred stock or other convertible securities), (D) there has not been any material change in the Company's long-term or short-term debt, and (E) there has not been the occurrence of any Material Adverse Effect.

(xiii) **Ownership Interest.** Except as otherwise stated in the Registration Statement, in the Time of Sale Disclosure Package, the Preliminary Prospectus and the Prospectus, the Company does not own, directly or indirectly, any capital stock or other ownership interest in any partnership, corporation, business trust, limited liability company, limited liability partnership, joint stock company, trust, unincorporated association, joint venture or other entity.

(xiv) **Absence of Proceedings.** Other than as set forth in the Registration Statement, the Time of Sale Disclosure Package, the Statutory Prospectus, the Preliminary Prospectus and the Prospectus, there is no pending or, to the knowledge of the Company, threatened action, suit or proceeding to which the Company or any of its subsidiaries is a party or of which any property or assets of the Company or any of its subsidiaries is the subject before or by any court or governmental agency, authority or body, or any arbitrator or mediator, which, if determined adversely to the Company or its subsidiaries, would individually or in the aggregate, reasonably be likely to result in a Material Adverse Effect.

(xv) **Permits.** The Company and each of its subsidiaries holds, and is in compliance with, all franchises, grants, authorizations, licenses, permits, easements, consents, certificates and orders ("Permits") of any governmental or self-regulatory agency, authority or body (including, without limitation, those administered by the Food and Drug Administration of the U.S. Department of Health and Human Services (the "FDA") or by any foreign, federal, state or local governmental or regulatory authority performing functions similar to those performed by the FDA) required for the conduct of its business, and all such Permits are in full force and effect, in each case except where the failure to hold, or comply with, any of them is not reasonably likely to result in a Material Adverse Effect. The Company has not received notification of any material revocation, modification, suspension, termination or invalidation (or proceedings related thereto) of any such Permit. All such Permits are free and clear of any material restriction or condition that are in addition to, or materially different from those normally applicable to similar licenses, certificates, authorizations and permits. The Company has not received notification of any material revocation, modification, suspension, termination or invalidation (or proceedings related thereto) of any such Permit.

(xvi) **Compliance** Except as described in the Registration Statement, the Time of Sale Disclosure Package, the Statutory Prospectus and the Prospectus, the Company and its subsidiaries: (A) are and at all times have been in compliance with all statutes, rules, and regulations applicable to Company and its subsidiaries related to the ownership, testing, development, manufacture, packaging, processing, use, distribution, marketing, labeling, promotion, sale, offer for sale, storage, import, export or disposal of any product manufactured or distributed by the Company ("Applicable Laws"), except as would not, individually or in the aggregate, reasonably be expected to result in a Material Adverse Effect; (B) have not received any FDA, Form 483, notice of adverse finding, warning letter, untitled letter or other correspondence or notice from any governmental authority alleging or asserting noncompliance with any Applicable Laws or any licenses, certificates, approvals, clearances, authorizations, permits and supplements or amendments thereto required by any such Applicable Laws ("Authorizations"); (C) possess all material Authorizations and such Authorizations are valid and in full force and effect and are not in material violation of any term of any such Authorizations; (D) have not received notice of any claim, action, suit, proceeding, hearing, enforcement, investigation, arbitration or other action from any governmental authority or third party alleging that any product operation or activity is in violation of any Applicable Laws or Authorizations and have no knowledge that any such governmental authority or third party is considering any such claim, litigation, arbitration, action, suit, investigation or proceeding; (E) have not received notice that any governmental authority has taken, is taking or intends to take action to limit, suspend, modify or revoke any Authorizations and the Company has no knowledge that any such governmental authority is considering such action; (F) have not, either voluntarily or involuntarily, initiated, conducted, or issued or caused to be initiated, conducted or issued, any recall, market withdrawal or replacement, safety alert, post-sale warning, "dear doctor" letter, or other notice or action relating to the alleged lack of safety, efficacy or regulatory compliance of any product or any alleged product defect or violation and, to the Company's knowledge, no third party has initiated or conducted any such notice or action and there are no facts which are reasonably likely to cause, and the Company has not received any written notice from the FDA or any other regulatory agency regarding, a material recall, market withdrawal or replacement of any Company product sold or intended to be sold by the Company, a material change in the marketing classification or a material adverse change in the labeling of any such Company products, or a termination or suspension of the manufacturing, marketing, or distribution of such Company products; and (G) have filed, obtained, maintained or submitted all material reports, documents, forms, notices, applications, records, claims, submissions and supplements or amendments as required by any Applicable Laws or Authorizations and that all such reports, documents, forms, notices, applications, records, claims, submissions and supplements or amendments were complete and correct in all material respects on the date filed (or were corrected or supplemented by a subsequent submission).

(xvii) **Good Title.** The Company and each of its subsidiaries have good and marketable title to all property (whether real or personal) described in the Registration Statement, the Time of Sale Disclosure Package, the Statutory Prospectus and the Prospectus as being owned by them that are material to the business of the Company, in each case free and clear of all liens, claims, security interests, other encumbrances or defects, except those that are disclosed in the Registration Statement, the Time of Sale Disclosure Package, the Statutory Prospectus and the Prospectus and those that are not reasonably likely to result in a Material Adverse Effect. The property held under lease by the Company and its subsidiaries is held by them, to their knowledge, under valid, subsisting and enforceable leases with only such exceptions as are not material and with respect to any particular lease as do not interfere in any material respect with the conduct of the business of the Company and its subsidiaries.

(xviii) **Intellectual Property.** For convenience, any or all of patents, patent applications, licenses, inventions, copyrights, know how (including trade secrets and other unpatented and/or unpatentable proprietary or confidential information, systems or procedures), trademarks, service marks, trade names and/or other intellectual property may be referred to herein as “Intellectual Property”. To the Company’s knowledge, the Company and each of its subsidiaries owns, or has valid, binding and enforceable licenses or other rights under, the Intellectual Property necessary for, or used in the conduct, or the proposed conduct, of the business of the Company in the manner described in the Registration Statement, the Time of Sale Disclosure Package, the Statutory Prospectus and the Prospectus. To the Company’s knowledge, the issued patents, trademarks, and copyrights, if any, included within the Intellectual Property are valid, enforceable, and subsisting. To the knowledge of the Company, no action or use by the Company or any of its subsidiaries involves or gives rise to any infringement of, or license or similar fees for, any Intellectual Property of others. Additionally, to the Company’s knowledge, except as disclosed in the Registration Statement, the Time of Sale Disclosure Package, the Statutory Prospectus and the Prospectus: (A) the Company is not obligated to pay a material royalty, grant a license to, or provide other material consideration to any third party in connection with the Intellectual Property, other than as disclosed in the Registration Statement, the Time of Sale Disclosure Package, the Statutory Prospectus and the Prospectus, (B) the Company has not received any notice of any claim of infringement, misappropriation or conflict with any asserted rights of others with respect to any of the Company’s products or product candidates, processes or Intellectual Property, (C) neither the sale nor use of any of the discoveries, inventions, products or product candidates or processes of the Company referred to in the Registration Statement, the Time of Sale Disclosure Package, the Statutory Prospectus or the Prospectus do or will, infringe, misappropriate or violate any right or valid patent claim of any third party, except to the extent that such infringement, misappropriation or violation is not reasonably likely to result in a Material Adverse Effect, and (D) no third party has any ownership right in or to any Intellectual Property that is owned by the Company, other than any co-owner of any patent who is listed on the records of the U.S. Patent and Trademark Office (the “USPTO”) and any co-owner of any patent application who is named in such patent application, and, to the Company’s knowledge, no third party has any ownership right in or to any Intellectual Property in any field of use that is exclusively licensed to the Company, other than any licensor to the Company of such Intellectual Property.

(xix) **Patents and Patent Applications.** To the Company’s knowledge, all patents and patent applications owned by or licensed to the Company or under which the Company has rights have been duly and properly filed and maintained; to the knowledge of the Company, the parties prosecuting such applications have complied with their duty of candor and disclosure to the USPTO in connection with such applications; and the Company is not aware of any facts required to be disclosed to the USPTO that were not disclosed to the USPTO and which could reasonably be expected to preclude the grant of a patent in connection with any such application or could reasonably be expected to form the basis of a finding of invalidity with respect to any patents that have issued with respect to such applications.

(xx) **Employment Matters.** There is (A) no unfair labor practice complaint pending against the Company or any of its subsidiaries nor, to the Company's knowledge, threatened, before the National Labor Relations Board, any state or local labor relation board or any foreign labor relations board, and no grievance or arbitration proceeding arising out of or under any collective bargaining agreement is so pending against the Company or any of its subsidiaries, or, to the Company's knowledge, threatened against it or any of its subsidiaries and (B) no material labor disturbance by the employees of the Company or any of its subsidiaries exists or, to the Company's knowledge, is imminent, and the Company is not aware of any existing or imminent material labor disturbance by the employees of any of its, or its subsidiaries', principal suppliers, manufacturers, customers or contractors that could reasonably be expected, singularly or in the aggregate, to have a Material Adverse Effect. The Company is not aware that any key employee or significant group of employees of the Company or any subsidiary plans to terminate employment with the Company or any such subsidiary.

(xxi) **ERISA Compliance.** No "prohibited transaction" (as defined in Section 406 of the Employee Retirement Income Security Act of 1974, as amended, including the regulations and published interpretations thereunder ("ERISA"), or Section 4975 of the Internal Revenue Code of 1986, as amended from time to time (the "Code")) or "accumulated funding deficiency" (as defined in Section 302 of ERISA) or any of the events set forth in Section 4043(b) of ERISA (other than events with respect to which the thirty (30)-day notice requirement under Section 4043 of ERISA has been waived) has occurred or could reasonably be expected to occur with respect to any "employee benefit plan" (as defined under ERISA) established or maintained by the Company or any of its subsidiaries which would reasonably be expected to, singularly or in the aggregate, have a Material Adverse Effect. Each "employee benefit plan" established or maintained by the Company or any of its subsidiaries is in compliance in all material respects with applicable law, including ERISA and the Code. Neither the Company nor any of its subsidiaries has incurred or reasonably expects to incur any material liability under (A) Title IV of ERISA with respect to the termination of, or withdrawal from, any "employee benefit plan" or (B) Sections 412, 4971, 4975 or 4980B of the Code. Each "employee benefit plan" established or maintained by the Company or its subsidiaries that is intended to be qualified under Section 401(a) of the Code is so qualified, and, to the Company's knowledge, nothing has occurred, whether by action or by failure to act, which could, singularly or in the aggregate, cause the loss of such qualification.

