

PROSPECTUS



**10,013,600 Shares of Common Stock
Pre-Funded Warrants to Purchase 10,923,958 Shares of Common Stock
Warrants to Purchase up to 20,937,558 Shares of Common Stock**

We are offering 10,013,600 shares of our common stock and common warrants to purchase an equal number of 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 pre-funded warrants to purchase 10,923,958 shares of common stock, in lieu of shares of common stock. Each pre-funded warrant is exercisable for one share of our common stock and is accompanied by a common warrant to purchase one share of common stock. The purchase price of each pre-funded warrant and the accompanying common warrant is 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 is \$0.001 per share. The pre-funded warrants are 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 the 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 \$0.86 per share. The common warrants are 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 October 22, 2019 was \$1.16 per share. 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 7 of this prospectus as well as in the documents incorporated by reference.

	Per Share	Per Pre- Funded Warrant	Per Common Warrant	Total ⁽¹⁾
Public offering price	\$ 0.85	\$ 0.849	\$ 0.01	\$ 17,995,376
Underwriting discounts and commissions ⁽²⁾	\$ 0.0595	\$ 0.0594	\$ 0.0007	\$ 1,259,349
Proceeds to us, before expenses	\$ 0.7905	\$ 0.7896	\$ 0.0093	\$ 16,736,027

(1) Reflects the issuance of 10,013,600 shares of our common stock and pre-funded warrants to purchase 10,923,958 shares of our common stock.

(2) See "Underwriting" for additional information regarding underwriting compensation.

The delivery of the shares of common stock, the pre-funded warrants and common warrants to purchasers is expected to be made on or about October 23, 2019.

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

Roth Capital Partners

Co-Lead Manager

Maxim Group LLC

The date of this prospectus is October 21, 2019

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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 life sciences instrumentation company in the genome analysis space. We develop and market 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 study of changes in chromosomes, which is known as cytogenetics. Our Saphyr system comprises an instrument, chip consumables, reagents and a suite of data analysis tools.

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 cause genetic disorders and diseases. Until our commercial launch of the Saphyr system in February 2017, and since, we believe no products existed or exists 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 reduces 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 120 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, Columbia University, DuPont Pioneer, Garvan Institute of Medical Research, Genentech, Icahn School of Medicine at Mount Sinai, McDonnell Genome Institute at Washington University, National Institutes of Health, Pennsylvania State University, Radboud University Medical Center and Salk Institute for Biological Studies. Our revenues in 2017 were \$9.5 million, representing approximately 40% growth over the prior year, and for 2018 our revenues were \$12 million representing approximately 26% growth over the prior year comparable period.

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. 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 initial public offering in August 2018:

- We announced the release of data sets by Columbia University, MD Anderson Cancer Center and other institutions affirming Saphyr as a replacement of current cytogenetic technologies for the detection of blood cancers.
- We announced the release of data from Radboud University Medical Center and other institutions showcasing the advantages of Saphyr over traditional cytogenetics for cancer and genetic disease detection.
- We announced the publication by the Human Genome Structural Variation Consortium of study results establishing Saphyr as being essential for comprehensive structural variation detection.
- We announced the publication by Berry Genomics and other institutions of study results showing highly accurate detection of facioscapulohumeral muscular dystrophy (FSHD) by Saphyr.
- We supported GrandOmics in its launch of a Saphyr-based genetic test for FSHD in China.
- As of September 2019, we have been cited in more than 500 publications.
- We sold our 80th Saphyr instrument.
- We announced the appointment of Dr. Kristina Vuori, MD, PhD to our Board of Directors.
- We launched new Saphyr hardware, consumables and software, increasing cost-effectiveness, speed and ease of use (\$300 per human sample; 6 human samples per day; 80-90% sensitivity with allele fraction between 3-5%).
- 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.

Other Recent Updates

Revenue Expectations

While we have not finalized our full financial results for the quarter ended September 30, 2019, we expect to report that our total revenue for the three months ended September 30, 2019 was \$3.3 million, compared to \$2.8 million for the same period in 2018. This amount is preliminary, has not been audited and is subject to change in connection with the completion of our financial statements for the quarter ended September 30, 2019. In addition, our independent registered public accounting firm does not express an opinion or any other form of assurance with respect thereto. Accordingly, you should not place undue reliance on this information. Additional information and disclosures would be required for a more complete understanding of our financial position and results of operations as of September 30, 2019.

