

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

FORM S-1
REGISTRATION STATEMENT
UNDER
THE SECURITIES ACT OF 1933

Bionano Genomics, Inc.
(Exact name of registrant as specified in its charter)

Delaware
(State or Other Jurisdiction of
Incorporation or Organization)

3826
(Primary Standard Industrial
Classification Code Number)
Bionano Genomics, Inc.
9540 Towne Centre Drive, Suite 100
San Diego, California 92121
(858) 888-7600

26-1756290
(I.R.S. Employer
Identification Number)

(Address, including zip code, and telephone number, including area code of registrant's principal executive offices)

R. Erik Holmlin, Ph.D.
President and Chief Executive Officer
Bionano Genomics, Inc.
9540 Towne Centre Drive, Suite 100
San Diego, California 92121
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(Name, address, including zip code, and telephone number, including area code, of agent for service)

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Approximate date of commencement of proposed sale to the public: As soon as practicable after the effective date of this registration statement.

If any of the securities being registered on this Form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act of 1933 check the following box.

If this Form is filed to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act, please check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

If this Form is a post-effective amendment filed pursuant to Rule 462(c) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

If this Form is a post-effective amendment filed pursuant to Rule 462(d) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, smaller reporting company, or an emerging growth company.

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

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 7(a)(2)(B) of the Securities Act.

CALCULATION OF REGISTRATION FEE

Title of each class of securities to be registered	Proposed Maximum Aggregate Offering Price ⁽¹⁾	Amount of Registration Fee ⁽¹⁾
Common Stock, par value \$0.0001 per share ⁽²⁾⁽³⁾	\$ 15,000,800	
Pre-funded warrants to purchase shares of common stock and common stock issuable upon exercise thereof ⁽²⁾⁽³⁾	\$ 15,000,800	
Warrants to purchase Common Stock and shares of Common Stock issuable upon exercise thereof ⁽²⁾	\$ 15,000,800	
Total	\$ 30,001,600	\$ 3,895

(1) Estimated solely for the purpose of calculating the registration fee in accordance with Rule 457(o) under the Securities Act of 1933, as amended (the "Securities Act").

(2) Pursuant to Rule 416 under the Securities Act, the securities being registered hereunder include such indeterminate number of additional securities as may be issuable to prevent dilution resulting from stock splits, dividends or similar transactions.

(3) The proposed maximum aggregate offering price of the common stock proposed to be sold in the offering will be reduced on a dollar-for-dollar basis based on the aggregate offering price of the pre-funded warrants offered and sold in the offering (plus the aggregate exercise price of the common stock issuable upon exercise of the pre-funded warrants), and as such the proposed aggregate maximum offering price of the common stock and pre-funded warrants (including the common stock issuable upon exercise of the pre-funded warrants), if any, is \$15,000,800.

The registrant hereby amends this registration statement on such date or dates as may be necessary to delay its effective date until the registrant shall file a further amendment which specifically states that this registration statement shall thereafter become effective in accordance with Section 8(a) of the Securities Act of 1933 or until the registration statement shall become effective on such date as the Commission, acting pursuant to said Section 8(a), may determine.

The information in this prospectus is not complete and may be changed. We may not sell these securities until the registration statement filed with the Securities and Exchange Commission is effective. This prospectus is not an offer to sell these securities, and we are not soliciting offers to buy these securities, in any state where the offer or sale of these securities is not permitted.

SUBJECT TO COMPLETION, DATED MARCH 11, 2020

PROSPECTUS



**17,648,000 Shares of Common Stock
Pre-Funded Warrants to Purchase Shares of Common Stock
Warrants to Purchase up to 17,648,000 Shares of Common Stock**

We are offering 17,648,000 shares of our common stock and common warrants to purchase an aggregate of 17,648,000 shares of our common stock (and the shares of common stock that are issuable from time to time upon exercise of the warrants). We are also offering to certain purchasers whose purchase of shares of common stock in this offering would otherwise result in the purchaser, together with its affiliates and certain related parties, beneficially owning more than 4.99% (or, at the election of the purchaser, 9.99%) of our outstanding common stock immediately following the consummation of this offering, the opportunity to purchase, if any such purchaser so chooses, pre-funded warrants, in lieu of shares of common stock that would otherwise result in such purchaser’s beneficial ownership exceeding 4.99% (or, at the election of the purchaser, 9.99%) of our outstanding common stock. Each pre-funded warrant will be exercisable for one share of our common stock. The purchase price of each pre-funded warrant and the accompanying common warrant will be equal to the price at which a share of common stock and accompanying common warrant are sold to the public in this offering, minus \$0.001, and the exercise price of each pre-funded warrant will be \$0.001 per share. The pre-funded warrants will be immediately exercisable and may be exercised at any time until all of the pre-funded warrants are exercised in full. This offering also relates to the shares of common stock issuable upon exercise of any pre-funded warrants sold in this offering. Each share of common stock and pre-funded warrant is being sold together with a common warrant to purchase one share of our common stock, at an exercise price of \$ per share. For each pre-funded warrant we sell, the number of shares of common stock we are offering will be decreased on a one-for-one basis. Because we will issue a common warrant for each share of our common stock and for each pre-funded warrant to purchase one share of our common stock sold in this offering, the number of common warrants sold in this offering will not change as a result of a change in the mix of the shares of our common stock and pre-funded warrants sold. The common warrants will be exercisable immediately and will expire five years from the date of issuance. The shares of common stock and pre-funded warrants, and the accompanying common warrants, can only be purchased together in this offering but will be issued separately and will be immediately separable upon issuance. Our common stock is listed on The Nasdaq Capital Market under the symbol “BNGO”. The last reported sale price of our common stock on The Nasdaq Capital Market on March 9, 2020 was \$0.85 per share. The public offering price per share of common stock and accompanying common warrant and any pre-funded warrant and accompanying common warrant, as the case may be, will be determined by us at the time of pricing, may be at a discount to the current market price, and the recent market price used throughout this prospectus may not be indicative of the final offering price. There is no established public trading market for the pre-funded warrants or common warrants, and we do not expect a market to develop. In addition, we do not intend to apply for a listing of the pre-funded warrants or common warrants on any national securities exchange.

You should read this prospectus and any prospectus supplement, together with additional information described under the headings “Incorporation of Certain Information by Reference” and “Where You Can Find More Information,” carefully before you invest in any of our securities.

We are an “emerging growth company” as defined by the Jumpstart Our Business Startups Act of 2012, and as such, we have elected to comply with certain reduced public company reporting requirements for this prospectus and future filings.

Investing in our securities involves a high degree of risk. See “Risk Factors” beginning on page 6 of this prospectus as well as in the documents incorporated by reference.

	Per Share	Per Pre-Funded Warrant	Per Common Warrant	Total
Public offering price	\$	\$	\$	\$
Underwriting discounts and commissions ⁽¹⁾	\$	\$	\$	\$
Proceeds to us, before expenses	\$	\$	\$	\$

(1) See “Underwriting” for additional information regarding underwriting compensation.

The delivery of the shares of common stock and any pre-funded warrants and common warrants to purchasers is expected to be made on or about , 2020.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or passed upon the adequacy or accuracy of this prospectus. Any representation to the contrary is a criminal offense.

Sole Book-Running Manager
Oppenheimer & Co.

Lead Manager *Co-Lead Manager*
Roth Capital Partners **Maxim Group LLC**

The date of this prospectus is , 2020

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We incorporate by reference important information into this prospectus. You may obtain the information incorporated by reference without charge by following the instructions under “Where You Can Find More Information.” You should carefully read this prospectus as well as additional information described under “Incorporation of Certain Information by Reference,” before deciding to invest in our common stock.

Neither we nor the underwriters have authorized anyone to provide you with additional information or information different from that contained in this prospectus filed with the Securities and Exchange Commission. We take no responsibility for, and can provide no assurance as to the reliability of, any other information that others may give you. The underwriters are offering to sell, and seeking offers to buy, our common stock only in jurisdictions where offers and sales are permitted. The information contained in this prospectus is accurate only as of the date of this prospectus, regardless of the time of delivery of this prospectus or any sale of shares of our common stock. Our business, financial condition, results of operations and prospects may have changed since that date.

For investors outside the United States: We and the underwriters have not done anything that would permit this offering or the possession or distribution of this prospectus in any jurisdiction where action for those purposes is required, other than in the United States. Persons outside the United States who come into possession of this prospectus must inform themselves about, and observe any restrictions relating to, the offering of the shares of common stock and the distribution of this prospectus outside of the United States.

PROSPECTUS SUMMARY

The following summary highlights information contained or incorporated by reference elsewhere in this prospectus and does not contain all of the information that you should consider in making your investment decision. Before investing in our common stock, you should carefully read this entire prospectus, including our financial statements and the related notes and other documents incorporated by reference in this prospectus, as well as the information under the caption “Risk Factors” herein and under similar headings in the other documents that are incorporated by reference into this prospectus.

Except as otherwise indicated herein or as the context otherwise requires, references in this prospectus to “Bionano,” “the company,” “we,” “us” and “our” refer to Bionano Genomics, Inc.

Company Overview

We are a genome analysis company providing tools and services based on our Saphyr® system to scientists and clinicians conducting genetic research and patient testing. We developed the Saphyr system, a platform for ultra-sensitive and ultra-specific structural variation detection, that enables researchers and clinicians to accelerate the search for new diagnostics and therapeutic targets and to streamline the evaluation of changes in chromosomes, which is known as cytogenetics. Our commercial offering includes the Saphyr system, which 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.

Structural variation refers to large-scale structural differences in the genomic DNA of one individual compared to another. Each structural variation involves the rearrangement or repetition of as few as several hundred to as many as tens of millions of DNA base pairs. Structural variations may be inherited or arise spontaneously, and many structural variations cause genetic disorders and diseases. Until our commercial launch of the Saphyr system in February 2017, and since, we believe no other products existed or exist that could more comprehensively and cost and time-efficiently detect structural variation.

Our customers include researchers and clinicians who seek to uncover and understand the biological or clinical impact of genome variation to improve the diagnosis and treatment of patients with better clinical tests and new medicines or to replace existing cytogenetic tests that are expensive, slow and labor-intensive, with a modern solution designed to simplify workflow and reduce cost and that has the potential to significantly increase diagnostic yields across the industry. Our customers also include researchers in non-human segments, such as agricultural genomics, seeking to advance their understanding of how structural variation impacts industrial applications of plants and animals. We have established relationships with key opinion leaders in genomics research and clinical applications, including rare diseases and oncology, and our installed base of over 138 systems made up of Saphyr and its predecessor system, includes some of the world’s most prominent clinical, translational research, basic research, academic and government institutions as well as leading pharmaceutical and diagnostic companies. Examples include Children’s Hospital of Philadelphia, Children’s National Health System, Boston Children’s Hospital, PerkinElmer, GeneDx, Mayo Clinic, Columbia University, DuPont Pioneer, Garvan Institute of Medical Research, Genentech, McDonnell Genome Institute at Washington University, National Institutes of Health, Pennsylvania State University, Radboud University Medical Center and Salk Institute for Biological Studies.

Approximately 7,000 research use only, or RUO, high throughput sequencers are currently installed worldwide. These sequencers are developed and sold almost entirely by Illumina and are owned by an estimated 3,000 unique customers. Sequencing is very good at detecting genome differences involving just a few base pairs or single-nucleotide variations, which Saphyr cannot detect, but sequencing, including next-generation sequencing, or NGS, cannot reliably detect the larger structural variations that our Saphyr system can detect. Therefore, Saphyr is being adopted alongside this installed base of sequencers as a complement that is designed to give users the ability to see a much wider scope of genome variation than ever before.

The Saphyr system, which is for RUO, is also beginning to be adopted by cytogenetics labs that seek to use it in commercial clinical tests of its patients as a laboratory-developed test, or LDT. We estimate that approximately 2,500 cytogenetics labs exist worldwide. These labs currently rely on existing methods such as karyotyping, fluorescence in situ hybridization, or FISH, and microarrays for clinical tests and research that look at chromosomal structure, location and function in cells. Major guidelines for oncology and genetic disease clinical diagnostics

recommend first-line structural variation testing by these existing methods. The organizations issuing these guidelines include, among many others, World Health Organization (WHO), National Comprehensive Cancer Network (NCCN), American College of Medical Genetics (ACMG) and American College of Obstetricians & Gynecologists (ACOG).

More than 30 medical institutions are conducting more than 20 human translational research and human clinical studies in 2019 and 2020 to assess Saphyr's ability to detect structural variations and diagnose patients and, in certain studies, to compare those results to those produced via existing cytogenetic methods. We expect the findings from these studies, whether assessed internally or published by the institution, to help drive adoption of Saphyr beginning in 2020.

Saphyr and its predecessor system, which we collectively refer to as our system in this prospectus, have been cited by researchers and clinicians in hundreds of publications covering structural variations in areas of high unmet medical need and research interest, such as rare and undiagnosed pediatric diseases, muscular diseases, developmental delays and disorders, prostate cancer and leukemia. Importantly, Saphyr can be used alone to provide comprehensive detection of structural variations and enable diagnostic calls without the need for sequencing or cytogenetic technology. Saphyr enables these diagnostic calls with low cost per patient, high speed and industry leading performance. Saphyr's performance characteristics include up to 99% sensitivity, less than 2% false positive rates and accurate diagnosis with allele fraction, or the percentage of sample exhibiting the variant, as low as between 3-5%.

Recent Highlights

Below is a summary of selected highlights since our follow-on public offering in October 2019:

- We announced the adoption of our Saphyr system by PerkinElmer Genomics and the University of Iowa, including their development of assays using our optical mapping technology to expand their genetic tests assessing disease-associated chromosomal abnormalities.
- We announced that Novogene added the Saphyr system to their repertoire of genomics data services.
- We announced the adoption of our Saphyr system by Mayo Clinic for applications in neurodegenerative disease.
- We announced the adoption of our Saphyr system by GeneDx, using our system for the clinical detection of genetic variants in muscular dystrophies, developmental and reproductive disorders.
- We announced the publication of a study by Radboud University Medical Center showing 100% concordance of Saphyr with standard of care for the detection of somatic chromosomal abnormalities in leukemia.
- We announced a collaboration with GrandOmics in Wuhan, China to study gene variants that contribute to Coronavirus disease susceptibility.

Corporate Information

We were formed in January 2003 as BioNanomatrix LLC, a Delaware limited liability company. In August 2007, we became BioNanomatrix Inc., a Delaware corporation. In October 2011, we changed our name to BioNano Genomics, Inc., and in July 2018, we changed our name to Bionano Genomics, Inc.

Our principal executive offices are located at 9540 Towne Centre Drive, Suite 100, San Diego, California 92121, and our telephone number is (858) 888-7600. Our website address is www.bionanogenomics.com and we regularly post copies of our press releases as well as additional information about us on our website.