(xxii) **Environmental Matters.** The Company and its subsidiaries are in compliance with all foreign, federal, state and local rules, laws and regulations relating to the use, treatment, storage and disposal of hazardous or toxic substances or waste and protection of health and safety or the environment which are applicable to their businesses ("Environmental Laws"), except where the failure to comply has not had and would not reasonably be expected to have, singularly or in the aggregate, a Material Adverse Effect. There has been no storage, generation, transportation, handling, treatment, disposal, discharge, emission, or other release of any kind of toxic or other wastes or other hazardous substances by, due to, or caused by the Company or any of its subsidiaries (or, to the Company's knowledge, any other entity for whose acts or omissions the Company or any of its subsidiaries is or may otherwise be liable) upon any of the property now or previously owned or leased by the Company or any of its subsidiaries, or upon any other property, in violation of any law, statute, ordinance, rule, regulation, order, judgment, decree or permit or which would, under any law, statute, ordinance, rule (including rule of common law), regulation, order, judgment, decree or permit, give rise to any liability, except for any violation or liability which has not had and would not reasonably be expected to have, singularly or in the aggregate, a Material Adverse Effect; and there has been no disposal, discharge, emission or other release of any kind onto such property or into the environment surrounding such property of any toxic or other wastes or other hazardous substances with respect to which the Company or any of its subsidiaries has knowledge.

(xxiii) **SOX Compliance.** The Company has taken all necessary actions to ensure that, at the Effective Time of the Registration Statement, it will be in compliance in all material respects with all provisions of the Sarbanes-Oxley Act of 2002 and all rules and regulations promulgated thereunder or implementing provisions thereof (collectively, the “Sarbanes-Oxley Act”) that are then in effect and with which the Company is required to be in compliance with as of the Effective Time of the Registration Statement (taking into account all exemptions and phase-in periods provided under the Jumpstart Our Business Startups Act and otherwise under applicable law).

(xxiv) **Accounting Controls and Disclosure Controls.** Except as disclosed in the Registration Statement, the Time of Sale Disclosure Package, the Statutory Prospectus and the Prospectus, the Company maintains internal control over financial reporting (as defined under Rule 13-a15 and 15d-15 under the Rules and Regulations of the Commission under the Exchange Act (the “Exchange Act Regulations”)) and a system of internal accounting controls designed to provide reasonable assurances that (A) transactions are executed in accordance with management’s general or specific authorization; (B) transactions are recorded as necessary to permit preparation of financial statements in conformity with GAAP and to maintain accountability for assets; (C) access to assets is permitted only in accordance with management’s general or specific authorization; and (D) the recorded accountability for assets is compared with the existing assets at reasonable intervals and appropriate action is taken with respect to any differences, in each case, to the extent applicable to an Emerging Growth Company and a “smaller reporting company” as defined in Section 12b-2 of the Exchange Act. Except as described in the Registration Statement, the Time of Sale Disclosure Package, the Statutory Prospectus and the Prospectus, since the end of the Company’s most recent audited fiscal year, there has been (X) no material weakness in the Company’s internal control over financial reporting (whether or not remediated) and (Y) no change in the Company’s internal control over financial reporting that has materially adversely affected, or is reasonably likely to materially adversely affect, the Company’s internal control over financial reporting.

(xxv) **Money Laundering Laws.** The operations of the Company and its subsidiaries are and have been conducted at all times in compliance in all material respects with applicable financial recordkeeping and reporting requirements of the Currency and Foreign Transactions Reporting Act of 1970, as amended, the money laundering statutes of all jurisdictions, the rules and regulations thereunder and any related or similar rules, regulations or guidelines, issued, administered or enforced by any Governmental Entity (collectively, the “Money Laundering Laws”); and no action, suit or proceeding by or before any Governmental Entity involving the Company or any of its subsidiaries with respect to the Money Laundering Laws is pending or, to the knowledge of the Company, threatened. “Governmental Entity” shall be defined as any arbitrator, court, governmental body, regulatory body, administrative agency or other authority, body or agency (whether foreign or domestic) having jurisdiction over the Company or any of its subsidiaries or any of their respective properties, assets or operations.

(xxvi) **Foreign Corrupt Practices Act.** Neither the Company nor any of its subsidiaries, nor any director or officer of the Company or any of its subsidiaries, nor, to the knowledge of the Company, any employee, representative, agent, affiliate of the Company or any of its subsidiaries, or any other person acting on behalf of the Company or any of its subsidiaries, is aware of or has taken any action, directly or indirectly, that would result in a violation by such persons of the Foreign Corrupt Practices Act of 1977, as amended, and the rules and regulations thereunder (the “FCPA”), including, without limitation, making use of the mails or any means or instrumentality of interstate commerce corruptly in furtherance of an offer, payment, promise to pay or authorization of the payment of any money, or other property, gift, promise to give, or authorization of the giving of anything of value to any “foreign official” (as such term is defined in the FCPA) or any foreign political party or official thereof or any candidate for foreign political office, in contravention of the FCPA and the Company and, to the knowledge of the Company, its affiliates have conducted their businesses in compliance with the FCPA and have instituted and maintained policies and procedures designed to ensure and promote continued compliance therewith.



(xxvii) **OFAC.** Neither the Company nor any of its subsidiaries or any director or officer of the Company or any of its subsidiaries, nor, to the knowledge of the Company, any employee, representative, agent or affiliate of the Company or any of its subsidiaries or any other person acting on behalf of the Company or any of its subsidiaries is currently subject to any U.S. sanctions administered by the Office of Foreign Assets Control of the U.S. Treasury Department (“**OFAC**”); and the Company will not directly or indirectly use the proceeds of the offering of the Shares contemplated hereby, or lend, contribute or otherwise make available such proceeds to any person or entity, for the purpose of financing the activities of any person currently subject to any U.S. sanctions administered by OFAC.

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

(xxix) **Audit Committee.** The Board has validly appointed an audit committee whose composition satisfies the requirements of Rule 5605 of the Nasdaq Stock Market and the Board and/or the audit committee has adopted a charter that satisfies the requirements of Rule 5605 of the Nasdaq Stock Market. The audit committee has reviewed the adequacy of its charter within the past twelve months.

(xxx) **Related Party Transactions.** There are no outstanding loans, advances (except normal advances for business expenses in the ordinary course of business) or guarantees of indebtedness by the Company to or for the benefit of any of the officers or directors of the Company or any of their respective family members, except as disclosed in the Registration Statement or the Time of Sale Disclosure Package and the Prospectus. All material transactions by the Company with office holders or control persons of the Company have been duly approved by the Board, or duly appointed committees or officers thereof, if and to the extent required under U.S. law.

(xxxi) **Insurance.** The Company and each of its subsidiaries carries or is entitled to the benefits of insurance, with financially sound and reputable insurers, in such amounts and covering such risks as are commercially reasonable and customary and generally maintained by companies of established repute engaged in the same or similar business, and all such insurance is in full force and effect. The Company has no reason to believe that it and its subsidiaries will not be able (A) to renew its existing insurance coverage as and when such policies expire or (B) to obtain comparable coverage from similar institutions as may be necessary or appropriate to conduct its business as now conducted and at a cost that would not result in a Material Adverse Effect. The Company has not been denied any insurance coverage which it has sought or for which it has applied.

(xxxii) **Continued Business.** No supplier, customer, distributor or sales agent of the Company or any subsidiary has notified the Company or any subsidiary that it intends to discontinue or decrease the rate of business done with the Company or any subsidiary, except where such discontinuation or decrease has not resulted in and could not reasonably be expected to result in a Material Adverse Effect.

(xxxiii) **Transactions Affecting Disclosure to FINRA.**

A. **No Finder's Fee.** There are no claims, payments, issuances, arrangements or understandings for services in the nature of a finder's, consulting or origination fee with respect to the introduction of the Company to any Underwriter or the sale of the Shares hereunder or, except as contemplated in this Agreement, any other arrangements, agreements, understandings, payments or issuances with respect to the Company that may affect the Underwriters' compensation, as determined by FINRA. The Company is not a party to any other contract, agreement or understanding with any person that would give rise to a valid claim against the Company or the Underwriters for a brokerage commission, finder's fee or like payment in connection with the offering and sale of the Shares or any transaction contemplated by this Agreement, the Registration Statement, the Time of Sale Disclosure Package, the Statutory Prospectus or the Prospectus.

B. **Payments Within Twelve (12) Months.** Except as disclosed to the Representative in writing, the Company has not made any direct or indirect payments (in cash, securities or otherwise) to: (1) any person, as a finder's fee, consulting fee or otherwise, in consideration of such person raising capital for the Company or introducing to the Company persons who raised or provided capital to the Company; (2) any FINRA member; or (3) any person or entity that has any direct or indirect affiliation or association with any FINRA member, within the twelve (12) months prior to the Effective Time of the Registration Statement, other than the payment to the Underwriters in connection with the public offering contemplated hereunder.

C. **Use of Proceeds.** None of the net proceeds of the public offering contemplated hereunder will be paid by the Company to any participating FINRA member or its affiliates, except as specifically authorized herein.

D. **No FINRA Affiliations.** Except as disclosed to the Representative in writing, there is no: (1) officer or director of the Company or its subsidiaries, (2) beneficial owner of 5% or more of any class of the Company's securities or (3) beneficial owner of the Company's unregistered equity securities which were acquired during the 180-day period immediately preceding the filing of the Registration Statement that is an affiliate or associated person of a FINRA member participating in the public offering contemplated hereunder (as determined in accordance with the rules and regulations of FINRA). The Company will advise the Representative if it becomes aware that any of the persons referred to in clauses (1), (2) or (3) of the immediately preceding sentence is or becomes an affiliate or associated person of a FINRA member participating in the public offering contemplated hereunder.

(xxxiv) **No Financial Advisor.** Other than the Underwriters, no person has the right to act as an underwriter or as a financial advisor to the Company in connection with the transactions contemplated hereby.