Loan Agreement Waivers

On October 16, 2019, we obtained a waiver, or the Waiver, from Innovatus Life Sciences Lending Fund I, LP, a Delaware limited partnership, or Innovatus, with respect to certain financial covenants under our Loan and Security

Agreement, or the Loan Agreement, dated March 14, 2019, by and among us, Innovatus, as collateral agent, and the lenders listed on Schedule 1.1 thereto, including East West Bank.

Under the Loan Agreement, we are required to meet certain minimum revenue targets measured at the end of each calendar quarter, or the Revenue Covenant. For the quarter ended September 30, 2019, we did not achieve the Revenue Covenant. The Waiver permits us to cure our non-compliance with the Revenue Covenant, so long as we (i) raise at least \$10,000,000 from the sale and issuance of securities in an underwritten public offering, or the Equity Raise, between October 16, 2019 and October 31, 2019, or the Specified Period, and (ii) amend, no later than five days after the end of the Specified Period, that certain Warrant to Purchase Common Stock issued to Innovatus on March 22, 2019, or the Bank Warrant, to decrease the exercise price per share of our common stock subject to the Bank Warrant from \$4.63 per share to \$0.48 per share.

In addition, under the Loan Agreement we are required to maintain a minimum cash balance in our collateral account with Innovatus, or the Liquidity Covenant. In the event that we are in non-compliance with the Liquidity Covenant during the Specified Period, Innovatus has agreed to waive such non-compliance, so long as (i) we pay a fee, or the Waiver Fee, on November 1, 2019, in the form of (1) the issuance by us of 572,917 shares of our common stock if the closing of the Equity Raise occurs before November 1, 2019, or (2) \$250,000 in cash if the Equity Raise does not close before November 1, 2019, and (ii) if the Waiver Fee is paid in shares of our common stock, within five days after the end of the Specified Period, we amend the Registration Rights Agreement by and among Innovatus, Innovatus Life Sciences Offshore Fund I, LP, and us, dated as of March 14, 2019, to include such shares of common stock as Registrable Securities as defined in such agreement.

We expect to comply with the terms of the Waiver, such that our non-compliance with the Revenue Covenant and potential non-compliance with the Liquidity Covenant, shall be deemed cured and no event of default under the Loan Agreement shall have occurred.

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 offered by us	10,013,600 shares.
Pre-funded warrants offered by us	We are also offering pre-funded warrants to purchase 10,923,958 shares of common stock 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, in lieu of shares of common stock that would otherwise result in each 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 is exercisable for one share of our common stock. The purchase price of each pre-funded warrant and the accompanying common warrant is equal to 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 is \$0.001 per share. The pre-funded warrants are 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 the pre-funded warrants sold in this offering.
Common warrants offered by us	Common warrants to purchase an aggregate of 20,937,558 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 has an exercise price of \$0.86 per share, is 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	20,911,122 shares (assuming no exercise of the pre-funded warrants or any common warrants issued in this offering). Assuming all of the pre-funded warrants were immediately exercised, there would be 31,835,080 shares of our common stock outstanding after this offering.
Use of proceeds	<p>We estimate that the net proceeds from this offering will be approximately \$16.4 million, excluding any proceeds that may be received upon the exercise of the pre-funded warrants and the common warrants, after deducting underwriting discounts and commissions and estimated offering expenses payable by us.</p> <p>We intend to use the net proceeds from this offering primarily for general corporate purposes, including working capital, sales and marketing activities, general and administrative matters and capital expenditures. These expectations are subject to change. 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 stock.

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.

The number of shares of our common stock that will be outstanding after this offering is based on 10,897,522 shares of common stock outstanding as of June 30, 2019, and assumes the sale and issuance by us of 10,013,600 shares of common stock in this offering and excludes:

- 1,716,719 shares of common stock issuable upon the exercise of options outstanding as of June 30, 2019 at a weighted average exercise price of \$5.99 per share;
- 223,540 shares of common stock reserved for future issuance under our 2018 Equity Incentive Plan as of June 30, 2019;
- 209,395 shares of common stock reserved for future issuance under our 2018 Employee Stock Purchase Plan as of June 30, 2019;
- 4,224,494 shares of common stock issuable upon the exercise of warrants outstanding as of June 30, 2019 at a weighted-average exercise price of \$6.125 per share; and
- 20,937,558 shares of common stock issuable upon the exercise of the common warrants issued in this offering.

Unless otherwise indicated, this prospectus assumes:

- no exercise of outstanding options or warrants; and
- no exercise of the pre-funded warrants or common warrants issued in this offering.