Information contained in, or that can be accessed through, our website is not incorporated by reference into this prospectus, and you should not consider information on our website to be part of this prospectus. Our design logo, "Bionano," and our other registered and common law trade names, trademarks and service marks are the property of Bionano Genomics, Inc.

The trademarks, trade names and service marks appearing in this prospectus are the property of their respective owners. We do not intend our use or display of other companies' trademarks, trade names or service marks to imply a relationship with, or endorsement or sponsorship of us by, any other companies or products.

Implications of Being an Emerging Growth Company

We are an emerging growth company, as defined in the Jumpstart Our Business Startups Act of 2012, or the JOBS Act. For as long as we continue to be an emerging growth company, we may take advantage of exemptions from various reporting requirements that are applicable to other public companies that are not emerging growth companies, including not being required to comply with the auditor attestation requirements of Section 404 of the Sarbanes-Oxley Act of 2002, or the Sarbanes-Oxley Act, reduced disclosure obligations regarding executive compensation in this prospectus and our periodic reports and proxy statements and exemptions from the requirements of holding nonbinding advisory votes on executive compensation and stockholder approval of any golden parachute payments not previously approved. We can remain an emerging growth company until the earlier of (1) the last day of the fiscal year (a) ending December 31, 2023, which is the end of the fiscal year following the fifth anniversary of the closing of our initial public offering, (b) in which we have total annual gross revenue of at least \$1.07 billion, or (c) in which we are deemed to be a large accelerated filer, which means the market value of our common stock that is held by non-affiliates exceeds \$700 million as of the prior June 30th, and (2) the date on which we have issued more than \$1.0 billion in non-convertible debt during the prior three-year period. Even after we no longer qualify as an emerging growth company, we may still qualify as a “smaller reporting company” which would allow us to take advantage of many of the same exemptions from disclosure requirements, including reduced disclosure obligations regarding executive compensation in our periodic reports and proxy statements. Additionally, even if we no longer qualify as an emerging growth company, as long as we are neither a “large accelerated filer” nor an “accelerated filer,” we would not be required to comply with the auditor attestation requirements of Section 404 of the Sarbanes-Oxley Act.

We cannot predict if investors will find our securities less attractive because we may rely on these exemptions, which could result in a less active trading market for our securities and increased volatility in the price of our securities.

Under the JOBS Act, emerging growth companies can also delay adopting new or revised accounting standards that have different effective dates for public and private companies until those standards apply to private companies. We have elected to use this extended transition period. As a result of this election, our timeline to comply with these standards will in many cases be delayed as compared to other public companies that are not eligible to take advantage of this election or have not made this election. Therefore, our financial statements may not be comparable to those of companies that comply with the public company effective dates for these standards.

In addition, if we cease to be an emerging growth company, we will no longer be able to use the extended transition period for complying with new or revised accounting standards. As a result, changes in rules of U.S. generally accepted accounting principles or their interpretation, the adoption of new guidance or the application of existing guidance to changes in our business could significantly affect our financial position and results of operations.

Finally, we are a “smaller reporting company” (and may continue to qualify as such even after we no longer qualify as an emerging growth company) and accordingly may provide less public disclosure than larger public companies, including the inclusion of only two years of audited financial statements and only two years of related selected financial data and management’s discussion and analysis of financial condition and results of operations disclosure. As a result, the information that we provide to our stockholders may be different than you might receive from other public reporting companies in which you hold equity interests.

THE OFFERING

Common stock to be offered

17,648,000 shares, assuming the sale of our common stock at an assumed public offering price of \$0.85 per share, which is the last reported sale price of our common stock on March 9, 2020, and no sale of any pre-funded warrants.

Pre-funded warrants offered by us

We are also offering to certain purchasers whose purchase of shares of common stock in this offering would otherwise result in the purchaser, together with its affiliates and certain related parties, beneficially owning more than 4.99% (or, at the election of the purchaser, 9.99%) of our outstanding common stock immediately following the consummation of this offering, the opportunity to purchase, if such purchasers so choose, pre-funded warrants, in lieu of shares of common stock that would otherwise result in any such purchaser's beneficial ownership exceeding 4.99% (or, at the election of the purchaser, 9.99%) of our outstanding common stock. Each pre-funded warrant will be exercisable for one share of our common stock. The purchase price of each pre-funded warrant and the accompanying common warrant will equal the price at which the share of common stock and the accompanying common warrant are being sold to the public in this offering, minus \$0.001, and the exercise price of each pre-funded warrant will be \$0.001 per share. The pre-funded warrants will be exercisable immediately and may be exercised at any time until all of the pre-funded warrants are exercised in full. This offering also relates to the shares of common stock issuable upon exercise of any pre-funded warrants sold in this offering. For each pre-funded warrant we sell, the number of shares of common stock we are offering will be decreased on a one-for-one basis. Because we will issue a common warrant for each share of our common stock and for each pre-funded warrant to purchase one share of our common stock sold in this offering, the number of common warrants sold in this offering will not change as a result of a change in the mix of the shares of our common stock and pre-funded warrants sold.

Common Warrants offered by us

Common warrants to purchase an aggregate of 17,648,000 shares of our common stock. Each share of our common stock and each pre-funded warrant to purchase one share of our common stock is being sold together with a common warrant to purchase one share of our common stock. Each common warrant will have an exercise price of \$0.85 per share, will be immediately exercisable and will expire on the fifth anniversary of the original issuance date. The shares of common stock and pre-funded warrants, and the accompanying common warrants, as the case may be, can only be purchased together in this offering but will be issued separately and will be immediately separable upon issuance. This prospectus also relates to the offering of the shares of common stock issuable upon exercise of the common warrants.

Common stock to be outstanding after this offering	51,922,469 shares (assuming none of the warrants issued in this offering are exercised and assuming the sale of our common stock at an assumed public offering price of \$0.85 per share, which is the last reported sale price of our common stock on March 9, 2020, and no sale of any pre-funded warrants).
Use of proceeds	<p>We estimate that the net proceeds from this offering will be approximately \$13.6 million based on an assumed offering price of \$0.85 per share and accompanying warrant, which was the last reported sales price of our common stock on The Nasdaq Capital Market on March 9, 2020, and assuming no sale of any pre-funded warrants, after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us.</p> <p>We intend to use to use \$2.9 million of the net proceeds from this offering to repay a portion of the aggregate principal amount outstanding under our Loan and Security Agreement with Innovatus Life Sciences Lending Fund I, LP, our senior lender, and the remainder primarily for general corporate purposes, including working capital, sales and marketing activities, general and administrative matters and capital expenditures. See “Use of Proceeds” for additional information.</p>
Risk factors	An investment in our securities involves a high degree of risk. See “Risk Factors” and the other information included in this prospectus and incorporated by reference herein for a discussion of factors you should carefully consider before deciding to invest in our securities.
National Securities Exchange Listing	Our common stock is listed on the Nasdaq Capital Market under the symbol “BNGO.” We do not intend to list the pre-funded warrants or common warrants on any securities exchange or nationally recognized trading system.
<p>The number of shares of our common stock that will be outstanding after this offering is based on 34,274,469 shares of common stock outstanding as of December 31, 2019, and assumes the sale and issuance by us of 17,648,000 shares of common stock (and no sale of any pre-funded warrants) in this offering and excludes:</p> <ul style="list-style-type: none">• 1,742,912 shares of common stock issuable upon the exercise of options outstanding as of December 31, 2019 at a weighted average exercise price of \$5.73 per share;• 196,731 shares of common stock reserved for future issuance under our 2018 Equity Incentive Plan as of December 31, 2019;• 165,402 shares of common stock reserved for future issuance under our 2018 Employee Stock Purchase Plan as of December 31, 2019;• 24,406,050 shares of common stock issuable upon the exercise of common warrants outstanding as of December 31, 2019 at a weighted-average exercise price of \$1.76 per share;• 163,000 shares of common stock issuable upon the exercise of pre-funded warrants outstanding as of December 31, 2019 at a weighted-average exercise price of \$0.001 per share; and• 17,648,000 shares of common stock issuable upon the exercise of the common warrants issued in this offering. <p>Unless otherwise indicated, this prospectus reflects and assumes no issuances or exercises of any other outstanding options or warrants after December 31, 2019.</p>	

RISK FACTORS

Investing in our common stock involves a high degree of risk. You should consider carefully the following risks and uncertainties as well as the risks and uncertainties described in the section entitled “Risk Factors” contained in our Annual Report on Form 10-K for the year ended December 31, 2019, as filed with the Securities and Exchange Commission, or SEC, on March 10, 2020, as well as in our subsequent Quarterly and Annual Reports filed with the SEC, which descriptions are incorporated in this prospectus by reference in their entirety, as well as in any prospectus supplement hereto. These risks and uncertainties are not the only risks and uncertainties we face. Additional risks and uncertainties not currently known to us, or that we currently view as immaterial, may also impair our business. If any of the risks or uncertainties described in our SEC filings or any additional risks and uncertainties actually occur, our business, financial condition, results of operations and cash flow could be materially and adversely affected. In that case, the trading price of our common stock could decline and you might lose all or part of your investment. You should carefully consider the following information about risks, together with the other information contained in this prospectus, before making an investment in our common stock.

If you purchase shares of common stock in this offering, you will experience immediate and substantial dilution in your investment. You will experience further dilution if we issue additional equity or equity-linked securities in the future.

Since the price per share of our common stock being offered is substantially higher than the net tangible book value per share of our common stock, you will suffer immediate and substantial dilution with respect to the net tangible book value of the common stock you purchase in this offering. Based on the assumed combined public offering price of \$0.85 per share of common stock and accompanying warrants being sold in this offering, and our net tangible book value as of December 31, 2019, if you purchase shares of common stock in this offering, you will suffer immediate and substantial dilution of \$0.52 per share with respect to the net tangible book value of the common stock. See the section entitled “Dilution” for a more detailed discussion of the dilution you will incur if you purchase common stock in this offering.

If we issue additional shares of common stock, or securities convertible into or exchangeable or exercisable for shares of common stock, our stockholders, including investors who purchase shares of common stock and accompanying warrants in this offering, will experience additional dilution, and any such issuances may result in downward pressure on the price of our common stock. We also cannot assure you that we will be able to sell shares or other securities in any other offering at a price per share that is equal to or greater than the price per share paid by investors in this offering, and investors purchasing shares or other securities in the future could have rights superior to existing stockholders.

Future sales of substantial amounts of our common stock, or the possibility that such sales could occur, could adversely affect the market price of our common stock.

Future sales in the public market of shares of our common stock, including shares referred to in the foregoing risk factor or shares issued upon exercise of our outstanding stock options, or the perception by the market that these sales could occur, could lower the market price of our common stock or make it difficult for us to raise additional capital.

There is no public market for the pre-funded warrants or common warrants being offered in this offering.

There is no established public trading market for the pre-funded warrants or common warrants being offered in this offering, and we do not expect a market to develop. In addition, we do not intend to apply to list the pre-funded warrants or common warrants on any securities exchange or nationally recognized trading system, including the Nasdaq Capital Market. Without an active market, the liquidity of the pre-funded warrants or common warrants will be limited.

Holders of pre-funded warrants or common warrants purchased in this offering will have no rights as common stockholders until such holders exercise such warrants and acquire our common stock.

Until holders of pre-funded warrants or common warrants acquire shares of our common stock upon exercise of such warrants, holders of pre-funded warrants or common warrants will have no rights with respect to the shares of our common stock underlying such warrants. Upon exercise of the pre-funded warrants or common warrants, the holders will be entitled to exercise the rights of a common stockholder only as to matters for which the record date occurs after the exercise date.

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We will have broad discretion in the use of our existing cash and cash equivalents, including the proceeds from this offering, and may invest or spend our cash in ways with which you do not agree and in ways that may not increase the value of your investment.

We will have broad discretion over the use of our cash and cash equivalents, including the proceeds from this offering. You may not agree with our decisions, and our use of cash may not yield any return on your investment. We intend to use the net proceeds from this offering to expand our commercial capabilities in selling and marketing related to our products, to fund our ongoing research and development activities, and for general corporate purposes, including working capital, operating expenses and capital expenditures. Our failure to apply the net proceeds from this offering effectively could compromise our ability to pursue our growth strategy and we might not be able to yield a significant return, if any, on our investment of these net proceeds. You will not have the opportunity to influence our decisions on how to use our net proceeds from this offering.

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus and the documents incorporated by reference herein contain forward-looking statements that reflect our management's beliefs and views with respect to future events and are subject to substantial risks and uncertainties within the meaning of Section 27A of the Securities Act, Section 21E of the Securities Exchange Act of 1934, as amended and the safe harbor provisions for the U.S. Private Securities Litigation Reform Act of 1995. All statements, other than statements of historical fact, contained in this prospectus and the documents incorporated by reference herein, including statements regarding our strategy, future operations, future financial position, future revenue, projected costs, prospects, plans and objectives of management, are forward-looking statements. In some cases, forward-looking statements can be identified by the use of forward-looking words such as "aim," "anticipate," "believe," "contemplate," "continue," "could," "estimate," "expect," "intend," "may," "plan," "potential," "predict," "pro forma," "project," "seek," "should," "target," "will," "would" or other similar words or expressions (including their use in the negative), or by discussions of future matters such as the development of products, technology enhancements, possible changes in legislation, and other statements that are not historical.

We have based these forward-looking statements largely on our current expectations and projections about future events and financial trends that we believe may affect our financial condition, results of operations, business strategy and financial needs. These forward-looking statements are subject to known and unknown risks, uncertainties and assumptions, including risks described in "Risk Factors" and elsewhere in this prospectus and the documents incorporated by reference herein, regarding, among other things:

- the size and growth potential of the markets for our products, and our ability to serve those markets;
- the rate and degree of market acceptance of our products;
- ability to expand our sales organization to address effectively existing and new markets that we intend to target;
- impact from future regulatory, judicial, and legislative changes or developments in the U.S. and foreign countries;
- ability to compete effectively in a competitive industry;
- the success of competing technologies that are or may become available;
- the performance of our third-party contract sales organizations, suppliers and manufacturers;
- our ability to attract and retain key scientific or management personnel;
- the accuracy of our estimates regarding expenses, future revenues, reimbursement rates, capital requirements and needs for additional financing;
- our ability to comply with the covenants and satisfy certain conditions of our debt facility;
- our ability to obtain funding for our operations; and
- our ability to attract collaborators and strategic partnerships.