(xxxv) **Investment Company.** The Company is not, and, after giving effect to the offering and sale of the Shares and the application of the net proceeds thereof, will not be required to register as an "investment company," as such term is defined in the Investment Company Act of 1940, as amended.

(xxxvi) **Public Filings.** The Registration Statement (and any further documents to be filed with the Commission in connection with the offering) contains all exhibits and schedules as required by the Securities Act. Each of the Registration Statement and any post-effective amendment thereto, if any, at the time it became effective, complied in all material respects with the Securities Act and the applicable rules and regulations under the Securities Act and did not and, as amended or supplemented, if applicable, will 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 not misleading. The Prospectus complies in all material respects with the Securities Act and the applicable rules and regulations. The Prospectus, as amended or supplemented, did not and will not contain as of the date thereof any untrue statement of a material fact or omit to state a material fact necessary in order to make the statements therein, in light of the circumstances under which they were made, not misleading. The SEC Reports, when they respectively were filed with the Commission, conformed in all material respects to the requirements of the Securities Act and the Exchange Act, as applicable, and the applicable rules and regulations, and none of such documents, when they respectively were filed with the Commission, contained any untrue statement of a material fact or omitted to state a material fact necessary to make the statements therein (with respect to the SEC Reports incorporated by reference in the Prospectus), in light of the circumstances under which they were made not misleading; and any further documents so filed and incorporated by reference in the Prospectus when such documents are filed with the Commission, will conform in all material respects to the requirements of the Exchange Act and the applicable rules and regulations, as applicable, and will not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements therein, in light of the circumstances under which they were made not misleading. No post-effective amendment to the Registration Statement reflecting any facts or events arising after the date thereof which represent, individually or in the aggregate, a fundamental change in the information set forth therein is required to be filed with the Commission. There are no documents required to be filed with the Commission in connection with the transaction contemplated hereby that (A) have not been filed as required pursuant to the Securities Act or (B) will not be filed within the requisite time period. There are no contracts or other documents required to be described in the Prospectus, or to be filed as exhibits or schedules to the Registration Statement, which have not been described or filed as required.

(xxxvii) **No Prior Offering Integration.** The Company has not, directly or indirectly, made any offers or sales of any security or solicited any offers to buy any security, under circumstances that would cause this offering of the Shares to be integrated with prior offerings by the Company for purposes of any applicable shareholder approval provisions of any trading market on which any of the securities of the Company are listed or designated.

(xxxviii) **No Off-Balance Sheet Arrangements.** Except as set forth in the Registration Statement, the Time of Sale Disclosure Package, the Statutory Prospectus and the Prospectus, there are no material off-balance sheet arrangements (as defined in Item 303 of Regulation S-K) that have or are reasonably likely to have a material current or future effect on the Company's financial condition, revenues or expenses, changes in financial condition, results of operations, liquidity, capital expenditures or capital resources.

(xxxix) **Certain Statements.** The statements set forth in the Registration Statement, the Time of Sale Disclosure Package, the Statutory Prospectus and the Prospectus under the caption "Description of Capital Stock," insofar as they purport to constitute a summary of (A) the terms of the Company's outstanding securities, (B) the terms of the Shares, and (C) the terms of the documents referred to therein, are accurate and fair in all material respects.

(x1) **Statistical and Market-Related Data.** No facts have come to the Company's attention that causes it to believe that any statistical and market-related data included in the Registration Statement, the Time of Sale Disclosure Package, the Statutory Prospectus or the Prospectus is not based on or derived from sources that the Company believes to be reliable and accurate in all material respects, and, to the extent required, the Company has obtained the written consent to the use of such data from such sources.

**4. Purchase, Sale and Delivery of Shares.**

(a) On the basis of the representations, warranties and agreements herein contained, but subject to the terms and conditions herein set forth, the Company agrees to issue and sell the Firm Shares to the Underwriters, and the Underwriters, severally and not jointly, agree to purchase the Firm Shares, at a purchase price of \$2.867 (the "Initial Price"), the number of Firm Shares set forth opposite the name of such Underwriter under the column "Number of Firm Shares to be Purchased" on Schedule I to this Agreement. The Company hereby grants to the Underwriters an option to purchase, severally and not jointly, all or any part of the Company Option Shares at a purchase price of \$2.867 per share. The number of Company Option Shares to be purchase by each Underwriter shall be the same percentage (adjusted by the Representative to eliminate fractions) of the total number of Company Option Shares to be purchase by the Underwriters as such Underwriter is purchasing of the Firm Shares. Such option may be exercised only to cover over-allotments in the sales of the Firm Shares by the Underwriters and may be exercised in whole or in part at any time on or before 12:00 noon, New York City time, on the business day before the Firm Shares Closing Date (as defined below), and from time to time thereafter within 30 days after the date of this Agreement, in each case upon written, facsimile or electronic notice, or verbal or telephonic notice confirmed by written, facsimile or electronic notice, by the Representative to the Company no later than 12:00 noon, New York City time, on the business day before the Firm Shares Closing Date or at least two business days before the Option Shares Closing Date (as defined below), as the case may be, setting forth the number of Company Option Shares to be purchased and the time and date (if other than the Firm Shares Closing Date) of such purchase.

(b) The delivery of certificates for the Firm Shares shall be made through the facilities of the Depository Trust Company ("DTC"), New York, New York, at the offices of Oppenheimer & Co. Inc., 85 Broad Street, New York, New York 10004, at 10:00 a.m., New York City time, on the second business day following the date of this Agreement or at such time on such other date, not later than ten (10) business days after the date of this Agreement, as shall be agreed upon by the Company and the Representative (such time and date of delivery and payment are called the "Firm Shares Closing Date"). In addition, in the event that any or all of the Company Option Shares are purchased by the Underwriters, delivery of the certificates, for such Company Option Shares shall be made at the above-mentioned offices, or at such other place as shall be agreed upon by the Representative and the Company, on each date of delivery as specified in the notice from the Representative to the Company (such time and date of delivery and payment are called the "Option Shares Closing Date"). The Firm Shares Closing Date and any Option Shares Closing Date are called, individually, a "Closing Date" and, together, the "Closing Dates."

(c) Payment for the Shares shall be made to the Company by wire transfer of immediately available funds in New York Clearing House (same day) funds drawn to the order of the Company against delivery of the Shares for the respective accounts of the Underwriters.

(d) The Shares shall be registered in such names and shall be in such denominations as the Representative shall request at least two full business days before the Firm Shares Closing Date or, in the case of Company Option Shares, on the day of notice of exercise of the option as described in Section 4(a), and shall be delivered by or on behalf of the Company to the Representative through the facilities of DTC for the account of the Underwriters.

5. *Covenants.*

(a) The Company covenants and agrees with the Representative as follows:

(i) The Company shall prepare the Prospectus in a form approved by the Underwriters and file such Prospectus pursuant to Rule 424(b) under the Securities Act not later than the Commission's close of business on the second (2nd) business day following the execution and delivery of this Agreement, or, if applicable, such earlier time as may be required by the Rules and Regulations of the Commission.

(ii) During the period beginning on the date hereof and ending on the earlier of (A) such date as determined by the Representative that the Prospectus is no longer required by law to be delivered in connection with sales by an underwriter or dealer or (B) the completion of the distribution of the Shares by the Underwriters (the "Prospectus Delivery Period"), prior to amending or supplementing the Registration Statement, including any Rule 462 Registration Statement, the Time of Sale Disclosure Package or the Prospectus, the Company shall furnish to the Representative for review and comment a copy of each such proposed amendment or supplement, and the Company shall not file any such proposed amendment or supplement to which the Representative reasonably objects.

(iii) From the date of this Agreement until the end of the Prospectus Delivery Period, the Company shall promptly advise the Representative in writing (A) of the receipt of any comments of, or requests for additional or supplemental information from, the Commission, (B) of the time and date of any filing of any post-effective amendment to the Registration Statement or any amendment or supplement to the Time of Sale Disclosure Package, the Prospectus or any Issuer Free Writing Prospectus, (C) of the time and date that any post-effective amendment to the Registration Statement becomes effective and (D) of the issuance by the Commission of any stop order suspending the effectiveness of the Registration Statement or of any order preventing or suspending its use or the use of the Time of Sale Disclosure Package, the Prospectus or any Issuer Free Writing Prospectus, or of any proceedings to remove, suspend or terminate from listing or quotation the Common Stock from any securities exchange upon which it is listed for trading or included or designated for quotation, or of the threatening or initiation of any proceedings for any of such purposes. If the Commission shall enter any such stop order at any time during the Prospectus Delivery Period, the Company will use its reasonable efforts to obtain the lifting of such order at the earliest possible moment. Additionally, the Company agrees during the Prospectus Delivery Period that it shall comply with the provisions of Rules 424(b), 430A and 430B, as applicable, under the Securities Act and will use its reasonable efforts to confirm that any filings made by the Company under Rule 424(b) or Rule 433 were received in a timely manner by the Commission (without reliance on Rule 424(b)(8) or 164(b) of the Securities Act).

(iv) (A) During the Prospectus Delivery Period, the Company will comply with all requirements imposed upon it by the Securities Act, as now and hereafter amended, and by the Rules and Regulations, as from time to time in force, and by the Exchange Act, as now and hereafter amended, so far as necessary to permit the continuance of sales of or dealings in the Shares as contemplated by the provisions hereof, the Time of Sale Disclosure Package, the Registration Statement and the Prospectus. If during the Prospectus Delivery Period any event occurs as the result of which would cause the Prospectus (or if the Prospectus is not yet available to prospective purchasers, the Time of Sale Disclosure Package ) to include an untrue statement of a material fact or omit to state a material fact necessary to make the statements therein, in the light of the circumstances under which such statement was made, not misleading, or if during such period it is necessary or appropriate in the opinion of the Company or its counsel or the Underwriters or their counsel to amend the Registration Statement or supplement the Prospectus (or if the Prospectus is not yet available to prospective purchasers, the Time of Sale Disclosure Package ) to comply with the Securities Act or to file under the Exchange Act any document that would be deemed to be incorporated by reference in the Prospectus in order to comply with the Securities Act or the Exchange Act, the Company will promptly notify the Underwriters, allow the Underwriters the opportunity to provide reasonable comments on such amendment, Prospectus or document, and will amend the Registration Statement or supplement the Prospectus (or if the Prospectus is not yet available to prospective purchasers, the Time of Sale Disclosure Package) or file such document (at the expense of the Company) so as to correct such statement or omission or effect such compliance.