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, 2018, as filed with the Securities and Exchange Commission, or SEC, on March 14, 2019, 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 combined public offering price of \$0.86 per share of common stock and accompanying warrant and \$0.859 per pre-funded warrant and accompanying warrant being sold in this offering, and our net tangible book value as of June 30, 2019, if you purchase shares of common stock in this offering, you will suffer immediate and substantial dilution of \$0.14 per share with respect to the net tangible book value of the common stock and, assuming all of the pre-funded warrants to purchase 10,923,958 shares of our common stock were immediately exercised for cash at an exercise price of \$0.001 per share, you would suffer immediate and substantial dilution of \$0.39 per share. 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.

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.

An active trading market for our common stock may not be sustained.

Our shares of common stock began trading on The Nasdaq Capital Market on September 21, 2018. Given the limited trading history of our common stock, there is a risk that an active trading market for our shares will not be sustained, which could put downward pressure on the market price of our common stock and thereby affect the ability of our stockholders to sell their shares.

If we are not able to comply with the applicable continued listing requirements or standards of the Nasdaq Capital Market, Nasdaq could delist our common stock.

Our ability to publicly or privately sell equity securities and the liquidity of our common stock could be adversely affected if we are delisted from the Nasdaq Capital Market or if we are unable to transfer our listing to another stock market. Our common stock is currently listed on The Nasdaq Capital Market. In order to maintain this listing, we must satisfy minimum financial and other continued listing requirements and standards, including a requirement to maintain a minimum of \$2.5 million in stockholder equity.

For example, in a letter dated August 16, 2019, or the Notice, we were notified by The Nasdaq Stock Market LLC, or Nasdaq, that we failed to comply with Listing Rule 5550(b)(1) for continued listing on the Nasdaq Capital Market because our stockholder's equity, as reported in our Quarterly Report on Form 10-Q for the period ended June 30, 2019, is below the required minimum of \$2.5 million. The Notice also indicated that, as of August 13, 2019, we do not meet the alternative compliance standards relating to the market value of listed securities of \$35 million or net income from continuing operations of \$500,000 in the most recently completed fiscal year or in two of the last three most recently completed fiscal years, and therefore could be subject to delisting if we did not submit a plan to regain compliance within 45 calendar days of August 16, 2019.

In September 2019, we submitted a plan to Nasdaq to regain compliance. On October 16, 2019, Nasdaq granted us until February 12, 2020 to provide evidence of compliance with Listing Rule 5550(b), subject to certain requirements, including that we complete this offering by October 31, 2019, periodically update Nasdaq regarding any additional proceeds received from the sale of shares of our capital stock pursuant to our March 2019 common stock purchase agreement with Aspire Capital Fund, LLC, and publicly disclose evidence of our compliance with Listing Rule 5550(b). However, there can be no assurance that our plan will be accepted or that if it is, we will be able to regain compliance. If our plan to regain compliance with the minimum stockholders' equity standard is not accepted or if it is accepted but we do not regain compliance by the end of the extension period granted by Nasdaq, or if we fail to satisfy another Nasdaq requirement for continued listing, Nasdaq staff could provide notice that our common stock will become subject to delisting. In such event, Nasdaq rules permit us to appeal the decision to reject our proposed compliance plan or any delisting determination to a Nasdaq Hearings Panel. Accordingly, there can be no guarantee that we will be able to maintain our Nasdaq listing. Furthermore, the proceeds we raise in this offering may not be sufficient to allow us to regain compliance with continued listing on Nasdaq.

If our common stock is delisted by Nasdaq, it could lead to a number of negative implications, including an adverse effect on the price of our common stock, increased volatility in our common stock, reduced liquidity in our common stock, the loss of federal preemption of state securities laws and greater difficulty in obtaining financing. In addition, delisting of our common stock could deter broker-dealers from making a market in or otherwise seeking or generating interest in our common stock, could result in a loss of current or future coverage by certain sell-side analysts and might deter certain institutions and persons from investing in our securities at all. Delisting could also cause a loss of confidence of our customers, collaborators, vendors, suppliers and employees, which could harm our business and future prospects.

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If our common stock is delisted by Nasdaq, our common stock may be eligible to trade on the OTC Bulletin Board, OTC-QB or another over-the-counter market. Any such alternative would likely result in it being more difficult for us to raise additional capital through the public or private sale of equity securities and for investors to dispose of or obtain accurate quotations as to the market value of, our common stock. In addition, there can be no assurance that our common stock would be eligible for trading on any such alternative exchange or markets. Moreover, if our common stock is delisted, it may come within the definition of “penny stock” under the Exchange Act, which imposes additional sales practice requirements on broker-dealers who sell securities to persons other than established customers and accredited investors. For example, we and/or broker-dealers are required to make a special suitability determination for purchases of such securities and must receive a purchaser’s written consent to the transaction prior to any purchase. Additionally, unless exempt, prior to a transaction involving a penny stock, the penny stock rules require the delivery of a disclosure schedule prescribed by the SEC relating to the penny stock market. The broker-dealer must also disclose the commissions payable to the broker-dealer, current quotations for the securities and, if the broker-dealer is the sole market-maker for the security, the fact that they are the sole market-maker and their presumed control over the market. Finally, monthly statements disclosing recent price information on the limited market in penny stocks must be sent to holders of such penny stocks. These requirements may reduce trading activity in the secondary market for our common stock and may impact the ability or willingness of broker-dealers to sell our securities which could limit the ability of stockholders to sell their securities in the public market and limit our ability to attract and retain qualified employees or raise additional capital in the future.