We may not actually achieve the plans, intentions or expectations disclosed in our forward-looking statements. We operate in a very competitive and rapidly changing environment. It is not possible for our management to predict all risks, nor can we assess the impact of all factors on our business or the extent to which any factor, or combination of factors, may cause actual results to differ materially from those contained in any forward-looking statements we may make. Actual results or events could differ materially from the plans, intentions and expectations disclosed in the forward-looking statements we make, and accordingly you should not place undue reliance on our forward-looking statements. We have included important factors in the cautionary statements included in this prospectus, particularly in the "Risk Factors" section in this prospectus and the documents incorporated by reference herein, that we believe could cause actual results or events to differ materially from the forward-looking statements that we make. Our forward-looking statements do not reflect the potential impact of any future acquisitions, mergers, dispositions, joint ventures or investments we may make.

You should read this prospectus, the documents incorporated by reference herein and the documents that we have filed as exhibits to the registration statement of which this prospectus is a part completely and with the understanding that our actual future results may be materially different from what we expect. We qualify all of the forward-looking statements in this prospectus and the documents incorporated by reference herein by these cautionary statements. Except as required by law, we undertake no obligation to publicly update any forward-looking statements, whether as a result of new information, future events or otherwise.

USE OF PROCEEDS

We estimate that we will receive net proceeds of approximately \$13.6 million from the sale of the securities offered by us in this offering, assuming a public offering price of \$0.85 per share and accompanying common warrant, which was the last reported sale price of our common stock on The Nasdaq Capital Market on March 9, 2020, and after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us, and excluding the proceeds, if any, from the exercise of the common warrants issued in this offering.

A \$0.25 increase or decrease in the assumed combined public offering price of \$0.85 per share and accompanying common warrant would increase or decrease the expected net proceeds of the offering to us by approximately \$4.1 million, assuming the number of shares offered by us, as set forth on the cover page of this prospectus, remains the same and after deducting the estimated underwriting discounts and commissions and estimated offering expenses payable by us. An increase or decrease of 1.0 million shares from the assumed number of shares sold in this offering would increase or decrease the expected net proceeds of the offering to us by approximately \$0.8 million, assuming the combined public offering price of \$0.85 per share and accompanying common warrant remains the same, and after deducting the estimated underwriting discounts and commissions and estimated offering expenses payable by us.

The principal purposes of this offering are to obtain additional capital to support our operations. We intend to use \$2.9 million of the net proceeds from this offering to repay a portion of the aggregate principal amount outstanding under the Innovatus Loan Agreement (as defined below) and the remainder primarily for general corporate purposes, including working capital, sales and marketing activities, general and administrative matters and capital expenditures. We may also use a portion of our net proceeds to co-develop, acquire or invest in products, technologies or businesses that are complementary to our business. However, we currently have no agreements or commitments to complete any such transaction.

As noted above, we will use a portion of the net proceeds from this offering to repay \$2.9 million of the approximately \$20 million aggregate principal amount outstanding under our Loan and Security Agreement, or the Innovatus Loan Agreement, with Innovatus Life Sciences Lending Fund I, LP, a Delaware limited partnership, as collateral agent and the Lenders listed on Schedule 1.1 thereto, including East West Bank. The total interest rate under the Innovatus Loan Agreement is 10.25%, such that interest is payable in cash at a rate of 7.25% per annum, with the remaining 3.0% per annum of the interest added back to the outstanding principal amount. The Innovatus Loan Agreement matures on March 1, 2024.

The foregoing discussion assumes no sale of pre-funded warrants, which if sold, would reduce the number of shares of common stock that we are offering on a one-for-one basis.

We believe that the net proceeds from this offering, together with our existing cash and cash equivalents, will enable us to fund our operations through at least the next 12 months. We have based this estimate on assumptions that may prove to be wrong, and we could use our available capital resources sooner than we expect.

Our management will have broad discretion in the application of the net proceeds from this offering, and investors will be relying on the judgment of our management regarding the application of those net proceeds. The timing and amount of our actual expenditures will be based on many factors, including cash flows from operations and the anticipated growth of our business. Pending the uses described above, we plan to invest these net proceeds in short-term, interest bearing investments, investment-grade instruments, certificates of deposit or direct or guaranteed obligations of the United States. We also may use a portion of the net proceeds from the offering to fund acquisitions or other business development opportunities. However, we have no current commitments or obligations with respect to any such acquisitions or business development opportunities at this time.

DIVIDEND POLICY

We do not anticipate declaring or paying, in the foreseeable future, any cash dividends on our capital stock. We intend to retain all available funds and future earnings, if any, to fund the development and expansion of our business, and we do not anticipate paying any cash dividends in the foreseeable future. Any future determination regarding the declaration and payment of dividends, if any, will be at the discretion of our board of directors and will depend on then-existing conditions, including our financial condition, operating results, contractual restrictions, capital requirements, business prospects and other factors our board of directors may deem relevant. In addition, we are currently prohibited from paying dividends on our common stock without the prior written consent of Innovatus Life Sciences Lending Fund I, LP, our senior lender.

DILUTION

If you invest in our securities, your ownership interest will be diluted to the extent of the difference between the public offering price per share of our common stock and the as adjusted net tangible book value per share of our common stock immediately after the closing of this offering.

Our historical net tangible book value as of December 31, 2019 was \$3.6 million, or \$0.11 per share of common stock. Our historical net tangible book value is the amount of our total tangible assets less our liabilities. Historical net tangible book value per common share is our historical net tangible book value divided by the number of shares of common stock outstanding as of December 31, 2019.

After giving effect to the sale of shares of common stock and accompanying common warrants in this offering at an assumed public offering price of \$0.85 per share, which was the last reported sale price of our common stock on the Nasdaq Capital Market on March 9, 2020, and after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us, and excluding the proceeds, if any, from the exercise of the common warrants issued in this offering, our as adjusted net tangible book value as of December 31, 2019 would be \$17.2 million, or \$0.33 per share of common stock. This amount represents an immediate increase in as adjusted net tangible book value of \$0.22 per share to our existing stockholders and an immediate dilution of \$0.52 per share to investors participating in this offering. We determine dilution per share to investors participating in this offering by subtracting as adjusted net tangible book value per share after this offering from the assumed public offering price per share paid by investors participating in this offering.

The following table illustrates this dilution on a per share basis to new investors:

Assumed public offering price per share and accompanying common warrant		\$	0.85
Historical net tangible book value per share as of December 31, 2019		\$	0.11
Increase in as adjusted net tangible book value per share attributable to this offering			0.22
As adjusted net tangible book value per share after giving effect to this offering			0.33
Dilution per share to new investors in this offering		\$	0.52

The as-adjusted dilution information discussed above is illustrative only and will change based on the actual public offering price. Each \$0.25 increase (decrease) in the assumed public offering price of \$0.85 per share and accompanying common warrant, which was the last reported sale price of our common stock on the Nasdaq Capital Market on March 9, 2020, would increase (decrease) the as-adjusted net tangible book value per share by \$0.08 per share and the dilution per share to investors participating in this offering by \$0.69 per share, assuming that the number of shares and accompanying common warrants offered by us, as set forth on the cover page of this prospectus, remains the same and after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us, and excluding the proceeds, if any, from the exercise of the common warrants issued in this offering.

We may also increase or decrease the number of shares we are offering. A 1.0 million share increase in the number of shares and accompanying common warrants offered by us, as set forth on the cover page of this prospectus, would increase the as adjusted net tangible book value per share by \$0.01 and decrease the dilution per share to new investors participating in this offering by \$0.01, assuming the assumed public offering price of \$0.85 per share, which was the last reported sale price of our common stock on the Nasdaq Capital Market on March 9, 2020, remains the same and after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us, and excluding the proceeds, if any, from the exercise of the common warrants issued in this offering. A 1.0 million share decrease in the number of shares and accompanying common warrants offered by us, as set forth on the cover page of this prospectus, would decrease the as adjusted net tangible book value per share after this offering by \$0.01 and increase the dilution per share to new investors participating in this offering by \$0.01, assuming the assumed public offering price of \$0.85 per share, which was the last reported sale price of our common stock on the Nasdaq Capital Market on March 9, 2020, remains the same and after deducting estimated underwriting discounts and commissions and estimated offering expenses payable by us, and excluding the proceeds, if any, from the exercise of the common warrants issued in this offering. The information discussed above is illustrative only and will adjust based on the actual public offering price, the actual number of shares and common warrants that we offer in this offering, and other terms of this offering determined at pricing. The discussion and table above assume (i) no sale of pre-funded warrants, which, if sold, would reduce the number of shares of common stock that we are offering on a one-for-one basis and (ii) no exercise of common warrants accompanying the shares of common stock sold in this offering.

SELECTED FINANCIAL DATA

The selected statements of operations data for the years ended December 31, 2018 and 2019 and the balance sheet data as of December 31, 2018 and 2019 are derived from our audited financial statements appearing in our Annual Report on Form 10-K for the year ended December 31, 2019, which is incorporated by reference herein. Our historical results are not necessarily indicative of our results in any future period and results from our interim period may not necessarily be indicative of the results of the entire year.

You should read the following selected financial data together with “Management’s Discussion and Analysis of Financial Condition and Results of Operations” section and our financial statements and the related notes in our Annual Report on Form 10-K for the year ended December 31, 2019, which is incorporated by reference herein. The selected financial data in this section are not intended to replace our financial statements and the related notes and are qualified in their entirety by the financial statements and related notes included elsewhere in this prospectus.

	Year Ended December 31,	
	2018	2019
Total revenue	\$ 12,000,735	\$ 10,129,508
Operating expenses:		
Cost of revenue	8,711,326	6,768,147
Research and development	9,484,163	9,080,891
Selling, general and administrative	14,220,331	20,155,376
Total cost of revenue and operating expenses	32,415,820	36,004,414
Interest expense	(1,381,024)	(2,286,196)
Other income (expense)	3,315,228	(1,632,920)
Provision for income taxes	(15,511)	(21,048)
Net loss	<u>\$ (18,496,392)</u>	<u>\$ (29,815,070)</u>
Net loss per share:		
Basic and diluted	\$ (2.61)	\$ (1.99)
	As of December 31	
	2018	2019
Balance Sheet Data:		
Cash and cash equivalents	\$ 16,522,729	\$ 17,311,373
Working capital	18,502,256	1,891,220
Total assets	24,802,421	30,207,866
Long-term debt	9,029,374	—
Total liabilities	14,665,070	26,594,148
Accumulated deficit	(72,762,428)	(102,577,498)
Total stockholders' (deficit) equity	10,137,351	3,613,718

PRINCIPAL STOCKHOLDERS

The following table sets forth information regarding beneficial ownership of our capital stock as of December 31, 2019 by:

- each person, or group of affiliated persons, known by us to beneficially own more than 5% of our common stock;
- each of our directors;
- each of our named executive officers; and
- all of our current executive officers and directors as a group.

The percentage ownership information shown in the column titled “Before Offering” in the table is based on 34,274,469 shares of common stock outstanding as of December 31, 2019. The percentage ownership information shown in the column titled “After Offering” in the table is based upon _____ shares, assuming the sale of _____ shares of our common stock and accompanying common warrants by us in this offering.

We have determined beneficial ownership in accordance with the rules of the SEC. These rules generally attribute beneficial ownership of securities to persons who possess sole or shared voting power or investment power with respect to those securities. In addition, the rules include shares of common stock issuable pursuant to the exercise of stock options or warrants that are exercisable as of February 29, 2020, which is 60 days after December 31, 2019. These shares are deemed to be outstanding and beneficially owned by the person holding those options or warrants for the purpose of computing the percentage ownership of that person, but they are not treated as outstanding for the purpose of computing the percentage ownership of any other person.

The following table is based upon information supplied by officers, directors and principal stockholders and Schedules 13D and 13G, if any, filed with the SEC. Unless otherwise indicated in the footnotes to this table and subject to community property laws where applicable, we believe that each of the stockholders named in this table has sole voting and investment power with respect to the shares indicated as beneficially owned.

Unless otherwise indicated, the address for each beneficial owner listed in the table below is c/o Bionano Genomics, Inc., 9540 Towne Centre Drive, Suite 100, San Diego, California 92121.

Name of Beneficial Owner	Number of Shares Beneficially Owned	Percentage of Shares Beneficially Owned	
		Before Offering	After Offering
Greater than 5% Stockholders			
LC Fund VI, L.P. and Related Entities ⁽¹⁾	2,906,915	8.5%	%
Hudson Bay Capital Management LP ⁽²⁾	2,020,000	5.6%	%
Wealth Strategy Holding Limited ⁽³⁾	1,950,000	5.5%	%
Entities affiliated with Innovatus Life Sciences GP, LP ⁽⁴⁾	1,891,408	5.4%	%
Directors and Named Executive Officers			
David L. Barker, Ph.D. ⁽⁵⁾	40,454	*	*
R. Erik Holmlin, Ph.D. ⁽⁶⁾	34,167	*	*
Albert Luderer, Ph.D. ⁽⁷⁾	28,461	*	*
Mark Oldakowski ⁽⁸⁾	88,907	*	*
Warren Robinson ⁽⁹⁾	85,642	*	*
Christopher Twomey ⁽¹⁰⁾	58,280	*	*
Junfeng Wang ⁽¹⁾	2,926,195	8.5%	%
Mike Ward ⁽¹¹⁾	66,416	*	*
Kristiina Vuori, M.D., Ph.D. ⁽¹²⁾	6,727	*	*
All directors and executive officers as a group (9 persons)⁽¹³⁾		9.6%	%

* Represents beneficial ownership of less than 1%.

(1) Based solely on a Schedule 13G filed with the SEC by the reporting persons on June 7, 2019, the indicated ownership consists of (i) 426,900 shares of common stock held by LC Fund VI, L.P., (ii) 20,656 shares of common stock held by LC Parallel Fund VI, L.P., (iii) 1,325,359 shares of common stock held by LC Healthcare Fund I, L.P., and (iv) 1,134,000 shares of common stock held by Rosy Shine Limited and (v) 19,280 shares of common stock subject to options exercisable as of February 29, 2020 held by Junfeng Wang. Each of LC Fund VI, L.P., LC Parallel Fund VI, L.P., and LC Healthcare Fund I, L.P., collectively referred to as the LC Funds, are ultimately controlled and managed by Legend Capital, a limited liability Chinese company. Legend Capital is ultimately controlled by a management team consisting of three key individuals, Linan Zhu, Hao Chen, and Nengguang Wang. In addition, Junfeng Wang and Quan Zhou are Managing

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Directors of Legend Capital. Each of these individual managers of Legend Capital shares voting and investment power over the shares held by the LC Funds. Rosy Shine Limited is ultimately controlled and managed by Legend Holdings, a limited liability Chinese joint stock company listed on a Stock Exchange of Hong Kong (3396). The board of directors of Legend Holdings has sole voting and investment power over the shares held by Rosy Shine Limited. None of the members of the board of directors has individual voting or investment power with respect to such shares and each disclaims beneficial ownership of such shares. The address of the principal place of business for each of the above entities except Legend Holdings is Legend Capital, 16/F, Tower B, Raycom Infotech Park, No.2 Kexueyuan South Road, Zhongguancun, Haidian District, Beijing 100190, People's Republic of China. The Schedule 13G filed by the reporting persons provides information as of April 2, 2019 and, consequently, the beneficial ownership of the reporting persons may have changed between April 2, 2019 and December 31, 2019. The address of the principal place of business for Legend Holdings is Room 1701, 17/F, Block 1, Court No. 2, Ke Xue Yuan Nanlu, Haidian District, Beijing, People's Republic of China.