(B) During the Prospectus Delivery Period, if at any time following the issuance of an Issuer Free Writing Prospectus there occurred or occurs an event or development the result of which is that such Issuer Free Writing Prospectus conflicted or would conflict with the information contained in the Registration Statement or any Prospectus or included or would include, when taken together with the Time of Sale Disclosure Package, an untrue statement of a material fact or omitted or would omit to state a material fact necessary in order to make the statements therein, in the light of the circumstances prevailing at that subsequent time, not misleading, the Company has promptly notified or promptly will notify the Underwriters and has promptly amended or will promptly amend or supplement, at its own expense, such Issuer Free Writing Prospectus to eliminate or correct such conflict, untrue statement or omission.

(v) The Company shall take or cause to be taken all necessary action to qualify the Shares for sale under the securities laws of such jurisdictions as the Underwriters reasonably designate and to continue such qualifications in effect so long as required for the distribution of the Shares, except that the Company shall not be required in connection therewith to qualify as a foreign corporation or as a dealer in securities in any jurisdiction in which it is not so qualified, to execute a general consent to service of process in any state or to subject itself to taxation in respect of doing business in any jurisdiction in which it is not otherwise subject.

(vi) The Company shall deliver to the Underwriters and counsel for the Underwriters copies, without charge, of the Registration Statement, the Prospectus, any Issuer Free Writing Prospectus, and all amendments and supplements to such documents, and signed copies of all consents and certificates of experts, in each case as soon as available and in such quantities as the Underwriters may from time to time reasonably request.

(vii) The Company will make generally available to its security holders as soon as practicable, but in any event not later than 15 months after the end of the Company's current fiscal quarter, an earnings statement (which need not be audited) covering a 12-month period that shall satisfy the provisions of Section 11(a) of the Securities Act and Rule 158 of the Rules and Regulations.

(viii) The Company shall use commercially reasonable efforts to maintain the listing of the Shares of Common Stock on Nasdaq for at least two (2) years from the date of this Agreement unless the Company is acquired or goes private under Exchange Act Rule 13e-3 during such time.

(ix) For a period of two (2) years from each Closing Date, the Company shall use its commercially reasonable efforts to maintain the registration of the Shares under the Exchange Act unless the Company is acquired or goes private under Exchange Act Rule 13e-3 during such time.

(x) The Company, whether or not the transactions contemplated hereunder are consummated or this Agreement is terminated, will pay or cause to be paid (A) all expenses incurred in connection with the delivery to the Underwriters of the Shares (including transfer taxes allocated to the respective transferees, all fees and expenses of the registrar and transfer agent of the Shares (if other than the Company)), (B) all expenses and fees (including, without limitation, fees and expenses of the Company's counsel) in connection with the preparation, printing, filing, delivery, and shipping of the Registration Statement (including the financial statements therein and all amendments, schedules, and exhibits thereto), the Shares, the Time of Sale Disclosure Package, any Prospectus, any Issuer Free Writing Prospectus and any amendment thereof or supplement thereto, (C) all reasonable filing fees and reasonable fees and disbursements of the Representative's counsel incurred in connection with the qualification of the Shares for offering and sale by the Underwriters or by dealers under the securities or blue sky laws of the states and other jurisdictions that the Underwriters shall designate, (D) the fees and expenses of any transfer agent or registrar (E) the reasonable filing fees and reasonable fees and disbursements of Representative's counsel incident to any required review and approval by FINRA, of the terms of the sale of the Shares, (F) all fees and expenses relating to the listing of the Shares on Nasdaq, (G) the fees and expenses of the Company's accountants, (H) the costs and expenses of the Company relating to investor presentations on any Road Show undertaken in connection with the marketing of the Shares, including, without limitation, expenses associated with the production of Road Show slides and graphics, fees and expenses of any consultants (not including the Underwriters and their representatives) engaged in connection with the Road Show presentations, and travel and lodging expenses of the representatives and officers of the Company and any such consultants (not including the Underwriters and their representatives), and (I) all other costs and expenses incident to the performance of its obligations hereunder that are not otherwise specifically provided for herein. The Company will reimburse the Representative for its reasonable and documented out-of-pocket expenses incurred in connection with the offer and sale of the Shares contemplated hereby, including the fees and disbursements of its counsel, in an aggregate amount not to exceed \$50,000 without the Company's prior approval (such approval not to be unreasonably withheld, conditioned or delayed).

(xi) The Company intends to apply the net proceeds from the sale of the Shares to be sold by it hereunder for the purposes set forth in the Time of Sale Disclosure Package and in the Prospectus.

(xii) The Company has not taken and will not take, directly or indirectly, during the Prospectus Delivery Period, any action designed to or which might reasonably be expected to cause or result in, or that has constituted, the stabilization or manipulation of the price of any security of the Company to facilitate the sale or resale of the Shares.

(xiii) The Company represents and agrees that, unless it obtains the prior written consent of the Representative, and the Representative represents and agrees that, unless it obtains the prior written consent of the Company, it has not made and will not make any offer relating to the Shares that would constitute an Issuer Free Writing Prospectus; provided that the prior written consent of the parties hereto shall be deemed to have been given in respect of the free writing prospectuses included in Schedule II. Any such free writing prospectus set forth on Schedule II and consented to by the Company and the Representative is hereinafter referred to as a "Permitted Free Writing Prospectus." The Company represents that it has treated, or agrees that it will treat, each Permitted Free Writing Prospectus as an "issuer free writing prospectus," as defined in Rule 433, and has complied or will comply with the requirements of Rule 433 applicable to any Permitted Free Writing Prospectus, including timely Commission filing where required, legending and record-keeping.

(xiv) The Company hereby agrees that, without the prior written consent of the Representative, it will not, during the period ending 90 days after the date hereof ("Lock-Up Period"), (A) sell, offer to sell, contract or agree to sell, hypothecate, pledge, grant any option to purchase or otherwise dispose of or agree to dispose of, directly or indirectly, or file (or participate in the filing of) a registration statement with the Commission in respect of, or establish or increase a put equivalent position or liquidate or decrease a call equivalent position within the meaning of Section 16 of the Exchange Act with respect to, any Common Stock or any other securities of the Company that are substantially similar to Common Stock, or any securities convertible into or exchangeable or exercisable for, or any warrants or other rights to purchase, the foregoing, (B) enter into any swap or other arrangement that transfers to another, in whole or in part, any of the economic consequences of ownership of Common Stock or any other securities of the Company that are substantially similar to Common Stock, or any securities convertible into or exchangeable or exercisable for, or any warrants or other rights to purchase, the foregoing, whether any such transaction is to be settled by delivery of Common Stock or such other securities, in cash or otherwise or (C) publicly announce an intention to effect any transaction specified in clause (A) or (B). The restrictions contained in the preceding sentence shall not apply to (V) the Shares to be sold hereunder, (W) the issuance and registration of the Prepayment Fee Shares and the Waiver Fee Shares (each as defined in that certain Second Amendment to Loan and Security Agreement dated March 6, 2020, by and between the Company and Innovatus Life Sciences Lending Fund I, LP, in its capacity as collateral agent (the "LSA Amendment")) pursuant to the terms of the LSA Amendment, (X) the issuance of Common Stock upon the exercise of options or warrants disclosed as outstanding in the Registration Statement (excluding exhibits thereto), the Time of Sale Disclosure Package or the Prospectus, (Y) the issuance of employee stock options not exercisable during the Lock-Up Period and the grant of restricted stock awards or restricted stock units pursuant to equity incentive plans described in the Registration Statement (excluding exhibits thereto) and the Prospectus or (Z) the filing of registration statements on Form S-8 with respect to the shares of Common Stock reserved for issuance under the Company's equity incentive plans as in effect from time to time.



(xv) Prior to each Closing Date, the Company will issue no press release or other communications directly or indirectly and hold no press conference with respect to the Company, the condition, financial or otherwise, or the earnings, business affairs or business prospects of any of them, or the offering of the Shares without the prior written consent of the Representatives unless in the judgment of the Company and its counsel, and after notification to the Representatives, such press release or communication is required by law.

(xvi) The Company hereby agrees to engage and maintain, at its expense, a registrar and transfer agent for the Shares.

(xvii) The Company will promptly notify the Representative if the Company ceases to be an Emerging Growth Company at any time prior to the later of (A) the end of the Prospectus Delivery Period and (B) the expiration of the Lock-Up Period described above.

**6. Conditions of the Underwriters' Obligations.** The obligations of each Underwriter hereunder to purchase the Shares are subject to the accuracy, as of the date hereof and at each Closing Date (as if made at such Closing Date), of and compliance with all representations, warranties and agreements of the Company contained herein, the performance by the Company of its obligations hereunder and the following additional conditions:

(a) If filing of the Prospectus, or any amendment or supplement thereto, or any Issuer Free Writing Prospectus, is required under the Securities Act or the Rules and Regulations, the Company shall have filed the Prospectus (or such amendment or supplement) or such Issuer Free Writing Prospectus with the Commission in the manner and within the time period so required (without reliance on Rule 424(b)(8) or 164(b) under the Securities Act); the Registration Statement shall remain effective; no stop order suspending the effectiveness of the Registration Statement or any part thereof, any Rule 462 Registration Statement, or any amendment thereof, nor suspending or preventing the use of the Time of Sale Disclosure Package, the Prospectus or any Issuer Free Writing Prospectus shall have been issued; no proceedings for the issuance of such an order shall have been initiated or threatened by the Commission; any request of the Commission or the Representative for additional information (to be included in the Registration Statement, the Time of Sale Disclosure Package, the Statutory Prospectus, the Prospectus, any Issuer Free Writing Prospectus or otherwise) shall have been complied with to the Underwriters' satisfaction.

(b) The Shares shall be qualified and approved for listing on Nasdaq.

(c) FINRA shall have raised no objection to the fairness and reasonableness of the underwriting terms and arrangements.

(d) The Representative shall not have reasonably determined, and advised the Company, that the Registration Statement, the Time of Sale Disclosure Package the Statutory Prospectus or the Prospectus, or any amendment thereof or supplement thereto, or any Issuer Free Writing Prospectus, contains an untrue statement of fact which, in the Representative's reasonable opinion, is material, or omits to state a fact which, in the Representative's reasonable opinion, is material and is required to be stated therein or necessary to make the statements therein not misleading.