- (2) Based solely on a Schedule 13G filed with the SEC by the reporting person January 31, 2020, the indicated ownership consists of 2,020,000 shares of common stock issuable upon the exercise of warrants held by Hudson Bay Master Fund Ltd. According to the Schedule 13G, Hudson Bay Capital Management LP acts as investment manager to Hudson Bay Master Fund Ltd., and Mr. Sander Gerber, a United States citizen, serves as managing member of Hudson Bay Capital GP LLC, which is a general partner of Hudson Bay Capital Management LP. Hudson Bay Capital Management LP and Mr. Sander Gerber may be deemed to have shared voting and dispositive power with respect to the shares held by Hudson Bay Master Fund Ltd. The address for Hudson Bay Capital Management LP and Mr. Sander Gerber listed in the Schedule 13G is 777 Third Avenue, 30th Floor, New York, NY 10017.
- (3) Based solely on a Schedule 13G filed with the SEC by the reporting person on December 14, 2018, the indicated ownership consists of 975,000 shares of common stock and 975,000 shares of common stock issuable upon the exercise of warrants held by Wealth Strategy Holding Limited. According to the Schedule 13G, Mr. Kung Hung Ka may be deemed to have sole voting and dispositive power with respect to the shares held by Wealth Strategy Holding Limited. The Schedule 13G/A filed by the reporting person provides information as of August 21, 2018 and, consequently, the beneficial ownership of the reporting person may have changed between August 21, 2018 and December 31, 2019. The address for Wealth Strategy Holding Limited listed in the Schedule 13G is Level 12, International Commerce Centre, 1 Austin Road West, Kowloon, Hong Kong.
- (4) The indicated ownership consists of (i) 839,781 shares of common stock and 332,948 shares of common stock issuable upon the exercise of warrants held by Innovatus Life Sciences Lending Fund I, LP, or Innovatus, and (ii) 514,640 shares of common stock and 204,039 shares of common stock issuable upon the exercise of warrants held by Innovatus Life Sciences Offshore Fund I-A, LP., or Innovatus Offshore. Innovatus Life Sciences GP, LP, or Innovatus GP, is the general partner of Innovatus Life Sciences Lending Fund I, LP, or Innovatus. Innovatus Capital Partners LLC, or Innovatus Manager, serves as investment manager to each of Innovatus and Innovatus Life Sciences Offshore Fund I-A, LP, or Innovatus Offshore. Innovatus Life Sciences Offshore GP, LP, or Innovatus Offshore GP, is the general partner of Innovatus Offshore. Each of Innovatus GP, Innovatus, Innovatus Manager, Innovatus Offshore GP and Innovatus Offshore are collectively referred to as the Innovatus Entities. Innovatus Flagship Parent GP, LLC, or Innovatus Holdings, is the parent company of Innovatus GP and Innovatus Offshore Parent GP, LLC, or Innovatus Offshore Holdings. David Schiff, a citizen of the United States, is the principal shareholder of each of Innovatus Holdings and Innovatus Offshore Holdings, collectively referred to as the Parent Entities, and could be deemed to exercise voting and investment power over the Parent Entities and the Innovatus Entities. The address of the principal place of business for each of the Parent Entities and David Schiff is 777 Third Avenue, 25th Floor New York, NY 10017.
- (5) Consists of (i) 3,894 shares of common stock, (ii) 32,666 shares of common stock subject to options exercisable as of February 29, 2020 and (iii) 3,894 shares of common stock issuable upon the exercise of warrants.
- (6) Consists of (i) 3,026 shares of common stock, (ii) 29,511 shares of common stock subject to options exercisable as of February 29, 2020 and (iii) 1,630 shares of common stock issuable upon the exercise of warrants.
- (7) Consists of (i) 28,461 shares of common stock subject to options exercisable as of February 29, 2020.
- (8) Consists of (i) 9,736 shares of common stock, (ii) 78,356 shares of common stock subject to options exercisable as of February 29, 2020 and (iii) 815 shares of common stock issuable upon the exercise of warrants.
- (9) Consists of (i) 3,932 shares of common stock and (ii) 81,710 shares of common stock subject to options exercisable as of February 29, 2020.
- (10) Consists of (i) 19,500 shares of common stock, (ii) 19,280 shares of common stock subject to options exercisable as of February 29, 2020 and (iii) 19,500 shares of common stock issuable upon the exercise of warrants.
- (11) Consists of 66,416 shares of common stock subject to options exercisable as of February 29, 2020. Mr. Ward terminated service with us effective December 6, 2019.
- (12) Consists of 6,727 shares of common stock subject to options exercisable as of February 29, 2020.
- (13) Consists of (i) 2,937,503 shares of common stock, (ii) 362,407 shares of common stock subject to options exercisable as of February 29, 2020 and (iii) 16,339 shares of common stock issuable upon the exercise of warrants.

DESCRIPTION OF CAPITAL STOCK

The following description of our capital stock, certain provisions of our certificate of incorporation and bylaws, and certain provisions of Delaware law are summaries. The following description is not complete and is subject to and qualified in its entirety by our certificate of incorporation and bylaws, which are filed as exhibits to the registration statement of which this prospectus is a part, as well as the relevant provisions of the Delaware General Corporation Law.

As of the date of this prospectus, our certificate of incorporation authorized us to issue 200,000,000 shares of common stock, par value \$0.0001 per share, and 10,000,000 shares of preferred stock, par value \$0.0001 per share.

Common Stock

Voting Rights

Our common stock is entitled to one vote for each share held of record on all matters submitted to a vote of the stockholders, including the election of directors, and does not have cumulative voting rights. Our amended and restated certificate of incorporation establishes a classified board of directors that is divided into three classes with staggered three-year terms. Only the directors in one class will be subject to election by a plurality of the votes cast at each annual meeting of our stockholders, with the directors in the other classes continuing for the remainder of their respective three-year terms.

Economic Rights

Except as otherwise expressly provided in our certificate of incorporation or required by applicable law, all shares of common stock have the same rights and privileges and rank equally, share ratably, and are identical in all respects for all matters, including those described below.

Dividends. Subject to preferences that may be applicable to any then-outstanding preferred stock, the holders of common stock are entitled to receive dividends, if any, as may be declared from time to time by our board of directors out of legally available funds.

Liquidation Rights. In the event of our liquidation, dissolution or winding-up, holders of our common stock are entitled to share ratably in the net assets legally available for distribution to stockholders after the payment of all of our debts and other liabilities, subject to the satisfaction of any liquidation preference granted to the holders of any outstanding shares of preferred stock.

No Preemptive or Similar Rights

The holders of our shares of common stock are not entitled to preemptive rights, and are not subject to conversion, redemption or sinking fund provisions. The rights, preferences and privileges of the holders of our common stock are subject to, and may be adversely affected by, the rights of the holders of shares of any series of our preferred stock that we may designate and issue in the future.

Fully Paid and Non-Assessable

All of our outstanding shares of common stock are, and the shares of common stock to be issued in this offering will be, fully paid and nonassessable.

Convertible Preferred Stock

Our board of directors may authorize the issuance of preferred stock with voting or conversion rights that could adversely affect the voting power or other rights of the holders of the common stock. The issuance of preferred stock, while providing flexibility in connection with possible acquisitions and other corporate purposes, could, among other things, have the effect of delaying, deferring or preventing a change in our control that may otherwise benefit holders of our common stock and may adversely affect the market price of the common stock and the voting and other rights of the holders of common stock. We have no current plans to issue any shares of preferred stock.

Anti-Takeover Provisions

The provisions of Delaware law, our eighth amended and restated certificate of incorporation and our amended and restated bylaws, certain provisions of which are summarized below, may have the effect of delaying, deferring or discouraging another person from acquiring control of our company. They are also designed, in part, to encourage

persons seeking to acquire control of us to negotiate first with our board of directors. We believe that the benefits of increased protection of our potential ability to negotiate with an unfriendly or unsolicited acquirer outweigh the disadvantages of discouraging a proposal to acquire us because negotiation of these proposals could result in an improvement of their terms.

Certificate of Incorporation and Bylaws to be in Effect upon the Closing of this Offering

Because our stockholders do not have cumulative voting rights, stockholders holding a majority of the voting power of our shares of common stock may be able to elect all of our directors. Our amended and restated certificate of incorporation and amended and restated bylaws provide for stockholder actions at a duly called meeting of stockholders or, before the date on which all shares of common stock convert into a single class, by written consent. A special meeting of stockholders may be called by a majority of our board of directors, the chair of our board of directors, or our chief executive officer. Our amended and restated bylaws establish an advance notice procedure for stockholder proposals to be brought before an annual meeting of our stockholders, including proposed nominations of persons for election to our board of directors. Our board of directors is divided into three classes with staggered three-year terms.

The foregoing provisions make it difficult for another party to obtain control of us by replacing our board of directors. Since our board of directors has the power to retain and discharge our officers, these provisions could also make it more difficult for existing stockholders or another party to effect a change in management. In addition, the authorization of undesignated preferred stock makes it possible for our board of directors to issue preferred stock with voting or other rights or preferences that could impede the success of any attempt to change our control.

These provisions are designed to reduce our vulnerability to an unsolicited acquisition proposal and to discourage certain tactics that may be used in proxy fights. However, such provisions could have the effect of discouraging others from making tender offers for our shares and may have the effect of deterring hostile takeovers or delaying changes in our control or management. As a consequence, these provisions may also inhibit fluctuations in the market price of our stock that could result from actual or rumored takeover attempts.

Section 203 of the Delaware General Corporation Law

We are subject to Section 203 of the Delaware General Corporation Law, which prohibits a Delaware corporation from engaging in any business combination with any interested stockholder for a period of three years after the date that such stockholder became an interested stockholder, subject to certain exceptions.

Choice of Forum

Our amended and restated certificate of incorporation provides that the Court of Chancery of the State of Delaware is the exclusive forum for: (i) any derivative action or proceeding brought on our behalf; (ii) any action asserting a breach of fiduciary duty; (iii) any action asserting a claim against us or any of our directors or officers or other employees arising under the Delaware General Corporation Law, our amended and restated certificate of incorporation or our amended and restated bylaws; or (iv) any action asserting a claim against us that is governed by the internal affairs doctrine. Our amended and restated certificate of incorporation further provides that U.S. federal district courts is the exclusive forum for resolving any complaint asserting a cause of action arising under the Securities Act. However, a Delaware court recently held that such an exclusive forum provision relating to federal courts was unenforceable under Delaware law, and unless and until the Delaware court decision is reversed on appeal or otherwise abrogated, we do not intend to enforce such a provision in the event of a complaint asserting a cause of action arising under the Securities Act. These choice of forum provisions of our amended and restated certificate of incorporation will not apply to suits brought to enforce a duty or liability created by the Securities Exchange Act of 1934, as amended.

DESCRIPTION OF SECURITIES WE ARE OFFERING

We are offering (i) 17,648,000 shares of our common stock or pre-funded warrants to purchase shares of our common stock and (ii) common warrants to purchase up to an aggregate of 17,648,000 shares of our common stock. Each share of common stock or pre-funded warrant is being sold together with a common warrant to purchase one share of common stock. The shares of common stock or pre-funded warrants and accompanying common warrants will be issued separately. We are also registering the shares of common stock issuable from time to time upon exercise of the pre-funded warrants and common warrants offered hereby.

Common Stock

The material terms and provisions of our common stock and each other class of our securities which qualifies or limits our common stock are described under the caption “Description of Capital Stock” in this prospectus.

Pre-Funded Warrants

The following summary of certain terms and provisions of pre-funded warrants that are being offered hereby is not complete and is subject to, and qualified in its entirety by, the provisions of the pre-funded warrant, the form of which is filed as an exhibit to the registration statement of which this prospectus forms a part. Prospective investors should carefully review the terms and provisions of the form of pre-funded warrant for a complete description of the terms and conditions of the pre-funded warrants.

Duration and Exercise Price. Each pre-funded warrant offered hereby will have an initial exercise price per share equal to \$0.001. The pre-funded warrants will be immediately exercisable and may be exercised at any time until the pre-funded warrants are exercised in full. The exercise price and number of shares of common stock issuable upon exercise is subject to appropriate adjustment in the event of stock dividends, stock splits, reorganizations or similar events affecting our common stock and the exercise price. The pre-funded warrants will be issued separately from the accompanying common warrants, and may be transferred separately immediately thereafter.

Exercisability. The pre-funded warrants will be exercisable, at the option of each holder, in whole or in part, by delivering to us a duly executed exercise notice accompanied by payment in full for the number of shares of our common stock purchased upon such exercise (except in the case of a cashless exercise as discussed below). Purchasers of the pre-funded warrants in this offering may elect to deliver their exercise notice following the pricing of the offering and prior to the issuance of the pre-funded warrants at closing to have their pre-funded warrants exercised immediately upon issuance and receive shares of common stock underlying the pre-funded warrants upon closing of this offering. A holder (together with its affiliates) may not exercise any portion of the pre-funded warrant to the extent that the holder would own more than 4.99% of the outstanding common stock immediately after exercise, except that upon at least 61 days’ prior notice from the holder to us, the holder may increase the amount of ownership of outstanding stock after exercising the holder’s pre-funded warrants up to 9.99% of the number of shares of our common stock outstanding immediately after giving effect to the exercise, as such percentage ownership is determined in accordance with the terms of the pre-funded warrants. Purchasers of pre-funded warrants in this offering may also elect prior to the issuance of the pre-funded warrants to have the initial exercise limitation set at 9.99% of our outstanding common stock. No fractional shares of common stock will be issued in connection with the exercise of a pre-funded warrant. In lieu of fractional shares, we will round down to the next whole share.

Cashless Exercise. If, at the time a holder exercises its pre-funded warrants, a registration statement registering the issuance of the shares of common stock underlying the pre-funded warrants under the Securities Act is not then effective or available, then in lieu of making the cash payment otherwise contemplated to be made to us upon such exercise in payment of the aggregate exercise price, the holder may elect instead to receive upon such exercise (either in whole or in part) the net number of shares of common stock determined according to a formula set forth in the pre-funded warrants.

Transferability. Subject to applicable laws, a pre-funded warrant may be transferred at the option of the holder upon surrender of the pre-funded warrant to us together with the appropriate instruments of transfer.

Exchange Listing. There is no trading market available for the pre-funded warrants on any securities exchange or nationally recognized trading system. We do not intend to list the pre-funded warrants on any securities exchange or nationally recognized trading system.

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Right as a Stockholder. Except as otherwise provided in the pre-funded warrants or by virtue of such holder's ownership of shares of our common stock, the holders of the pre-funded warrants do not have the rights or privileges of holders of our common stock, including any voting rights, until they exercise their pre-funded warrants.

Fundamental Transaction. In the event of a fundamental transaction, as described in the pre-funded warrants and generally including any reorganization, recapitalization or reclassification of our common stock, the sale, transfer or other disposition of all or substantially all of our properties or assets, our consolidation or merger with or into another person, the acquisition of more than 50% of our outstanding common stock, or any person or group becoming the beneficial owner of 50% of the voting power represented by our outstanding common stock, the holders of the pre-funded warrants will be entitled to receive upon exercise of the pre-funded warrants the kind and amount of securities, cash or other property that the holders would have received had they exercised the pre-funded warrants immediately prior to such fundamental transaction.

Common Warrants

The following summary of certain terms and provisions of Common Warrants that are being offered hereby is not complete and is subject to, and qualified in its entirety by, the provisions of the Common Warrants, the form of which is filed as an exhibit to the registration statement of which this prospectus forms a part. Prospective investors should carefully review the terms and provisions of the form of Common Warrants for a complete description of the terms and conditions of the common warrants.

Duration and Exercise Price. Each common warrant offered hereby will have an initial exercise price per share equal to \$. The common warrants will be immediately exercisable and will expire on the fifth anniversary of the original issuance date. The exercise price and number of shares of common stock issuable upon exercise is subject to appropriate adjustment in the event of stock dividends, stock splits, reorganizations or similar events affecting our common stock and the exercise price. The common warrants will be issued separately from the common stock, and may be transferred separately immediately thereafter. A common warrant to purchase one share of our common stock will be issued for every one share of common stock purchased in this offering.

Exercisability. The common warrants will be exercisable, at the option of each holder, in whole or in part, by delivering to us a duly executed exercise notice accompanied by payment in full for the number of shares of our common stock purchased upon such exercise (except in the case of a cashless exercise as discussed below). A holder (together with its affiliates) may not exercise any portion of the common warrant to the extent that the holder would own more than 4.99% of the outstanding common stock immediately after exercise, except that upon at least 61 days' prior notice from the holder to us, the holder may increase the amount of ownership of outstanding stock after exercising the holder's common warrants up to 9.99% of the number of shares of our common stock outstanding immediately after giving effect to the exercise, as such percentage ownership is determined in accordance with the terms of the common warrants. No fractional shares of common stock will be issued in connection with the exercise of a common warrant. In lieu of fractional shares, we will round down to the next whole share.

Cashless Exercise. If, at the time a holder exercises its common warrants, a registration statement registering the issuance of the shares of common stock underlying the common warrants under the Securities Act is not then effective or available and an exemption from registration under the Securities Act is not available for the issuance of such shares, then in lieu of making the cash payment otherwise contemplated to be made to us upon such exercise in payment of the aggregate exercise price, the holder may elect instead to receive upon such exercise (either in whole or in part) the net number of shares of common stock determined according to a formula set forth in the common warrants.

Transferability. Subject to applicable laws, a common warrant in book entry form may be transferred at the option of the holder through the facilities of the Depository Trust Company and common warrants in physical form may be transferred upon surrender of the common warrant to the warrant agent together with the appropriate instruments of transfer.

Exchange Listing. There is no established public trading market for the common warrants, and we do not expect a market to develop. In addition, we do not intend to list the common warrants on any securities exchange or nationally recognized trading system. Without an active trading market, the liquidity of the common warrants will be limited.

Right as a Stockholder. Except as otherwise provided in the common warrants or by virtue of such holder's ownership of shares of our common stock, the holders of the common warrants do not have the rights or privileges of holders of our common stock, including any voting rights, until they exercise their common warrants.

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Fundamental Transaction. In the event of a fundamental transaction, as described in the form of common warrant, and generally including any reorganization, recapitalization or reclassification of our common stock, the sale, transfer or other disposition of all or substantially all of our properties or assets, our consolidation or merger with or into another person, the acquisition of more than 50% of our outstanding common stock, or any person or group becoming the beneficial owner of 50% of the voting power represented by our outstanding common stock, the holders of the common warrants will be entitled to receive upon exercise of the common warrants the kind and amount of securities, cash or other property that the holders would have received had they exercised the common warrants immediately prior to such fundamental transaction.

UNDERWRITING

We entered into an underwriting agreement with the underwriters named below on _____, 2020. Oppenheimer & Co. Inc. is acting as the sole book-running manager and representative of the underwriters. The underwriting agreement provides for the purchase of a specific number of shares of common stock and/or pre-funded warrants and accompanying common warrants to purchase shares of common stock by each of the underwriters. The underwriters' obligations are several, which means that each underwriter is required to purchase a specified number of shares of common stock and/or pre-funded warrants and accompanying common warrants, but is not responsible for the commitment of any other underwriter to purchase shares of common stock and/or pre-funded warrants and accompanying common warrants. Subject to the terms and conditions of the underwriting agreement, each underwriter has severally agreed to purchase the number of shares set forth opposite its name below:

<u>Underwriter</u>	<u>Number of Shares of Common Stock</u>	<u>Number of Pre-Funded Warrants</u>	<u>Number of Common Warrants</u>
Oppenheimer & Co. Inc.			
Roth Capital Partners, LLC			
Maxim Group LLC			
Total			

The underwriters have agreed to purchase all of the shares of common stock and/or pre-funded warrants and accompanying common warrants offered by this prospectus, if any are purchased.

The shares of common stock and/or pre-funded warrants and accompanying common warrants offered hereby are expected to be ready for delivery on or about _____, 2020 against payment in immediately available funds.

The underwriters are offering the shares of common stock and/or pre-funded warrants and accompanying common warrants subject to various conditions and may reject all or part of any order. The representative of the underwriters has advised us that the underwriters propose initially to offer the shares of common stock and/or pre-funded warrants and accompanying common warrants to purchase shares of common stock to the public at the public offering price set forth on the cover page of this prospectus and to dealers at a price less a concession not in excess of \$ _____ per share and accompanying common warrant or \$ _____ per pre-funded warrant and accompanying common warrant, based on the combined public offering price per share and accompanying common warrant or pre-funded warrant and accompanying common warrant, to brokers and dealers. After the shares of common stock and/or pre-funded warrants and accompanying common warrants are released for sale to the public, the representative may change the offering price, the concession, and other selling terms at various times.

The following table provides information regarding the amount of the discounts and commissions to be paid to the underwriters by us, before expenses:

	<u>Per Share</u>	<u>Per Pre-Funded Warrant</u>	<u>Per Common Warrant</u>	<u>Total Per Share and Accompanying Common Warrant</u>	<u>Total Per Pre-Funded Warrant and Accompanying Common Warrant</u>
Public offering price	\$ _____	\$ _____	\$ _____	\$ _____	\$ _____
Underwriting discounts and commissions ⁽¹⁾	\$ _____	\$ _____	\$ _____	\$ _____	\$ _____
Proceeds, before expenses, to us	\$ _____	\$ _____	\$ _____	\$ _____	\$ _____

(1) We have agreed to pay the underwriters a commission of 7% of the gross proceeds of this offering.

We estimate that our total expenses of the offering, excluding the estimated underwriting discounts and commissions, will be approximately \$ _____, which includes the fees and expenses for which we have agreed to reimburse the underwriters, provided that any such fees and expenses in excess of an aggregate of \$ _____ will be subject to our prior written approval.

We have agreed to indemnify the underwriters against certain liabilities, including liabilities under the Securities Act of 1933.

We, our officers and directors have agreed to a 90-day "lock-up" with respect to shares of our common stock and other of our securities that they beneficially own, including securities that are convertible into shares of common

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stock and securities that are exchangeable or exercisable for shares of common stock. This means that, subject to certain exceptions, for a period of 90 days following the date of this prospectus, we and such persons may not offer, sell, pledge or otherwise dispose of these securities without the prior written consent of Oppenheimer & Co. Inc.

Rules of the Securities and Exchange Commission may limit the ability of the underwriters to bid for or purchase shares before the distribution of the shares is completed. However, the underwriters may engage in the following activities in accordance with the rules:

- Stabilizing transactions - the representative may make bids or purchases for the purpose of pegging, fixing or maintaining the price of the shares, so long as stabilizing bids do not exceed a specified maximum.
- Penalty bids - if the representative purchases shares in the open market in a stabilizing transaction or syndicate covering transaction, it may reclaim a selling concession from the underwriters and selling group members who sold those shares as part of this offering.
- Passive market making - market makers in the shares who are underwriters or prospective underwriters may make bids for or purchases of shares, subject to limitations, until the time, if ever, at which a stabilizing bid is made.

Similar to other purchase transactions, the underwriters' purchases to cover the syndicate short sales or to stabilize the market price of our common stock may have the effect of raising or maintaining the market price of our common stock or preventing or mitigating a decline in the market price of our common stock. As a result, the price of the shares of our common stock may be higher than the price that might otherwise exist in the open market. The imposition of a penalty bid might also have an effect on the price of the shares if it discourages resales of the shares.

Neither we nor the underwriters make any representation or prediction as to the effect that the transactions described above may have on the price of the shares. These transactions may occur on The Nasdaq Capital Market or otherwise. If such transactions are commenced, they may be discontinued without notice at any time.

Electronic Delivery of Prospectus: A prospectus in electronic format may be delivered to potential investors by one or more of the underwriters participating in this offering. The prospectus in electronic format will be identical to the paper version of such prospectus. Other than the prospectus in electronic format, the information on any underwriter's website and any information contained in any other website maintained by an underwriter is not part of this prospectus or the registration statement of which this prospectus forms a part.

Notice to Non-U.S. Investors

Belgium

The offering is exclusively conducted under applicable private placement exemptions and therefore it has not been and will not be notified to, and this document or any other offering material relating to the shares has not been and will not be approved by, the Belgian Banking, Finance and Insurance Commission ("Commission bancaire, financière et des assurances/Commissie voor het Bank, Financie en Assurantiewezen"). Any representation to the contrary is unlawful.

Each underwriter has undertaken not to offer sell, resell, transfer or deliver directly or indirectly, any shares, or to take any steps relating/ancillary thereto, and not to distribute or publish this document or any other material relating to the shares or to the offering in a manner which would be construed as: (a) a public offering under the Belgian Royal Decree of 7 July 1999 on the public character of financial transactions; or (b) an offering of securities to the public under Directive 2003/71/EC which triggers an obligation to publish a prospectus in Belgium. Any action contrary to these restrictions will cause the recipient and the company to be in violation of the Belgian securities laws.

Canada

This document constitutes an "exempt offering document" as defined in and for the purposes of applicable Canadian securities laws. No prospectus has been filed with any securities commission or similar regulatory authority in Canada in connection with the offer and sale of the securities described herein (the "Securities"). No securities commission or similar regulatory authority in Canada has reviewed or in any way passed upon this document or on the merits of the Securities and any representation to the contrary is an offence.

Canadian investors are advised that this document has been prepared in reliance on section 3A.3 of National Instrument 33-105 *Underwriting Conflicts* ("NI 33-105"). Pursuant to section 3A.3 of NI 33-105, this document

is exempt from the requirement to provide investors with certain conflicts of interest disclosure pertaining to “connected issuer” and/or “related issuer” relationships as would otherwise be required pursuant to subsection 2.1(1) of NI 33-105.

Resale Restrictions

The offer and sale of the securities in Canada is being made on a private placement basis only and is exempt from the requirement to prepare and file a prospectus under applicable Canadian securities laws. Any resale of Securities acquired by a Canadian investor in this offering must be made in accordance with applicable Canadian securities laws, which may vary depending on the relevant jurisdiction, and which may require resales to be made in accordance with Canadian prospectus requirements, a statutory exemption from the prospectus requirements, in a transaction exempt from the prospectus requirements or otherwise under a discretionary exemption from the prospectus requirements granted by the applicable local Canadian securities regulatory authority. These resale restrictions may under certain circumstances apply to resales of the Securities outside of Canada.

Representations of Purchasers

Each Canadian investor who purchases the securities will be deemed to have represented to the issuer and to each dealer from whom a purchase confirmation is received, as applicable, that the investor (i) is purchasing as principal, or is deemed to be purchasing as principal in accordance with applicable Canadian securities laws, for investment only and not with a view to resale or redistribution; (ii) is an “accredited investor” as such term is defined in section 1.1 of National Instrument 45-106 *Prospectus Exemptions* (“NI 45-106”) or, in Ontario, as such term is defined in section 73.3(1) of the *Securities Act* (Ontario); and (iii) is a “permitted client” as such term is defined in section 1.1 of National Instrument 31-103 *Registration Requirements, Exemptions and Ongoing Registrant Obligations*.

Taxation and Eligibility for Investment

Any discussion of taxation and related matters contained in this document does not purport to be a comprehensive description of all of the tax considerations that may be relevant to a Canadian investor when deciding to purchase the securities and, in particular, does not address any Canadian tax considerations. No representation or warranty is hereby made as to the tax consequences to a resident, or deemed resident, of Canada of an investment in the securities or with respect to the eligibility of the securities for investment by such investor under relevant Canadian federal and provincial legislation and regulations.

Rights of Action for Damages or Rescission

Securities legislation in certain of the Canadian jurisdictions provides certain purchasers of securities pursuant to an offering memorandum, including where the distribution involves an “eligible foreign security” as such term is defined in Ontario Securities Commission Rule 45-501 *Ontario Prospectus and Registration Exemptions* and in Multilateral Instrument 45-107 *Listing Representation and Statutory Rights of Action Disclosure Exemptions*, as applicable, with a remedy for damages or rescission, or both, in addition to any other rights they may have at law, where the offering memorandum, or other offering document that constitutes an offering memorandum, and any amendment thereto, contains a “misrepresentation” as defined under applicable Canadian securities laws. These remedies, or notice with respect to these remedies, must be exercised or delivered, as the case may be, by the purchaser within the time limits prescribed under, and are subject to limitations and defences under, applicable Canadian securities legislation. In addition, these remedies are in addition to and without derogation from any other right or remedy available at law to the investor.