(e) Between the date hereof and as of each Closing Date (A) no downgrading shall have occurred in the rating accorded any of the Company's securities by any "nationally recognized statistical organization," as that term is defined by the Commission for purposes of Rule 436(g)(2) under the Securities Act, and (B) no such organization shall have publicly announced that it has under surveillance or review, with possible negative implications, its rating of any of the Company's securities.

(f) On each Closing Date, there shall have been furnished to the Representative the opinion and negative assurance letter of Cooley LLP, corporate counsel for the Company, dated as of such Closing Date and addressed to the Representative, in form and substance reasonably satisfactory to the Representative.

(g) On each Closing Date, there shall have been furnished to the Representative an opinion from each of Sheppard, Mullin, Richter & Hampton LLP and Riverside Law LLP, the Company's intellectual property counsel, dated as of such Closing Date and addressed to the Representative, in form and substance reasonably satisfactory to the Representative.

(h) On each Closing Date, there shall have been furnished to the Representative a negative assurance letter from Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C., counsel to the Underwriters, dated as of such Closing Date and addressed to the Representative, in form and substance reasonably satisfactory to the Representative.

(i) The Representative shall have received letters of BDO USA, LLP and Deloitte & Touche, LLP, on the date hereof and on each Closing Date addressed to the Representative, confirming that each are independent public accountants within the meaning of the Securities Act and are in compliance with the applicable requirements relating to the qualifications of accountants under Rule 2-01 of Regulation S-X of the Commission, and confirming, as of the date of each such letter (or, with respect to matters involving changes or developments since the respective dates as of which specified financial information is given in the Time of Sale Disclosure Package, as of a date not prior to the date hereof or more than five days prior to the date of such letter), the conclusions and findings of said firm, of the type ordinarily included in accountants' "comfort letters" to underwriters, with respect to the financial information, including any financial information contained in Exchange Act Reports filed by the Company or incorporated by reference in the Registration Statement, the Time of Sale Disclosure Package, the Statutory Prospectus and the Prospectus, and other matters required by the Representative.

(j) On each Closing Date, there shall have been furnished to the Representative a certificate, dated as of such Closing Date and addressed to the Representative, signed by the chief executive officer and the chief financial officer of the Company, in their capacity as officers of the Company, to the effect that:

(i) The representations and warranties of the Company in this Agreement that are qualified by materiality or by reference to any Material Adverse Effect are true and correct in all respects, and all other representations and warranties of the Company in this Agreement are true and correct, in all material respects, as if made at and as of each Closing Date, and the Company has complied with all the agreements and satisfied all the conditions on its part to be performed or satisfied at or prior to such Closing Date;

(ii) No stop order or other order (A) suspending the effectiveness of the Registration Statement or any part thereof or any amendment thereof, (B) suspending the qualification of the Shares for offering or sale, or (C) suspending or preventing the use of the Time of Sale Disclosure Package, the Prospectus or any Issuer Free Writing Prospectus, has been issued, and no proceeding for that purpose has been instituted or, to their knowledge, is contemplated by the Commission or any state or regulatory body; and

(iii) There has been no occurrence of any event resulting or reasonably likely to result in a Material Adverse Effect during the period from and after the date of this Agreement and prior to each Closing Date.

(k) On or before the date hereof, the Representative shall have received duly executed "lock-up" agreements, in the form attached hereto as Schedule III, between the Representative and each of the parties set forth on Schedule IV hereto.

(l) The Common Stock shall be registered under the Exchange Act and shall be listed on Nasdaq, and the Company shall not have taken any action designed to terminate, or likely to have the effect of terminating, the registration of the Common Stock under the Exchange Act or delisting or suspending from trading the Common Stock from Nasdaq, nor shall the Company have received any information suggesting that the Commission is contemplated terminating such registration or listing.

(m) The Company shall have furnished to the Representative and its counsel such additional documents, certificates and evidence as the Representative or its counsel may have reasonably requested.

(n) On each Closing Date, the Shares shall have been delivered via the Depository Trust Company system to the accounts of the Underwriters.

If any condition specified in this Section 6 shall not have been fulfilled when and as required to be fulfilled, this Agreement may be terminated by the Representative by notice to the Company at any time at or prior to each Closing Date and such termination shall be without liability of any party to any other party, except that Section 5(a)(xi), Section 7 and Section 8 shall survive any such termination and remain in full force and effect.

**7. Indemnification and Contribution.**

(a) The Company agrees to indemnify, defend and hold harmless the Underwriters, their affiliates, directors and officers and employees, and each person, if any, who controls an Underwriter within the meaning of Section 15 of the Securities Act or Section 20 of the Exchange Act, from and against any losses, claims, damages or liabilities to which the Underwriters or such person may become subject, under the Securities Act or otherwise (including in settlement of any litigation if such settlement is effected with the written consent of the Company), insofar as such losses, claims, damages or liabilities (or actions in respect thereof) arise out of or are based upon (i) an untrue statement or alleged untrue statement of a material fact contained in the Registration Statement, including the information deemed to be a part of the Registration Statement at the time of effectiveness and at any subsequent time pursuant to Rules 430A and 430B of the Rules and Regulations, or arise out of or are based upon the omission from the Registration Statement, or alleged omission to state therein, a material fact required to be stated therein or necessary to make the statements therein not misleading (ii) an untrue statement or alleged untrue statement of a material fact contained in the Time of Sale Disclosure Package, the Prospectus, or any amendment or supplement thereto (including any documents filed under the Exchange Act and deemed to be incorporated by reference into the Registration Statement or the Prospectus), or any Issuer Free Writing Prospectus or the Marketing Materials, or arise out of or are based upon the omission or alleged omission to state therein 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, (iii) in whole or in part, any inaccuracy in the representations and warranties of the Company contained herein, or (iv) in whole or in part, any failure of the Company to perform its obligations hereunder or under law, and will reimburse the Underwriters for any legal or other expenses reasonably incurred by it in connection with evaluating, investigating or defending against such loss, claim, damage, liability or action (or any legal or other expense reasonably incurred in connection with the evaluation, investigation or defense thereof); *provided, however*, that the Company shall not be liable in any such case to the extent that any such loss, claim, damage, liability or action arises out of or is based upon an untrue statement or alleged untrue statement or omission or alleged omission made in the Registration Statement, the Time of Sale Disclosure Package, the Statutory Prospectus, the Prospectus, or any amendment or supplement thereto or any Issuer Free Writing Prospectus, in reliance upon and in conformity with written information furnished to the Company by the Underwriters specifically for use in the preparation thereof, which written information is described in Section 7(f).

(b) The Underwriters will indemnify, defend and hold harmless the Company, its affiliates, directors, officers and employees, and each person, if any, who controls the Company within the meaning of Section 15 of the Securities Act or Section 20 of the Exchange Act, from and against any losses, claims, damages or liabilities to which the Company may become subject, under the Securities Act or otherwise (including in settlement of any litigation, if such settlement is effected with the written consent of such Underwriter), insofar as such losses, claims, damages or liabilities (or actions in respect thereof) arise out of or are based upon an untrue statement or alleged untrue statement of a material fact contained in the Registration Statement, the Time of Sale Disclosure Package, the Statutory Prospectus, the Prospectus, or any amendment or supplement thereto, any Issuer Free Writing Prospectus or any "issuer information" filed or required to be filed pursuant to Rule 433(d) under the Act, or arise out of or are based upon 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, in each case to the extent, but only to the extent, that such untrue statement or alleged untrue statement or omission or alleged omission was made in the Registration Statement, the Time of Sale Disclosure Package, the Statutory Prospectus the Prospectus, or any amendment or supplement thereto or any Issuer Free Writing Prospectus or any "issuer information" filed or required to be filed pursuant to Rule 433(d) under the Act in reliance upon and in conformity with written information furnished to the Company by the Representative by or behalf of any Underwriters specifically for use in the preparation thereof, and will reimburse the Company for any legal or other expenses reasonably incurred by the Company in connection with defending against any such loss, claim, damage, liability or action.

(c) Promptly after receipt by an indemnified party under subsection (a) or (b) above of notice of the commencement of any action, such indemnified party shall, if a claim in respect thereof is to be made against the indemnifying party under such subsection, notify the indemnifying party in writing of the commencement thereof; but the failure to notify the indemnifying party shall not relieve the indemnifying party from any liability that it may have to any indemnified party except to the extent such indemnifying party has been materially prejudiced by such failure. In case any such action shall be brought against any indemnified party, it shall notify the indemnifying party of the commencement thereof, and the indemnifying party shall be entitled to participate in, and, to the extent that it shall wish, jointly with any other indemnifying party similarly notified, to assume the defense thereof, with counsel reasonably satisfactory to such indemnified party, and after notice from the indemnifying party to such indemnified party of the indemnifying party's election so to assume the defense thereof, the indemnifying party shall not be liable to such indemnified party under such subsection for any legal or other expenses subsequently incurred by such indemnified party in connection with the defense thereof; *provided, however*, that if (i) the indemnified party has reasonably concluded (based on advice of counsel) that there may be legal defenses available to it or other indemnified parties that are different from or in addition to those available to the indemnifying party, (ii) a conflict or potential conflict exists (based on advice of counsel to the indemnified party) between the indemnified party and the indemnifying party (in which case the indemnifying party will not have the right to direct the defense of such action on behalf of the indemnified party), or (iii) the indemnifying party has not in fact employed counsel reasonably satisfactory to the indemnified party to assume the defense of such action within a reasonable time after receiving notice of the commencement of the action, the indemnified party shall have the right to employ a single counsel to represent it in any claim in respect of which indemnity may be sought under subsection (a) or (b) of this Section 7, in which event the reasonable fees and expenses of such separate counsel shall be borne by the indemnifying party or parties and reimbursed to the indemnified party as incurred.