Language of Documents

Upon receipt of this document, each Canadian investor hereby confirms that it has expressly requested that all documents evidencing or relating in any way to the sale of the securities described herein (including for greater certainty any purchase confirmation or any notice) be drawn up in the English language only. *Par la réception de ce document, chaque investisseur canadien confirme par les présentes qu'il a expressément exigé que tous les documents faisant foi ou se rapportant de quelque manière que ce soit à la vente des valeurs mobilières décrites aux présentes (incluant, pour plus de certitude, toute confirmation d'achat ou tout avis) soient rédigés en anglais seulement.*

France

Neither this prospectus nor any other offering material relating to the shares has been submitted to the clearance procedures of the Autorité des marchés financiers in France. The shares have not been offered or sold and will not be offered or sold, directly or indirectly, to the public in France. Neither this prospectus nor any other offering material relating to the shares has been or will be: (a) released, issued, distributed or caused to be released, issued or distributed to the public in France; or (b) used in connection with any offer for subscription or sale of the shares to the public in France. Such offers, sales and distributions will be made in France only: (i) to qualified investors (investisseurs qualifiés) and/or to a restricted circle of investors (cercle restreint d'investisseurs), in each case investing for their own account, all as defined in and in accordance with Articles L.411-2, D.411-1, D.411-2, D.734-1, D.744-1, D.754-1 and D.764-1 of the French Code monétaire et financier; (ii) to investment services providers authorised to engage in portfolio management on behalf of third parties; or (iii) in a transaction that, in accordance with article L.411-2-II-1°-or-2°-or 3° of the French Code monétaire et financier and article 211-2 of the General Regulations (Règlement Général) of the Autorité des marchés financiers, does not constitute a public offer (appel public à l'épargne). Such shares may be resold only in compliance with Articles L.411-1, L.411-2, L.412-1 and L.621-8 through L.621-8-3 of the French Code monétaire et financier.

United Kingdom/Germany/Norway/The Netherlands

In relation to each Member State of the European Economic Area which has implemented the Prospectus Directive (each, a "Relevant Member State") an offer to the public of any shares which are the subject of the offering contemplated by this prospectus may not be made in that Relevant Member State other than the offers contemplated in this prospectus in name(s) of Member State(s) where prospectus will be approved or passported for the purposes of a non-exempt offer once this prospectus has been approved by the competent authority in such Member State and published and passported in accordance with the Prospectus Directive as implemented in name(s) of relevant Member State(s) except that an offer to the public in that Relevant Member State of any shares may be made at any time under the following exemptions under the Prospectus Directive, if they have been implemented in that Relevant Member State:

- (a) to legal entities which are authorised or regulated to operate in the financial markets or, if not so authorised or regulated, whose corporate purpose is solely to invest in securities;
- (b) to any legal entity which has two or more of (1) an average of at least 250 employees during the last financial year; (2) a total balance sheet of more than €43,000,000 and (3) an annual net turnover of more than €50,000,000, as shown in its last annual or consolidated accounts;
- (c) by the representative to fewer than 100 natural or legal persons (other than qualified investors as defined in the Prospectus Directive); or
- (d) in any other circumstances falling within Article 3(2) of the Prospectus Directive, provided that no such offer of shares shall result in a requirement for the publication by the company or any underwriter of a prospectus pursuant to Article 3 of the Prospectus Directive.

For the purposes of this provision, the expression an "offer to the public" in relation to any shares in any Relevant Member State means the communication in any form and by any means of sufficient information on the terms of the offer and any shares to be offered so as to enable an investor to decide to purchase any shares, as the same may be varied in that Member State by any measure implementing the Prospectus Directive in that Member State and the expression "Prospectus Directive" means Directive 2003/71/EC and includes any relevant implementing measure in each Relevant Member State.

Each underwriter has represented, warranted and agreed that:

- (a) it has only communicated or caused to be communicated and will only communicate or cause to be communicated any invitation or inducement to engage in investment activity (within the meaning of section 21 of the Financial Services and Markets Act 2000 (the FSMA)) received by it in connection with the issue or sale of any shares in circumstances in which section 21(1) of the FSMA does not apply to the company; and
- (b) it has complied with and will comply with all applicable provisions of the FSMA with respect to anything done by it in relation to the shares in, from or otherwise involving the United Kingdom.

Israel

In the State of Israel, the shares offered hereby may not be offered to any person or entity other than the following:

- (a) a fund for joint investments in trust (i.e., mutual fund), as such term is defined in the Law for Joint Investments in Trust, 5754-1994, or a management company of such a fund;
- (b) a provident fund as defined in Section 47(a)(2) of the Income Tax Ordinance of the State of Israel, or a management company of such a fund;
- (c) an insurer, as defined in the Law for Oversight of Insurance Transactions, 5741-1981, (d) a banking entity or satellite entity, as such terms are defined in the Banking Law (Licensing), 5741-1981, other than a joint services company, acting for their own account or for the account of investors of the type listed in Section 15A(b) of the Securities Law 1968;
- (d) a company that is licensed as a portfolio manager, as such term is defined in Section 8(b) of the Law for the Regulation of Investment Advisors and Portfolio Managers, 5755-1995, acting on its own account or for the account of investors of the type listed in Section 15A(b) of the Securities Law 1968;
- (e) a company that is licensed as an investment advisor, as such term is defined in Section 7(c) of the Law for the Regulation of Investment Advisors and Portfolio Managers, 5755-1995, acting on its own account;
- (f) a company that is a member of the Tel Aviv Stock Exchange, acting on its own account or for the account of investors of the type listed in Section 15A(b) of the Securities Law 1968;
- (g) an underwriter fulfilling the conditions of Section 56(c) of the Securities Law, 5728-1968;
- (h) a venture capital fund (defined as an entity primarily involved in investments in companies which, at the time of investment, (i) are primarily engaged in research and development or manufacture of new technological products or processes and (ii) involve above-average risk);
- (i) an entity primarily engaged in capital markets activities in which all of the equity owners meet one or more of the above criteria; and
- (j) an entity, other than an entity formed for the purpose of purchasing shares in this offering, in which the shareholders equity (including pursuant to foreign accounting rules, international accounting regulations and U.S. generally accepted accounting rules, as defined in the Securities Law Regulations (Preparation of Annual Financial Statements), 1993) is in excess of NIS 50 million.

Any offeree of the shares offered hereby in the State of Israel shall be required to submit written confirmation that it falls within the scope of one of the above criteria. This prospectus will not be distributed or directed to investors in the State of Israel who do not fall within one of the above criteria.

Italy

The offering of the shares offered hereby in Italy has not been registered with the Commissione Nazionale per la Società e la Borsa (“CONSOB”) pursuant to Italian securities legislation and, accordingly, the shares offered hereby cannot be offered, sold or delivered in the Republic of Italy (“Italy”) nor may any copy of this prospectus or any other document relating to the shares offered hereby be distributed in Italy other than to professional investors (operatori qualificati) as defined in Article 31, second paragraph, of CONSOB Regulation No. 11522 of 1 July, 1998 as subsequently amended. Any offer, sale or delivery of the shares offered hereby or distribution of copies of this prospectus or any other document relating to the shares offered hereby in Italy must be made:

- (a) by an investment firm, bank or intermediary permitted to conduct such activities in Italy in accordance with Legislative Decree No. 58 of 24 February 1998 and Legislative Decree No. 385 of 1 September 1993 (the “Banking Act”);
- (b) in compliance with Article 129 of the Banking Act and the implementing guidelines of the Bank of Italy; and
- (c) in compliance with any other applicable laws and regulations and other possible requirements or limitations which may be imposed by Italian authorities.

Sweden

This prospectus has not been nor will it be registered with or approved by Finansinspektionen (the Swedish Financial Supervisory Authority). Accordingly, this prospectus may not be made available, nor may the shares offered hereunder be marketed and offered for sale in Sweden, other than under circumstances which are deemed not to require a prospectus under the Financial Instruments Trading Act (1991: 980).

Switzerland

The shares offered pursuant to this prospectus will not be offered, directly or indirectly, to the public in Switzerland and this prospectus does not constitute a public offering prospectus as that term is understood pursuant to art. 652a or art. 1156 of the Swiss Federal Code of Obligations. The company has not applied for a listing of the shares being offered pursuant to this prospectus on the SWX Swiss Exchange or on any other regulated securities market, and consequently, the information presented in this prospectus does not necessarily comply with the information standards set out in the relevant listing rules. The shares being offered pursuant to this prospectus have not been registered with the Swiss Federal Banking Commission as foreign investment funds, and the investor protection afforded to acquirers of investment fund certificates does not extend to acquirers of shares.

Investors are advised to contact their legal, financial or tax advisers to obtain an independent assessment of the financial and tax consequences of an investment in shares.

LEGAL MATTERS

Cooley LLP, San Diego, California, which has acted as our counsel in connection with this offering, will pass on certain legal matters with respect to U.S. federal law in connection with this offering. Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C., New York, New York has acted as counsel to the underwriters in connection with this offering.

EXPERTS

The financial statements incorporated in this Prospectus by reference from the Company's Annual Report on Form 10-K for the year ended December 31, 2019 have been audited by Deloitte & Touche LLP, an independent registered public accounting firm, as stated in their report, which is incorporated herein by reference (which report expresses an unqualified opinion on the financial statements and includes an explanatory paragraph referring to the Company's ability to continue as a going concern). Such financial statements have been so incorporated in reliance upon the report of such firm given upon their authority as experts in accounting and auditing.

WHERE YOU CAN FIND MORE INFORMATION

We have filed with the SEC a registration statement on Form S-1 under the Securities Act, with respect to the securities being offered by this prospectus. This prospectus does not contain all of the information in the registration statement and its exhibits. For further information with respect to us and the securities offered by this prospectus, we refer you to the registration statement and its exhibits. Statements contained in this prospectus as to the contents of any contract or any other document referred to are not necessarily complete, and in each instance, we refer you to the copy of the contract or other document filed as an exhibit to the registration statement. Each of these statements is qualified in all respects by this reference.

We are subject to the information and periodic reporting requirements of the Exchange Act, and we file periodic reports, proxy statements and other information with the SEC. You can read our SEC filings, including the registration statement, over the Internet at the SEC's website at www.sec.gov. You may also request a copy of these filings, at no cost, by writing us at 9540 Towne Centre Drive, Suite 100, San Diego, California 92121 or telephoning us at (858) 888-7600. We also maintain a website at www.bionanogenomics.com, at which you may access these materials free of charge after they are electronically filed with, or furnished to, the SEC. The information contained in, or that can be accessed through, our website is not incorporated by reference in, and is not part of, this prospectus.

INCORPORATION OF CERTAIN INFORMATION BY REFERENCE

The SEC allows us to “incorporate by reference” information from other documents that we file with it, which means that we can disclose important information to you by referring you to those documents. The information incorporated by reference is considered to be part of this prospectus.

We incorporate by reference into this prospectus and the registration statement of which this prospectus form a part the information or documents listed below that we have filed with the SEC, and any future filings we will make with the SEC under Sections 13(a), 13(c), 14, or 15(d) of the Exchange Act after the date of the initial filing of the registration statement of which this prospectus is a part and prior to effectiveness of such registration statement, and until the termination of the offering of the shares covered by this prospectus (other than information furnished under Item 2.02 or Item 7.01 of Form 8-K):

- our Annual Report on Form 10-K for the year ended December 31, 2019 filed with the SEC on [March 10, 2020](#);
- our Current Reports on Form 8-K (other than information furnished rather than filed) filed with the SEC on [January 30, 2020](#) and [March 2, 2020](#); and
- the description of our common stock which is registered under Section 12 of the Exchange Act, in our registration statement on Form 8-A, filed on [August 17, 2018](#), including any amendment or reports filed for the purposes of updating this description.

Any statement contained in this prospectus or in a document incorporated or deemed to be incorporated by reference into this prospectus will be deemed to be modified or superseded for purposes of this prospectus to the extent that a statement contained in this prospectus or any other subsequently filed document that is deemed to be incorporated by reference into this prospectus modifies or supersedes the statement. Any statements so modified or superseded shall not be deemed, except as so modified or superseded, to constitute a part of this prospectus.

We will furnish without charge to you, on written or oral request, a copy of any or all of the documents incorporated by reference in this prospectus, including exhibits to these documents. You should direct any requests for documents to Bionano Genomics, Inc. 9540 Towne Centre Drive, Suite 100, San Diego, California 92121; telephone: (858) 888-7600.

You also may access these filings on our website at www.bionanogenomics.com. We do not incorporate the information on our website into this prospectus or any supplement to this prospectus and you should not consider any information on, or that can be accessed through, our website as part of this prospectus or any supplement to this prospectus (other than those filings with the SEC that we specifically incorporate by reference into this prospectus).

DISCLOSURE OF COMMISSION POSITION ON INDEMNIFICATION FOR SECURITIES ACT LIABILITY

Insofar as indemnification for liabilities arising under the Securities Act may be permitted to our directors, officers, and controlling persons, we have been advised that in the opinion of the SEC this indemnification is against public policy as expressed in the Securities Act and is therefore, unenforceable.



**17,648,000 Shares of Common Stock
Pre-Funded Warrants to Purchase Shares of Common Stock
Warrants to Purchase up to 17,648,000 Shares of Common Stock**

PROSPECTUS

Sole Book-Running Manager

Oppenheimer & Co.

Lead Manager

Roth Capital Partners

Co-Lead Manager

Maxim Group LLC

You should rely only on the information contained in this prospectus. No dealer, salesperson or other person is authorized to give information that is not contained in this prospectus. This prospectus is not an offer to sell nor is it seeking an offer to buy these securities in any jurisdiction where the offer or sale is not permitted. The information contained in this prospectus is correct only as of the date of this prospectus, regardless of the time of the delivery of this prospectus or any sale of these securities.

The date of this prospectus is _____, 2020

PART II**INFORMATION NOT REQUIRED IN PROSPECTUS****Item 13. Other Expenses of Issuance and Distribution**

The following table sets forth the expenses to be incurred in connection with the offering described in this registration statement, all of which will be paid by the registrant. All amounts are estimates except the SEC registration fee.

	<u>Amount</u>
SEC registration fee	\$ 3,895
FINRA filing fee	\$ 5,000
Printing and engraving expenses	\$ 20,000
Legal fees and expenses	\$ 250,000
Accounting fees and expenses	\$ 30,000
Transfer agent and registrar fees	\$ 5,000
Miscellaneous fees and expenses	\$ 21,105
Total	<u>\$ 335,000</u>

Item 14. Indemnification of Directors and Officers

We are incorporated under the laws of the State of Delaware. Section 145 of the Delaware General Corporation Law provides that a Delaware corporation may indemnify any persons who were, are, or are threatened to be made, parties to any threatened, pending or completed action, suit or proceeding, whether civil, criminal, administrative or investigative (other than an action by or in the right of such corporation), by reason of the fact that such person is or was an officer, director, employee or agent of such corporation, or is or was serving at the request of such corporation as an officer, director, employee or agent of another corporation or enterprise. The indemnity may include expenses (including attorneys' fees), judgments, fines and amounts paid in settlement actually and reasonably incurred by such person in connection with such action, suit or proceeding, provided that such person acted in good faith and in a manner he or she reasonably believed to be in or not opposed to the corporation's best interests and, with respect to any criminal action or proceeding, had no reasonable cause to believe that his or her conduct was illegal. A Delaware corporation may indemnify any persons who were, are, or are threatened to be made, a party to any threatened, pending or completed action or suit by or in the right of the corporation by reason of the fact that such person is or was a director, officer, employee or agent of such corporation, or is or was serving at the request of such corporation as a director, officer, employee or agent of another corporation or enterprise. The indemnity may include expenses (including attorneys' fees) actually and reasonably incurred by such person in connection with the defense or settlement of such action or suit provided such person acted in good faith and in a manner he or she reasonably believed to be in or not opposed to the corporation's best interests except that no indemnification is permitted without judicial approval if the officer or director is adjudged to be liable to the corporation. Where an officer or director is successful on the merits or otherwise in the defense of any action referred to above, the corporation must indemnify him or her against the expenses (including attorneys' fees) actually and reasonably incurred.

Our amended and restated certificate of incorporation and amended and restated bylaws provide for the indemnification of our directors and officers to the fullest extent permitted under the Delaware General Corporation Law.

Section 102(b)(7) of the Delaware General Corporation Law permits a corporation to provide in its certificate of incorporation that a director of the corporation shall not be personally liable to the corporation or its stockholders for monetary damages for breach of fiduciary duties as a director, except for liability for any:

- transaction from which the director derives an improper personal benefit;
- act or omission not in good faith or that involves intentional misconduct or a knowing violation of law;
- unlawful payment of dividends or redemption of shares; or
- breach of a director's duty of loyalty to the corporation or its stockholders.

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Our amended and restated certificate of incorporation includes such a provision. Expenses incurred by any officer or director in defending any such action, suit or proceeding in advance of its final disposition will be paid by us upon delivery to us of an undertaking, by or on behalf of such director or officer, to repay all amounts so advanced if it shall ultimately be determined that such director or officer is not entitled to be indemnified by us.

Section 174 of the Delaware General Corporation Law provides, among other things, that a director who willfully or negligently approves of an unlawful payment of dividends or an unlawful stock purchase or redemption, may be held liable for such actions. A director who was either absent when the unlawful actions were approved or dissented at the time may avoid liability by causing his or her dissent to such actions to be entered in the books containing minutes of the meetings of the board of directors at the time such action occurred or immediately after such absent director receives notice of the unlawful acts.

As permitted by the Delaware General Corporation Law, we have entered into, and continue to enter, into separate indemnity agreements with each of our directors and executive officers that require us to indemnify such persons against any and all costs and expenses (including attorneys', witness or other professional fees) actually and reasonably incurred by such persons in connection with any action, suit or proceeding (including derivative actions), whether actual or threatened, to which any such person may be made a party by reason of the fact that such person is or was a director or officer or is or was acting or serving as an officer, director, employee or agent of ours or any of our affiliated enterprises. Under these agreements, we are not required to provide indemnification for certain matters, including:

- indemnification beyond that permitted by the Delaware General Corporation Law;
- indemnification for any proceeding with respect to the unlawful payment of remuneration to the director or officer;
- indemnification for certain proceedings involving a final judgment that the director or officer is required to disgorge profits from the purchase or sale of our stock;
- indemnification for proceedings involving a final judgment that the director's or officer's conduct was in bad faith, knowingly fraudulent or deliberately dishonest or constituted willful misconduct or a breach of his or her duty of loyalty, but only to the extent of such specific determination;
- indemnification for proceedings or claims brought by an officer or director against us or any of our directors, officers, employees or agents, except for (1) claims to establish a right of indemnification or proceedings, (2) claims approved by our board of directors, (3) claims required by law, (4) when there has been a change of control as defined in the indemnification agreement with each director or officer, or (5) by us in our sole discretion pursuant to the powers vested to us under the Delaware General Corporate Law;
- indemnification for settlements the director or officer enters into without our consent; or
- indemnification in violation of any undertaking required by the Securities Act of 1933, as amended, or the Securities Act, or in any registration statement we file.

The indemnification agreements also set forth certain procedures that will apply in the event of a claim for indemnification thereunder.

There is at present no pending litigation or proceeding involving any of our directors or executive officers as to which indemnification is required or permitted, and we are not currently aware of any threatened litigation or proceeding that may result in a claim for indemnification.

We have an insurance policy in place that covers our officers and directors with respect to certain liabilities, including liabilities arising under the Securities Act or otherwise.

Any underwriting agreement that we may enter into may provide that the underwriters are obligated, under some circumstances, to indemnify our directors, officers and controlling persons against specified liabilities, including liabilities under the Securities Act.

Item 15. Recent Sales of Unregistered Securities

Set forth below is information regarding shares of common stock and preferred stock issued, and options granted, by us since January 1, 2017 that were not registered under the Securities Act of 1933, as amended (the Securities Act). Also included is the consideration, if any, received by us for such shares and options and information relating to the section of the Securities Act, or rule of the Securities and Exchange Commission, under which exemption from registration was claimed.

(a) Issuances of Securities

On March 2, 2020, we entered into a Warrants Amendment and Agreement, or the Warrant Inducement Agreement, with certain holders of the common warrants issued in our October 23, 2019 underwritten public offering, whereby we agreed (i) to amend such warrants, or the Amended Warrants, held by the holders and exercisable for up to an aggregate of 3,200,000 shares of common stock to reduce the exercise price of the Amended Warrants in the event of a cash exercise (and not a cashless exercise) to \$0.75 per share until 9:15 a.m. Eastern Time on March 3, 2020 and (ii) that if and only if such holders exercised for cash all of the Amended Warrants no later than 9:15 a.m. Eastern Time on March 3, 2020, to issue to such holders new warrants, or the Inducement Warrants, to purchase shares of our common stock, initially exercisable for the same number of shares of common stock issued to such holders pursuant to the exercise of the Amended Warrants, at an exercise price of \$1.06 per share. The holders timely exercised for cash all the Amended Warrants on March 3, 2020, resulting in gross proceeds to us of \$2.4 million. In accordance with the Warrant Inducement Agreement, we issued these holders the Inducement Warrants on March 3, 2020, which will be exercisable commencing on the six-month anniversary of the issuance date for a period of five years thereafter. The issuance of the Inducement Warrants and the shares of our common stock issuable upon exercise of the Inducement Warrants is exempt from registration under the Securities Act, pursuant to the exemption for transactions by an issuer not involving any public offering under Section 4(a)(2) of the Securities Act. The foregoing description is subject to, and qualified in its entirety by, the Form of Warrant Inducement Agreement filed as an exhibit hereto and incorporated herein by reference.

On March 14, 2019, we entered into a Loan and Security Agreement, or the Innovatus Loan Agreement, with Innovatus Life Sciences Lending Fund I, LP, or Innovatus, a Delaware limited partnership, as collateral agent and the Lenders listed on Schedule 1.1 thereto, including East West Bank, pursuant to which Innovatus agreed, among other things, to make a first term loan of \$17.5 million to us, or the Term A-1 Loan, a second term loan of \$2.5 million to us, or the Term A-2 Loan, and a third term loan of \$5.0 million to us, each upon satisfaction of certain funding conditions as set forth in the Innovatus Loan Agreement. In connection with the funding of any of the term loans, we agreed to issue warrants to Innovatus to purchase shares of our common stock. The warrants will be issued on the funding date of each tranche and will expire ten (10) years from such issue date.

On March 22, 2019, in connection with the receipt of funding with respect to the Term A-1 Loan and Term A-2 Loan, we issued to Innovatus a warrant to purchase up to 161,987 shares of our common stock at an exercise price of \$4.63 per share. The foregoing description is subject to, and qualified in its entirety by, the Loan and Security Agreement and the form of Warrant to Purchase Common Stock filed as exhibits hereto and incorporated herein by reference.

In connection with the Innovatus Loan Agreement, on March 14, 2019, we entered into a Common Stock Purchase Agreement, or the Innovatus Purchase Agreement, with certain entities affiliated with Innovatus, or the Innovatus Investors, pursuant to which we agreed to issue and sell 406,504 shares of common stock at \$3.69 per share for proceeds of \$1.5 million, or the Innovatus Shares. The foregoing description is subject to, and qualified in its entirety by, the Innovatus Purchase Agreement filed as an exhibit hereto and incorporated herein by reference. On November 8, 2019, we entered into a Common Stock Issuance Agreement with Innovatus, pursuant to which we issued to Innovatus 572,917 shares of our common stock.

On March 14, 2019, we entered into the Common Stock Purchase Agreement, or the Aspire Agreement, with Aspire Capital Fund, LLC, or Aspire Capital. Pursuant to the terms of the Aspire Agreement, Aspire Capital purchased 272,479 shares of our common stock at \$3.67 per share and we issued 69,444 shares of our common stock to Aspire Capital in consideration for entering into the Aspire Agreement.

On November 19, 2018, we entered into an Amendment Agreement, or the Amendment Agreement, with Western Alliance Bank, an Arizona corporation (the "Holder"), in order to amend (i) that certain Warrant to Purchase Stock, dated March 8, 2016, (ii) that certain Warrant to Purchase Stock, dated December 9, 2016, or, (i) and (ii) collectively, the Bank Warrants, and (iii) that certain Loan and Security Agreement, dated as of March 8, 2016, as amended, or

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the Loan Agreement. Pursuant to the Amendment Agreement, the exercise price of the Bank Warrants was decreased from \$20.56 per share to \$6.99 per share. The foregoing description is subject to, and qualified in its entirety by, the Amendment Agreement filed as an exhibit hereto and incorporated herein by reference.

On November 19, 2018, we issued (i) to LifeSci Capital, LLC, a warrant to purchase 44,183 shares of our common stock, and (ii) to Russell Creative Group, a warrant to purchase 3,311 shares of our common stock, or, together, the Service Provider Warrants, each having an exercise price of \$8.25 per share of our common stock and a term of five years. The Service Provider Warrants were issued in full satisfaction of our obligations to pay (i) to LifeSci Capital, LLC an aggregate of \$150,000 for capital advisory and investor relations services and (ii) to Russell Creative Group an aggregate of \$15,000 for branding and marketing services. LifeSci Capital, LLC and Russell Creative Group are accredited investors and the issuance of the Service Provider Warrants was exempt from registration under the Securities Act in reliance on an exemption provided by Section 4(a)(2) of the Securities Act. The description of the Service Provider Warrants is qualified in its entirety by the form of Warrant to Purchase Common Stock filed as an exhibit hereto and incorporated herein by reference.

On August 23, 2018, in connection with the underwriting agreement related to our IPO, we issued (i) to Roth Capital Partners, a warrant to purchase 68,040 shares of our common stock, (ii) to Maxim Partners LLC, a warrant to purchase 22,680 shares of our common stock and (iii) to LifeSci Capital LLC, a warrant to purchase 10,080 shares of our common stock, or, together, the Underwriter Warrants, each having an exercise price of \$9.1875 per share of our common stock and a term of five years. On August 30, 2018, pursuant to the exercise of the underwriters' over-allotment option, we issued (i) to Roth Capital Partners, a warrant to purchase 10,206 shares of our common stock, (ii) to Maxim Partners LLC, a warrant to purchase 3,402 shares of our common stock and (iii) to LifeSci Capital LLC, a warrant to purchase 1,512 shares of our common stock, or, together, the Over-Allotment Warrants, each having an exercise price of \$9.1875 per share of our common stock and a term of five years. The description of the Underwriter Warrants and the Over-Allotment Warrants is qualified in its entirety by the form of Warrant to Purchase Common Stock issued to the underwriters, filed as an exhibit hereto and incorporated herein by reference.

The offers, sales and issuances of the securities described in this section (a) of Item 15 were deemed to be exempt from registration under the Securities Act in reliance on Section 4(a)(2) of the Securities Act and Rule 506 promulgated under Regulation D promulgated thereunder as transactions by an issuer not involving a public offering. The recipients of securities in each of these transactions acquired the securities for investment only and not with a view to or for sale in connection with any distribution thereof and appropriate legends were affixed to the securities issued in these transactions. Each of the recipients of securities in these transactions was an accredited investor within the meaning of Rule 501 of Regulation D under the Securities Act and had adequate access, through employment, business or other relationships, to information about the Company. No underwriters were involved in these transactions.

(b) Stock Option and Restricted Stock Grants

From January 1, 2017 to August 21, 2018, we granted stock options under our Amended and Restated 2006 Equity Compensation Plan to purchase an aggregate of 462,363 shares of our common stock, with exercise prices ranging from \$1.30 to \$6.00 per share to certain directors, officers, employees and consultants.

The securities described in this section (b) of Item 15 were deemed to be exempt from registration under the Securities Act in reliance on Rule 701 in that the transactions were under compensatory benefit plans and contracts relating to compensation as provided under Rule 701. The recipients of such securities were the Registrant's employees, directors or bona fide consultants and received the securities under the Company's 2006 Equity Incentive Plan and 2018 Equity Incentive Plan. Appropriate legends were affixed to the securities issued in these transactions. Each of the recipients of securities in these transactions had adequate access, through employment, business or other relationships, to information about the Company.