The indemnifying party under this Section 7 shall not be liable for any settlement of any proceeding effected without its written consent, but if settled with such consent or if there be a final judgment for the plaintiff, the indemnifying party agrees to indemnify the indemnified party against any loss, claim, damage, liability or expense by reason of such settlement or judgment. No indemnifying party shall, without the prior written consent of the indemnified party, effect any settlement, compromise or consent to the entry of judgment in any pending or threatened action, suit or proceeding in respect of which any indemnified party is a party or could be named and indemnity was or would be sought hereunder by such indemnified party, unless such settlement, compromise or consent (a) includes an unconditional release of such indemnified party from all liability for claims that are the subject matter of such action, suit or proceeding and (b) does not include a statement as to or an admission of fault, culpability or a failure to act by or on behalf of any indemnified party.

(d) If the indemnification provided for in this Section 7 is unavailable or insufficient to hold harmless an indemnified party under subsection (a) or (b) above, then each indemnifying party shall contribute to the amount paid or payable by such indemnified party as a result of the losses, claims, damages or liabilities referred to in subsection (a) or (b) above, (i) in such proportion as is appropriate to reflect the relative benefits received by the Company on the one hand and the Underwriters on the other from the offering and sale of the Shares or (ii) if the allocation provided by clause (i) above is not permitted by applicable law, in such proportion as is appropriate to reflect not only the relative benefits referred to in clause (i) above but also the relative fault of the Company on the one hand and the Underwriters on the other in connection with the statements or omissions that resulted in such losses, claims, damages or liabilities, as well as any other relevant equitable considerations. The relative benefits received by the Company on the one hand and the Underwriters on the other shall be deemed to be in the same proportion as the total net proceeds from the offering (before deducting expenses) received by the Company bear to the total underwriting discounts and commissions received by the Underwriters, in each case as set forth in the table on the cover page of the Prospectus. The relative fault shall be determined by reference to, among other things, whether the untrue or alleged untrue statement of a material fact or the omission or alleged omission to state a material fact relates to information supplied by the Company or the Underwriters and the parties' relevant intent, knowledge, access to information and opportunity to correct or prevent such untrue statement or omission. The Company and the Underwriters agree that it would not be just and equitable if contributions pursuant to this subsection (d) were to be determined by pro rata allocation or by any other method of allocation that does not take account of the equitable considerations referred to in the first sentence of this subsection (d). The amount paid by an indemnified party as a result of the losses, claims, damages or liabilities referred to in the first sentence of this subsection (d) shall be deemed to include any legal or other expenses reasonably incurred by such indemnified party in connection with investigating or defending against any action or claim that is the subject of this subsection (d). Notwithstanding the provisions of this subsection (d), the Underwriters shall not be required to contribute any amount in excess of the amount of the Underwriters' discounts commissions set forth in the table on the cover of the Prospectus. No person guilty of fraudulent misrepresentation (within the meaning of Section 11(f) of the Securities Act) shall be entitled to contribution from any person who was not guilty of such fraudulent misrepresentation.

(e) The obligations of the Company under this Section 7 shall be in addition to any liability that the Company may otherwise have and the benefits of such obligations shall extend, upon the same terms and conditions, to each person, if any, who controls the Underwriters within the meaning of Section 15 of the Securities Act or Section 20 of the Exchange Act; and the obligations of the Underwriters under this Section 7 shall be in addition to any liability that the Underwriters may otherwise have and the benefits of such obligations shall extend, upon the same terms and conditions, to the Company, and officers, directors and each person who controls the Company within the meaning of Section 15 of the Securities Act or Section 20 of the Exchange Act.

(f) For purposes of this Agreement, the Underwriters confirm, and the Company acknowledges, that there is no information concerning the Underwriters furnished in writing to the Company by the Underwriters specifically for preparation of or inclusion in the Registration Statement, the Time of Sale Disclosure Package, the Statutory Prospectus, the Prospectus or any Issuer Free Writing Prospectus, other than the statements set forth in the statements set forth in the "Underwriting" section of the Prospectus and Time of Sale Disclosure Package, only insofar as such statements relate to the amount of selling concession and re-allowance and related activities that may be undertaken by the Underwriters.

**8. Representations and Agreements to Survive Delivery.** All representations, warranties, and agreements of the Company herein or in certificates delivered pursuant hereto, including, but not limited to, the agreements of the Underwriters and the Company contained in Section 5(a)(xi) and Section 7 hereof, shall remain operative and in full force and effect regardless of any investigation made by or on behalf of the Underwriters or any controlling person thereof, or the Company or any of its officers, directors, or controlling persons, and shall survive delivery of, and payment for, the Shares to and by the Underwriters hereunder.

**9. Termination of this Agreement.**

(a) The Representative shall have the right to terminate this Agreement by giving notice to the Company as hereinafter specified at any time at or prior to a Closing Date, if in the discretion of the Representative, (i) there has occurred any material adverse change in the securities markets or any event, act or occurrence that has materially disrupted, or in the opinion of the Representative, will in the future materially disrupt, the securities markets or there shall be such a material adverse change in general financial, political or economic conditions or the effect of international conditions on the financial markets in the United States is such as to make it, in the judgment of the Representative, inadvisable or impracticable to market the Shares or enforce contracts for the sale of the Shares (ii) trading in the Company's Common Stock shall have been suspended by the Commission or Nasdaq or trading in securities generally on Nasdaq, the NYSE or NYSE MKT shall have been suspended, (iii) minimum or maximum prices for trading shall have been fixed, or maximum ranges for prices for securities shall have been required, on Nasdaq, the NYSE or NYSE MKT, by such exchange or by order of the Commission or any other governmental authority having jurisdiction, (iv) a banking moratorium shall have been declared by federal or state authorities, (v) there shall have occurred any attack on, outbreak or escalation of hostilities or act of terrorism involving the United States, any declaration by the United States of a national emergency or war, any substantial change or development involving a prospective substantial change in United States or international political, financial or economic conditions or any other calamity or crisis, (vi) the Company suffers any loss by strike, fire, flood, earthquake, accident or other calamity, whether or not covered by insurance, or (vii) in the reasonable judgment of the Representative, there has been, since the time of execution of this Agreement or since the respective dates as of which information is given in the Prospectus, any material adverse change in the assets, properties, condition, financial or otherwise, or in the results of operations, business affairs or business prospects of the Company and its subsidiaries considered as a whole, whether or not arising in the ordinary course of business. Any such termination shall be without liability of any party to any other party except that the provisions of Section 5(a)(xi) and Section 7 hereof shall at all times be effective and shall survive such termination.

(b) If the Representative elects to terminate this Agreement as provided in this Section, the Company shall be notified promptly by the Representative by telephone, confirmed by letter.

**10. Notices.** Except as otherwise provided herein, all communications hereunder shall be in writing and, if to Representative, shall be mailed, delivered or telecopied to Oppenheimer & Co. Inc., 85 Broad Street, New York, NY 10004, Attention: Managing Director, with a copy to Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C., 666 Third Avenue, New York, NY 10017, telecopy number: (212) 983-3115, Attention: Ivan K. Blumenthal; and if to the Company, shall be mailed, delivered or telecopied to it at 9640 Towne Centre Drive, Suite 100, San Diego, CA 92121, telecopy number: (858) 888-7601, Attention: R. Erik Holmlin, President and Chief Executive Officer, with a copy to Cooley LLP, 4401 Eastgate Mall, San Diego, CA 92121, telecopy number: (858) 550-6420, Attention: Thomas A. Coll; or in each case to such other address as the person to be notified may have requested in writing. Any party to this Agreement may change such address for notices by sending to the parties to this Agreement written notice of a new address for such purpose.

**11. Persons Entitled to Benefit of Agreement.** This Agreement shall inure to the benefit of and be binding upon the parties hereto and their respective successors and assigns and the controlling persons, officers and directors referred to in Section 7. Nothing in this Agreement is intended or shall be construed to give to any other person, firm or corporation any legal or equitable remedy or claim under or in respect of this Agreement or any provision herein contained. The term "successors and assigns" as herein used shall not include any purchaser, as such purchaser, of any of the Shares from the Underwriter.

**12. Absence of Fiduciary Relationship.** The Company acknowledges and agrees that: (a) the Underwriters have been retained solely to act as underwriter in connection with the sale of the Shares and that no fiduciary, advisory or agency relationship between the Company and the Underwriters has been created in respect of any of the transactions contemplated by this Agreement, irrespective of whether the Underwriters have advised or are advising the Company on other matters; (b) the price and other terms of the Shares set forth in this Agreement were established by the Company following discussions and arms-length negotiations with the Underwriters and the Company is capable of evaluating and understanding and understands and accepts the terms, risks and conditions of the transactions contemplated by this Agreement; (c) it has been advised that the Underwriters and their affiliates are engaged in a broad range of transactions that may involve interests that differ from those of the Company and that the Underwriters have no obligation to disclose such interest and transactions to the Company by virtue of any fiduciary, advisory or agency relationship; (d) it has been advised that the Underwriters are acting, in respect of the transactions contemplated by this Agreement, solely for the benefit of the Underwriters, and not on behalf of the Company.

**13. Entire Agreement.** This Agreement represents the entire agreement of the parties and supersedes all prior or contemporaneous written or oral agreements between them concerning the offer and sale of the Shares.

**14. Amendments and Waivers.** No supplement, modification or waiver of this Agreement shall be binding unless executed in writing by the party to be bound thereby. The failure of a party to exercise any right or remedy shall not be deemed or constitute a waiver of such right or remedy in the future. No waiver of any of the provisions of this Agreement shall be deemed or shall constitute a waiver of any other provision hereof (regardless of whether similar), nor shall any such waiver be deemed or constitute a continuing waiver unless otherwise expressly provided.

15. **Partial Unenforceability.** The invalidity or unenforceability of any section, paragraph, clause or provision of this Agreement shall not affect the validity or enforceability of any other section, paragraph, clause or provision.

16. **Governing Law.** This Agreement shall be governed by and construed in accordance with the laws of the State of New York.

17. **Submission to Jurisdiction.** The Company irrevocably (a) submits to the jurisdiction of any court of the State of New York for the purpose of any suit, action, or other proceeding arising out of this Agreement, or any of the agreements or transactions contemplated by this Agreement, the Registration Statement and the Prospectus (each a "Proceeding"), (b) agrees that all claims in respect of any Proceeding may be heard and determined in any such court, (c) waives, to the fullest extent permitted by law, any immunity from jurisdiction of any such court or from any legal process therein, (d) agrees not to commence any Proceeding other than in such courts, and (e) waives, to the fullest extent permitted by law, any claim that such Proceeding is brought in an inconvenient forum. THE COMPANY (ON BEHALF OF ITSELF AND, TO THE FULLEST EXTENT PERMITTED BY LAW, ON BEHALF OF ITS RESPECTIVE EQUITY HOLDERS AND CREDITORS) HEREBY WAIVES ANY RIGHT IT MAY HAVE TO A TRIAL BY JURY IN RESPECT OF ANY CLAIM BASED UPON, ARISING OUT OF OR IN CONNECTION WITH THIS AGREEMENT AND THE TRANSACTIONS CONTEMPLATED BY THIS AGREEMENT, THE REGISTRATION STATEMENT, AND THE PROSPECTUS.

18. **Counterparts.** This Agreement may be executed and delivered (including by facsimile transmission and electronic mail attaching a portable document file (.pdf)) in one or more counterparts and, if executed in more than one counterpart, the executed counterparts shall each be deemed to be an original and all such counterparts shall together constitute one and the same instrument.

*[Signature Page Follows]*



Please sign and return to the Company the enclosed duplicates of this Agreement whereupon this Agreement will become a binding agreement between the Company and the Representative in accordance with its terms.

Very truly yours,

BIONANO GENOMICS, INC.

By: /s/ R. Erik Holmlin

Name: R. Erik Holmlin, Ph.D.

Title: President and Chief Executive Officer

Confirmed as of the date first above-mentioned by the Representative.

OPPENHEIMER & CO. INC.  
as the Representative of the several  
Underwriters listed on Schedule I

By: /s/ Michael Margolis

Name: Michael Margolis R.Ph.

Title: Managing Director, Co-Head  
of Healthcare Investment Banking

SCHEDULE I

<b>Name</b>	<b>Number of Firm Shares to be Purchased</b>
Oppenheimer & Co. Inc.	20,311,475
BTIG, LLC	4,352,459
Ladenburg Thalmann & Co. Inc.	2,901,639
Maxim Group LLC	1,450,820
<b>Total</b>	<b>29,016,393</b>

**SCHEDULE II**

Free Writing Prospectus

None.

## FORM OF LOCK-UP AGREEMENT

January \_\_, 2021

Oppenheimer & Co. Inc.  
as Representative of the Several Underwriters  
c/o Oppenheimer & Co. Inc.  
85 Broad Street  
New York, New York 10004

Re: Public Offering of BioNano Genomics, Inc

Ladies and Gentlemen:

This Lock-Up Agreement is being delivered to you, a holder of common stock, par value \$0.0001 per share ("Common Stock"), or rights to acquire Common Stock, of BioNano Genomics, Inc., a Delaware corporation (the "Company"), in connection with the proposed Underwriting Agreement (the "Agreement") to be entered into by and between the Company and Oppenheimer & Co. Inc., as representative (the "Representative") of the several underwriters named in Schedule I to the Agreement (the "Underwriters," or each, an "Underwriter"), with respect to the proposed public offering of securities of the Company (the "Securities") pursuant to a registration statement (the "Registration Statement") on Form S-1 (the "Offering"). Capitalized terms used and not otherwise defined herein shall have the meanings given to them in the Agreement.

In order to induce the Underwriters to enter into the Agreement, the undersigned agrees that, for a period (the "Lock-Up Period") beginning on the date hereof and ending on, and including, the date that is 90 days after the effective date of the Registration Statement relating to the Offering, the undersigned will not, without the prior written consent of the Representative, (i) sell, offer to sell, contract or agree to sell, hypothecate, pledge, grant any option to purchase or otherwise dispose of or agree to dispose of, directly or indirectly, or file (or participate in the filing of) a registration statement with the Securities and Exchange Commission (the "Commission") in respect of, or establish or increase a put equivalent position or liquidate or decrease a call equivalent position within the meaning of Section 16 of the Securities Exchange Act of 1934, as amended, and the rules and regulations of the Commission promulgated thereunder (the "Exchange Act") with respect to, any Common Stock or any other securities of the Company that are substantially similar to Common Stock, or any securities convertible into or exchangeable or exercisable for, or any warrants or other rights to purchase, the foregoing, (ii) enter into any swap or other arrangement that transfers to another, in whole or in part, any of the economic consequences of ownership of Common Stock or any other securities of the Company that are substantially similar to Common Stock, or any securities convertible into or exchangeable or exercisable for, or any warrants or other rights to purchase, the foregoing, whether any such transaction is to be settled by delivery of Common Stock or such other securities, in cash or otherwise, or (iii) publicly announce an intention to effect any transaction specified in clause (i) or (ii).

The foregoing paragraph shall not apply to (a) the registration of the offer and sale of Securities by the Company in the Offering, (b) bona fide gifts, provided that the recipient thereof agrees in writing with the Representative to be bound by the terms of this Lock-Up Agreement, (c) transfers pursuant to a qualified domestic order or in connection with a divorce settlement, provided that the recipient thereof agrees in writing with the Representative to be bound by the terms of this Lock-Up Agreement, (d) dispositions to any trust for the direct or indirect benefit of the undersigned and/or the immediate family of the undersigned, provided that such trust agrees in writing with the Representative to be bound by the terms of this Lock-Up Agreement, (e) transfers of Common Stock or securities convertible into or exchangeable or exercisable for Common Stock on death by will or intestacy, (f) sales or transfers of Common Stock solely in connection with the “cashless” exercise of Company stock options outstanding on the date hereof for the purpose of exercising such stock options (provided that any remaining Common Stock received upon such exercise will be subject to the restrictions provided for in this Lock-Up Agreement), (g) (A) if the undersigned is a non-natural person, transfers to another corporation, partnership, limited liability corporation, trust or other business entity that is an affiliate (as defined under Rule 12b-2 of the Exchange Act) of the undersigned as part of a distribution by the undersigned to its shareholders, current or former partners (general or limited), members or managers of the undersigned, as applicable, to the estates of any such partners, members or managers, or other equity holders, or (B) if the undersigned is a trust, transfers to any beneficiary of the undersigned or to the estate of any such beneficiary, provided that the transferee, in either case (A) or (B), agrees in writing with the Representative to be bound by the terms of this Lock-Up Agreement, (h) sales or transfers pursuant to a bona fide third-party tender offer, merger, consolidation or other similar transaction made to all holders of the Company’s securities involving a change in control of the Company, or (i) sales or transfers of Common Stock or securities convertible into Common Stock pursuant to a trading plan entered into prior to the date hereof pursuant to Rule 10b5-1 under the Exchange Act, a copy of which has been provided to the Representative. In addition, the restrictions set forth herein shall not prevent the undersigned from entering into a trading plan pursuant to Rule 10b5-1 under the Exchange Act after the date hereof, provided that (i) a copy of such plan is provided to the Representative promptly upon entering into the same and (ii) no sales or transfers may be made under such plan until the Lock-Up Period ends or this Lock-Up Agreement is terminated in accordance with its terms. For the purposes of this paragraph, “immediate family” shall mean any child, stepchild, parent, stepparent, spouse, sibling, mother-in-law, father-in-law, son-in-law, daughter-in-law, brother-in-law, or sister-in-law of such security holder, and any person (other than a tenant or employee) sharing the household of such security holder. For the purposes of this paragraph, “change in control” shall mean the transfer (whether by tender offer, merger, consolidation or other similar transaction), in one transaction or a series of related transactions, to a person or group of affiliated persons (other than an Underwriter pursuant to the Offering), of the Company’s voting securities if, after such transfer, such person or group of affiliated persons would hold more than 50% of the outstanding voting securities of the Company (or the surviving entity).

In addition, the undersigned hereby waives any rights the undersigned may have to require registration of Common Stock or any securities convertible into or exercisable or exchangeable for Common Stock in connection with the filing of the Registration Statement relating to the Offering. The undersigned further agrees that, for the Lock-Up Period, the undersigned will not, without the prior written consent of the Representative, make any demand for, or exercise any right with respect to, the registration of Common Stock or any securities convertible into or exercisable or exchangeable for Common Stock, or warrants or other rights to purchase Common Stock or any such securities.

The undersigned hereby confirms that the undersigned has not, directly or indirectly, taken, and hereby covenants that the undersigned will not, directly or indirectly, take, any action designed, or which has constituted or will constitute or might reasonably be expected to cause or result in the stabilization or manipulation of the price of any security of the Company to facilitate the sale or resale of shares of Common Stock.

If (i) the Company notifies you in writing that it does not intend to proceed with the Offering, (ii) the Registration Statement filed with the Commission with respect to the Offering is withdrawn, (iii) the closing of the Offering does not occur prior to ninety (90) days from the date of this Lock-Up Agreement, or (iv) for any reason the Agreement shall be terminated prior to the closing of the Offering, this Lock-Up Agreement shall be terminated and the undersigned shall be released from its obligations hereunder.

The undersigned hereby represents and warrants that the undersigned has full power and authority to enter into this Lock-Up Agreement. All authority herein conferred or agreed to be conferred and any obligations of the undersigned shall be binding upon the successors, assigns, heirs or personal representatives of the undersigned. The undersigned, whether or not participating in the Offering, further understands that the Underwriters are entering into the Underwriting Agreement and proceeding with the Offering in reliance upon this Lock-Up Agreement.

*[Signature page follows]*

This Lock-Up Agreement shall be construed and enforced in accordance with the laws of the State of New York without regard to the principles of conflict of laws (other than New York General Obligations Law § 5-1401).