Item 16. Exhibits and Financial Statement Schedules

(a) Exhibits

Exhibit Number	Description
1.1†	Form of Underwriting Agreement.
3.1(1)	Amended and Restated Certificate of Incorporation.
3.2(1)	Amended and Restated Bylaws.
4.1(2)	Form of Common Stock Certificate.
4.2(2)	Form of Warrant to Purchase Series B-1 Preferred Stock issued to Square 1 Bank.
4.3(2)	Form of Warrant to Purchase Series D Preferred Stock issued to Western Alliance Bank.
4.4(2)	Warrant to Purchase Series D-1 Preferred Stock issued to Western Alliance Bank.
4.5(2)	Form of Warrant to Purchase Series D-1 Preferred Stock issued to Midcap Financial Trust.
4.6(2)	Form of Warrant to Purchase Common Stock Issued to Underwriters in Initial Public Offering.
4.7(2)	Form of Warrant Certificate (included in Exhibit 4.8).
4.8(2)	Form of Warrant Agent Agreement by and between the Registrant and American Stock Transfer & Trust Company LLC, as warrant agent.
4.9(3)	Form of Warrant to Purchase Common Stock for Service Providers.
4.10(4)	Form of Warrant to Purchase Common Stock for Innovatus.
4.11(4)	Registration Rights Agreement, dated March 14, 2019, between the Company and Aspire Capital Fund, LLC.
4.12(4)	Registration Rights Agreement, as amended, dated March 14, 2019, by and among the Company and the Innovatus Investors.
4.13(5)	Form of Warrant to Purchase Common Stock issued to Investors in October 2019 Public Offering.
4.14(5)	Form of Pre-Funded Warrant issued to Investors in October 2019 Public Offering.
4.15(6)	Form of Inducement Warrant.
4.16†	Form of Warrant to Purchase Common Stock.
4.17†	Form of Pre-Funded Warrant.
5.1†	Opinion of Cooley LLP.
10.1(2)	Fifth Amended and Restated Investors’ Rights Agreement, dated August 5, 2016 as amended.
10.2+(2)	Bionano Genomics, Inc. Amended and Restated 2006 Equity Compensation Plan (the “2006 Plan”).
10.3+(2)	Forms of grant notice, stock option agreement and notice of exercise under the 2006 Plan.
10.4+(7)	Bionano Genomics, Inc. 2018 Equity Incentive Plan (the “2018 Plan”).
10.5+(2)	Forms of grant notice, stock option agreement and notice of exercise under the 2018 Plan.
10.6+(7)	Bionano Genomics, Inc. 2018 Employee Stock Purchase Plan.
10.7+(2)	Form of Indemnification Agreement by and between the Registrant and each director and executive officer.
10.8+(2)	Bionano Genomics, Inc. Non-Employee Director Compensation Policy.
10.9(2)	Credit and Security Agreement by and between the Registrant, Midcap Financial Trust and the Lenders listed on the Schedule of Lenders attached thereto, dated June 29, 2018.
10.10+(2)	Employment Agreement by and between the Registrant and R. Erik Holmlin, Ph.D., dated November 7, 2017, as amended.
10.11+(2)	Employment Agreement by and between the Registrant and Han Cao, Ph.D., dated November 7, 2017, as amended.
10.12+(2)	Employment Agreement by and between the Registrant and Mike Ward, dated July 1, 2016.
10.13+(2)	Employment Agreement by and between the Registrant and Warren Robinson, dated November 7, 2017.
10.14+(2)	Employment Agreement by and between the Registrant and Mark Borodkin, dated November 7, 2017.
10.15(2)	Loan and Security Agreement by and between the Registrant and Western Alliance Bank, dated March 8, 2016.
10.16(2)	First Amendment to the Loan and Security Agreement by and between the Registrant and Western Alliance Bank, dated December 9, 2016.
10.17(2)	Second Amendment to the Loan and Security Agreement by and between the Registrant and Western Alliance Bank, dated May 2, 2017.

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<u>Exhibit Number</u>	<u>Description</u>
10.18(2)	Third Amendment to the Loan and Security Agreement by and between the Registrant and Western Alliance Bank, dated November 20, 2017.
10.19(2)	Forbearance and Fourth Amendment to the Loan and Security Agreement by and between the Registrant and Western Alliance Bank, dated February 9, 2018.
10.20(2)	Lease by and between the Registrant and The Irvine Company LLC, dated January 16, 2012.
10.21(2)	First Amendment to the Lease by and between the Registrant and The Irvine Company LLC, dated September 10, 2013.
10.22(2)	Second Amendment to the Lease by and between the Registrant and The Irvine Company LLC, dated July 1, 2015.
10.23#(2)	Master Services Agreement by and between the Registrant and Skorprios Technologies, Inc. (f/k/a Novati Technologies, Inc. and f/k/a SVTC Technologies, LLC), dated March 2, 2009, as amended.
10.24#(2)	Manufacturing Services Agreement by and between the Registrant and Paramit Corporation, dated February 18, 2015.
10.25#(2)	License Agreement by and between Princeton University and the Registrant, dated January 7, 2004.
10.26#(2)	First Amendment to the License Agreement by and between Princeton University and the Registrant, dated December 17, 2004.
10.27#(2)	Second Amendment to the License Agreement by and between Princeton University and the Registrant, dated February 25, 2010.
10.28#(2)	Third Amendment to the License Agreement by and between Princeton University and the Registrant, dated October 17, 2011.
10.29#(2)	Fourth Amendment License Agreement by and between Princeton University and the Registrant, dated February 9, 2012.
10.30#(2)	Sublicense Agreement by and between the Registrant and Industry 3200 dated December 27, 2013.
10.31#(2)	License Agreement by and between the Registrant and Q Biotechnology CV dated May 1, 2014.
10.32#(2)	Amendment to Non-Exclusive Patent License Agreement by and between the Registrant and QBiotechnology CV dated May 1, 2014.
10.33#(2)	License Agreement by and between the Registrant and New York University dated November 4, 2013.
10.34#(2)	Option and Sublicense Agreement by and between the Registrant and Pacific Biosciences of California, Inc. dated February 2, 2016.
10.35(2)	Note Purchase Agreement by and among the Registrant and the Investors listed on Exhibit A thereto, dated February 9, 2018.
10.36(2)	First Amendment to Note Purchase Agreement by and among the Registrant and the Investors listed on the Schedule of Investors attached thereto, dated April 2, 2018.
10.37(2)	Fifth Amendment to Loan and Security Agreement by and between the Registrant and Western Alliance Bank, dated June 13, 2018.
10.38#(2)	Amendment to Patent Sublicense Agreement by and between the Registrant and Industry 3200, dated June 28, 2018.
10.39(2)	Second Amendment to Note Purchase Agreement by and between the Registrant and the Investors listed on the Schedule of Investors attached thereto, dated June 29, 2018.
10.40(2)	Omnibus Amendment to Convertible Promissory Notes by and among the Registrant and the Holders identified in the signature pages thereto, dated June 29, 2018.
10.41(2)	Omnibus Amendment to Convertible Promissory Notes by and among the Registrant and the Holders identified in the signature pages thereto, dated August 14, 2018.
10.42(2)	Omnibus Amendment to Warrants to Purchase Series B-1 Preferred Stock by and among the Registrant and the Holders identified in the signature pages thereto, dated August 14, 2018.
10.43(2)	Omnibus Amendment to Warrants to Purchase Series D Preferred Stock by and among the Registrant and the Holders identified in the signature pages thereto, dated August 14, 2018.
10.44(3)	Amendment Agreement, by and between the Registrant and Western Alliance Bank, dated November 19, 2018.
10.45(4)	Common Stock Purchase Agreement, dated March 14, 2019, between the Registrant and Aspire Capital Fund, LLC.

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<u>Exhibit Number</u>	<u>Description</u>
10.46 (4)	Loan and Security Agreement, dated March 14, 2019, by and among the Company, Innovatus Life Sciences Lending Fund I, LP and the Lenders listed on Schedule 1.1 thereto.
10.47 (8)	Waiver and First Amendment to Loan and Security Agreement, dated June 25, 2019, by and among the Company, Innovatus Life Sciences Lending Fund I, LP and East West Bank.
10.48 (4)	Common Stock Purchase Agreement, dated March 14, 2019, by and among the Company and the Innovatus Investors.
10.49 (9)	Second Amendment to Loan and Security Agreement, dated March 6, 2020, by and among the Company, Innovatus Life Sciences Lending Fund I, LP and East West Bank.
21.1 (2)	Subsidiaries of the Registrant.
23.1	Consent of Deloitte & Touche LLP, independent registered public accounting firm.
23.2 [†]	Consent of Cooley LLP (included in Exhibit 5.1).
24.1	Power of Attorney (included on signature page).

+ Indicates management contract or compensatory plan.

Confidential treatment has been requested with respect to certain portions of this exhibit. Omitted portions have been filed separately with the SEC.

† To be filed by amendment.

(1) Incorporated by reference to the Registrant's Current Report on Form 8-K, filed with the SEC on August 24, 2018.

(2) Incorporated by reference to the Registrant's Registration Statement on Form S-1 (File No. 333-225970), as amended.

(3) Incorporated by reference to the Registrant's Current Report on Form 8-K, filed with the SEC on November 21, 2018.

(4) Incorporated by reference to the Registrant's Current Report on Form 8-K, filed with the SEC on March 14, 2019.

(5) Incorporated by reference to the Registrant's Registration Statement on Form S-1 (File No. 333-233828), as amended.

(6) Incorporated by reference to the Registrant's Current Report on Form 8-K, filed with the SEC on March 2, 2020.

(7) Incorporated by reference to the Registrant's Registration Statement on Form S-8 (File No. 333-227073).

(8) Incorporated by reference to the Registrant's Quarterly Report on Form 10-Q, filed with the SEC on August 8, 2019.

(9) Incorporated by reference to the Registrant's Annual Report on Form 10-K, filed with the SEC on March 10, 2020.

(b) Financial Statement Schedules

No financial statement schedules are provided because the information called for is not required or is shown either in the financial statements or related notes, which are incorporated herein by reference.

Item 17. Undertakings

The undersigned registrant hereby undertakes to provide to the underwriters at the closing specified in the underwriting agreement certificates in such denominations and registered in such names as required by the underwriters to permit prompt delivery to each purchaser.

Insofar as indemnification for liabilities arising under the Securities Act may be permitted to directors, officers and controlling persons of the registrant pursuant to the foregoing provisions, or otherwise, the registrant has been advised that in the opinion of the SEC such indemnification is against public policy as expressed in the Securities Act, and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the registrant of expenses incurred or paid by a director, officer or controlling person of the registrant in the successful defense of any action, suit or proceeding) is asserted by such director, officer or controlling person in connection with the securities being registered, the registrant will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question of whether such indemnification by it is against public policy as expressed in the Securities Act and will be governed by the final adjudication of such issue.

The undersigned registrant hereby undertakes:

- (1) To file, during any period in which offers or sales are being made, a post-effective amendment to this registration statement:
 - (i) to include any prospectus required by Section 10(a)(3) of the Securities Act of 1933;
 - (ii) to reflect in the prospectus any facts or events arising after the effective date of the registration statement (or the most recent post-effective amendment thereof) which, individually or in the aggregate, represent a fundamental change in the information set forth in the registration statement. Notwithstanding the foregoing, any increase or decrease in volume of securities offered (if the total dollar value of securities offered would not exceed that which was registered) and any deviation from the low or high end of the estimated maximum offering range may be reflected in the form of prospectus filed with the Commission pursuant to Rule 424(b) if, in the aggregate, the changes in volume and price represent no more than a 20% change in the maximum aggregate offering price set forth in the "Calculation of Registration Fee" table in the effective registration statement; and
 - (iii) to include any material information with respect to the plan of distribution not previously disclosed in the registration statement or any material change to such information in the registration statement.
- (2) That, for the purpose of determining any liability under the Securities Act of 1933, each such post-effective amendment shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.
- (3) To remove from registration by means of a post-effective amendment any of the securities being registered which remain unsold at the termination of the offering.
- (4) That, for the purpose of determining liability under the Securities Act of 1933 to any purchaser in the initial distribution of the securities, the undersigned registrant undertakes that in a primary offering of securities of the undersigned registrant pursuant to this registration statement, regardless of the underwriting method used to sell the securities to the purchaser, if the securities are offered or sold to such purchaser by means of any of the following communications, the undersigned registrant will be a seller to the purchaser and will be considered to offer or sell such securities to such purchaser:
 - (i) Any preliminary prospectus or prospectus of the undersigned registrant relating to the offering required to be filed pursuant to Rule 424 (§230.424 of this chapter);
 - (ii) Any free writing prospectus relating to the offering prepared by or on behalf of the undersigned registrant or used or referred to by the undersigned registrant;
 - (iii) The portion of any other free writing prospectus relating to the offering containing material information about the undersigned registrant or its securities provided by or on behalf of the undersigned registrant; and
 - (iv) Any other communication that is an offer in the offering made by the undersigned registrant to the purchaser.

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- (5) The undersigned registrant hereby undertakes that, for purposes of determining any liability under the Securities Act, each filing of the registrant's annual report pursuant to section 13(a) or section 15(d) of the Securities Exchange Act of 1934, as amended, or the Exchange Act, (and, where applicable, each filing of an employee benefit plan's annual report pursuant to section 15(d) of the Exchange Act) that is incorporated by reference in the registration statement shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.
- (6) For purposes of determining any liability under the Securities Act, the information omitted from the form of prospectus filed as part of this Registration Statement in reliance upon Rule 430A and contained in a form of prospectus filed by the Registrant pursuant to Rule 424(b)(1) or (4) or 497(h) under the Securities Act shall be deemed to be part of this Registration Statement as of the time it was declared effective.
- (7) For the purpose of determining any liability under the Securities Act, each post-effective amendment that contains a form of prospectus shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, the Registrant has duly caused this Registration Statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of San Diego, State of California on March 11, 2020.

Bionano Genomics, Inc.

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

POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints R. Erik Holmlin, Ph.D. his or her true and lawful attorney-in-fact and agent, with full power of substitution and resubstitution, for him or her and in his or her name, place, and stead, in any and all capacities, to (i) act on, sign and file with the Securities and Exchange Commission any and all amendments (including post-effective amendments) to this registration statement together with all schedules and exhibits thereto and any subsequent registration statement filed pursuant to Rule 462(b) under the Securities Act of 1933, as amended, together with all schedules and exhibits thereto, (ii) act on, sign and file such certificates, instruments, agreements and other documents as may be necessary or appropriate in connection therewith, (iii) act on and file any supplement to any prospectus included in this registration statement or any such amendment or any subsequent registration statement filed pursuant to Rule 462(b) under the Securities Act of 1933, as amended, and (iv) take any and all actions which may be necessary or appropriate to be done, as fully for all intents and purposes as he or she might or could do in person, hereby ratifying and confirming all that said attorney-in-fact and agent, or his or her substitute or substitutes, may lawfully do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Act of 1933, this Registration Statement has been signed by the following persons in the capacities indicated on the dates indicated.

<u>Signature</u>	<u>Title</u>	<u>Date</u>
<u> /s/ R. Erik Holmlin, Ph.D. </u> R. Erik Holmlin, Ph.D.	Chief Executive Officer and Director <i>(Principal Executive and Financial Officer)</i>	March 11, 2020
<u> /s/ Mark Adamchak </u> Mark Adamchak	Controller <i>(Principal Accounting Officer)</i>	March 11, 2020
<u> /s/ David L. Barker, Ph.D. </u> David L. Barker, Ph.D.	Director	March 11, 2020
<u> /s/ Albert A. Luderer, Ph.D. </u> Albert A. Luderer, Ph.D.	Director	March 11, 2020
<u> /s/ Junfeng Wang </u> Junfeng Wang	Director	March 11, 2020
<u> /s/ Christopher Twomey </u> Christopher Twomey	Director	March 11, 2020
<u> /s/ Kristiina Vuori, M.D., Ph.D. </u> Kristiina Vuori, M.D., Ph.D.	Director	March 11, 2020

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We consent to the incorporation by reference in this Registration Statement on Form S-1 of our report dated March 10, 2020 relating to the financial statements of Bionano Genomics, Inc. appearing in the Annual Report on Form 10-K of Bionano Genomics, Inc. for the year ended December 31, 2019. We also consent to the reference to us under the heading “Experts” in such Registration Statement.

/s/ Deloitte & Touche LLP

San Diego, California
March 11, 2020