Very truly yours,

\_\_\_\_\_  
(Name - Please Print)

\_\_\_\_\_  
(Signature)

\_\_\_\_\_  
(Name of Signatory, in the case of entities - Please Print)

\_\_\_\_\_  
(Title of Signatory, in the case of entities - Please Print)

Address:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

*[Signature Page to Lock-Up Agreement]*

## SCHEDULE IV

### List of Lock-Up Parties

- David L. Barker, Ph.D.
  - Mark Oldakowski
  - R. Erik Holmlin, Ph.D.
  - Albert Luderer, Ph.D.
  - Christopher Twomey
  - Kristiina Vuori, M.D., Ph.D.
  - Hannah Mamuszka
  - Yvonne Linney
  - Christopher Stewart
  - Alka Chaubey
-





Thomas A. Coll  
+1 858 550 6013  
collta@cooley.com

January 11, 2021

Bionano Genomics, Inc.  
9540 Towne Centre Drive, Suite 100  
San Diego, CA 92121

Ladies and Gentlemen:

We have acted as counsel to Bionano Genomics, Inc., a Delaware corporation (the “*Company*”), in connection with the offering by the Company of up to 33,368,851 shares of the Company’s common stock, par value \$0.0001 per share (the “*Shares*”), including up to 4,352,458 Shares that may be sold pursuant to the exercise of an option to purchase additional shares, pursuant to the Registration Statement on Form S-3 (Registration Statement No. 333-245762) (the “*Initial Registration Statement*”) filed with the Securities and Exchange Commission (the “*Commission*”) under the Securities Act of 1933, as amended (the “*Act*”), the Registration Statement on Form S-3 (File No. 333-251956) filed with the Commission pursuant to Rule 462(b) under the Act (together with the Initial Registration Statement, the “*Registration Statements*”), the base prospectus included in the Initial Registration Statement (the “*Base Prospectus*”), and the prospectus supplement relating to the Shares filed with the Commission pursuant to Rule 424(b) under the Act (together with the Base Prospectus, the “*Prospectus*”).

In connection with this opinion, we have examined and relied upon the Registration Statements, the Prospectus, the Company’s Amended and Restated Certificate of Incorporation and Amended and Restated Bylaws, each as currently in effect, and such other documents, records, certificates, memoranda and other instruments as in our judgment are necessary or appropriate to enable us to render the opinion expressed below. We have assumed the genuineness of all signatures, the authenticity of all documents submitted to us as originals, the conformity to originals of all documents submitted to us as copies, the accuracy, completeness and authenticity of certificates of public officials and the due execution and delivery of documents by all persons other than the Company where execution and delivery are prerequisites to the effectiveness thereof. As to certain factual matters, we have relied upon a certificate of an officer of the Company and have not independently verified such matters.

Our opinion is expressed only with respect to the General Corporation Law of the State of Delaware. We express no opinion to the extent that any other laws are applicable to the subject matter hereof and express no opinion and provide no assurance as to compliance with any federal or state securities law, rule or regulation.

On the basis of the foregoing, and in reliance thereon, we are of the opinion that the Shares, when sold in accordance with the Registration Statements and the Prospectus, will be validly issued, fully paid and nonassessable.

We consent to the reference to our firm under the caption “Legal Matters” in the Prospectus and to the filing of this opinion as an exhibit to a Current Report on Form 8-K to be filed with the Commission for incorporation by reference in the Registration Statements.

Sincerely,

Cooley LLP

By: /s/ Thomas A. Coll  
Thomas A. Coll

Cooley LLP 4401 Eastgate Mall San Diego, CA 92121  
t: (858) 550-6000 f: (858) 550-6420 cooley.com

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**Bionano Genomics Announces Proposed Underwritten Public Offering of Common Stock**

SAN DIEGO, Jan. 07, 2021 (GLOBE NEWSWIRE) -- BIONANO GENOMICS, INC. (Nasdaq: BNGO), announced today that it plans to offer and sell, subject to market and other conditions, shares of its common stock in an underwritten public offering. There can be no assurance as to whether or when the offering may be completed, or the actual size or terms of the offering. Bionano also expects to grant the underwriters a 30-day option to purchase up to an additional 15% of the number of shares of common stock offered in the offering, to cover over-allotments, if any. All of the shares in the proposed offering are to be sold by Bionano.

Oppenheimer & Co. Inc. is acting as the sole book-running manager for the offering. BTIG, LLC is acting as the lead manager, and Ladenburg Thalmann & Co. Inc. and Maxim Group LLC are acting as the co-managers.

The shares are being offered pursuant to a "shelf" registration statement on Form S-3 (File No. 333-245762) previously filed on August 14, 2020 and declared effective by the Securities and Exchange Commission (SEC) on August 25, 2020. A preliminary prospectus supplement and accompanying prospectus relating to the offering will be filed with the SEC and will be available on the website of the SEC at [www.sec.gov](http://www.sec.gov). When available, copies of the preliminary prospectus supplement and accompanying prospectus relating to the offering may be obtained from: Oppenheimer & Co. Inc., Attention: Syndicate Prospectus Department, 85 Broad Street, 26<sup>th</sup> Floor, New York, New York 10004, by telephone at 212-667-8055, or by email at [EquityProspectus@opco.com](mailto:EquityProspectus@opco.com).

Before investing in the offering, you should read in their entirety the preliminary prospectus supplement and the accompanying prospectus and the other documents that Bionano has filed with the SEC that are incorporated by reference in the preliminary prospectus supplement and the accompanying prospectus, which provide more information about Bionano and the offering.

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

**About Bionano Genomics**

Bionano is a genome analysis company providing tools and services based on its Saphyr system to scientists and clinicians conducting genetic research and patient testing, and providing diagnostic testing for those with autism spectrum disorder (ASD) and other neurodevelopmental disabilities through its Lineagen business. The Saphyr system is comprised of an instrument, chip consumables, reagents and a suite of data analysis tools, and genome analysis services to provide access to data generated by the Saphyr system for researchers who prefer not to adopt the Saphyr system in their labs.

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## **Forward-Looking Statements**

This press release contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. Such forward-looking statements include, without limitation, statements about Bionano's expectations regarding the completion, timing and size of the public offering. Words such as "may," "will," "expect," "plan," "anticipate," "estimate," "intend" and similar expressions (as well as other words or expressions referencing future events, conditions or circumstances) convey uncertainty of future events or outcomes and are intended to identify these forward-looking statements, though not all forward-looking statements necessarily contain these identifying words. Among the factors that could cause actual results to differ materially from those indicated in the forward-looking statements are risks and uncertainties associated with market conditions and the satisfaction of customary closing conditions related to the offering, as well as risks and uncertainties associated with Bionano's business and financial condition in general, including the risks and uncertainties described in Bionano's Annual Report on Form 10-K for the year ended December 31, 2019, as filed with the SEC, and Bionano's subsequent filings with the SEC. You are cautioned not to place undue reliance on these forward-looking statements, which speak only as of the date of this press release. All forward-looking statements are qualified in their entirety by this cautionary statement, and Bionano undertakes no obligation to publicly update or revise any forward-looking statements, whether as a result of new information, future events or otherwise, except as may be required by law.

## **Contacts**

### **Company Contact:**

Erik Holmlin, CEO  
Bionano Genomics, Inc.  
+1 (858) 888-7610  
eholmlin@bionanogenomics.com

### **Investor Relations Contact:**

Ashley R. Robinson  
LifeSci Advisors, LLC  
+1 (617) 430-7577  
arr@lifesciadvisors.com

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**Bionano Genomics Announces Pricing of \$88.5 Million Underwritten Public Offering of Common Stock**

SAN DIEGO, Jan. 08, 2021 -- BIONANO GENOMICS, INC. (Nasdaq: BNGO), announced today the pricing of its previously announced underwritten public offering of 29,016,393 shares of its common stock at a price to the public of \$3.05 per share. The gross proceeds to Bionano from the offering, before deducting underwriting discounts and commissions and estimated offering expenses, are expected to be approximately \$88.5 million. In addition, Bionano has granted the underwriters a 30-day option to purchase up to an additional 4,352,458 shares of common stock at the public offering price, less underwriting discounts and commissions, to cover over-allotments, if any. All of the shares in the proposed offering are to be sold by Bionano. The offering is expected to close on January 12, 2021, subject to customary closing conditions.

Oppenheimer & Co. Inc. is acting as the sole book-running manager for the offering. BTIG, LLC is acting as the lead manager, and Ladenburg Thalmann & Co. Inc. and Maxim Group LLC are acting as the co-managers.

The shares are being offered pursuant to a “shelf” registration statement on Form S-3 (File No. 333-245762) previously filed on August 14, 2020 and declared effective by the Securities and Exchange Commission (SEC) on August 25, 2020. A preliminary prospectus supplement and accompanying prospectus relating to the offering has been filed with the SEC and is available on the website of the SEC at [www.sec.gov](http://www.sec.gov). When available, copies of the final prospectus supplement and accompanying prospectus relating to and describing the terms of the offering will be available on the website of the SEC and may also be obtained from: Oppenheimer & Co. Inc., Attention: Syndicate Prospectus Department, 85 Broad Street, 26th Floor, New York, New York 10004, by telephone at 212-667-8055, or by email at [EquityProspectus@opco.com](mailto:EquityProspectus@opco.com).

Before investing in the offering, you should read in their entirety the preliminary prospectus supplement and the accompanying prospectus and the other documents that Bionano has filed with the SEC that are incorporated by reference in the preliminary prospectus supplement and the accompanying prospectus, which provide more information about Bionano and the offering.

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

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## **About Bionano Genomics**

Bionano is a genome analysis company providing tools and services based on its Saphyr system to scientists and clinicians conducting genetic research and patient testing, and providing diagnostic testing for those with autism spectrum disorder (ASD) and other neurodevelopmental disabilities through its Lineagen business. The Saphyr system is comprised of an instrument, chip consumables, reagents and a suite of data analysis tools, and genome analysis services to provide access to data generated by the Saphyr system for researchers who prefer not to adopt the Saphyr system in their labs.

## **Forward-Looking Statements**

This press release contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. Such forward-looking statements include, without limitation, statements about Bionano's expectations regarding the completion, timing and gross proceeds of the public offering. Words such as "may," "will," "expect," "plan," "anticipate," "estimate," "intend" and similar expressions (as well as other words or expressions referencing future events, conditions or circumstances) convey uncertainty of future events or outcomes and are intended to identify these forward-looking statements, though not all forward-looking statements necessarily contain these identifying words. Among the factors that could cause actual results to differ materially from those indicated in the forward-looking statements are risks and uncertainties associated with market conditions and the satisfaction of customary closing conditions related to the offering, as well as risks and uncertainties associated with Bionano's business and financial condition in general, including the risks and uncertainties described in Bionano's Annual Report on Form 10-K for the year ended December 31, 2019, as filed with the SEC, and Bionano's subsequent filings with the SEC. You are cautioned not to place undue reliance on these forward-looking statements, which speak only as of the date of this press release. All forward-looking statements are qualified in their entirety by this cautionary statement, and Bionano undertakes no obligation to publicly update or revise any forward-looking statements, whether as a result of new information, future events or otherwise, except as may be required by law.

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