The terms of our debt facility place restrictions on our operating and financial flexibility, and failure to comply with covenants or to satisfy certain conditions of the agreement governing the debt facility may result in acceleration of our repayment obligations and foreclosure on our pledged assets, which could significantly harm our liquidity, financial condition, operating results, business and prospects and cause the price of our securities to decline.

Under the Loan Agreement, we may borrow up to \$25.0 million pursuant to certain term loans and an additional \$5.0 million through a revolving credit line. As of September 30, 2019, we have borrowed approximately \$20.3 million in term loans and \$1.0 million under the revolving credit line pursuant to the Loan Agreement.

The outstanding principal balance under the Loan Agreement is secured by a lien covering substantially all of our assets, including our intellectual property. The Loan Agreement requires us to comply with a number of covenants (affirmative and negative), including restrictive covenants that limit our ability to: incur additional indebtedness; encumber the collateral securing the loan; acquire, own or make investments; repurchase or redeem any class of stock or other equity interest; declare or pay any cash dividend or make a cash distribution on any class of stock or other equity interest; transfer a material portion of our assets; acquire other businesses; and merge or consolidate with or into any other organization or otherwise suffer a change in control, in each case subject to exceptions. Our intellectual property is also subject to customary negative covenants. The Loan Agreement also includes standard events of default, including a provision that Innovatus could declare an event of default upon the occurrence of any event that it interprets as having a material adverse effect upon our business, operations, properties, assets, or financial condition or upon our ability to perform or pay the secured obligations under the Loan Agreement or upon the collateral or the liens on the collateral under the agreement, thereby requiring us to repay the loan immediately, together with a prepayment fee and other applicable fees.

In connection with the audit of our 2018 financial statements, the report of our independent registered public accounting firm expressed an unqualified opinion and included an explanatory paragraph relating to substantial doubt about our ability to continue as a going concern. In the future, Innovatus may determine that the underlying circumstances resulting in the receipt of a going concern explanatory paragraph in the auditor opinion for our 2018 financial statements either on their own, or together with contemporaneous events or circumstances, such as a failure to timely secure additional funding, constitute a material adverse effect upon our business, operations, properties, assets, or financial condition or upon our ability to perform or pay the secured obligations under the Loan Agreement.

If we default under the Loan Agreement, Innovatus may accelerate all of our repayment obligations and, if we are unable to access funds to meet those obligations or to renegotiate our agreement, Innovatus could take control of our pledged assets and we could immediately cease operations. As of October 17, 2019, we were in non-compliance with the Revenue Covenant. In addition, we may become non-compliant with the Liquidity Covenant in the near future. Although we have obtained the Waiver from Innovatus and expect to comply with the terms of the Waiver, such that our non-compliance with each of the Revenue Covenant and Liquidity Covenant (if applicable) shall be deemed cured and no event of default under the Loan Agreement had occurred, there can be no assurance that we will be able

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to maintain compliance with the covenants in the Loan Agreement in the future. If we were unable to obtain a waiver of any breach under the Loan Agreement Innovatus could declare an event of default or require us to renegotiate the Loan Agreement on terms that may be significantly less favorable to us. If we were liquidated, Innovatus' right to repayment would be senior to the rights of our stockholders to receive any proceeds from the liquidation. Any declaration by Innovatus of an event of default could significantly harm our liquidity, financial condition, operating results, business, and prospects and cause the price of our securities to decline.

We may incur additional indebtedness in the future. The debt instruments governing such indebtedness may contain provisions that are as, or more, restrictive than the provisions governing our existing indebtedness under the Loan Agreement. If we are unable to repay, refinance or restructure our indebtedness when payment is due, the lenders could proceed against the collateral or force us into bankruptcy or liquidation.

Our recurring losses, negative cash flows, significant accumulated deficit, and recent non-compliance with Loan Agreement covenants have raised substantial doubt regarding our ability to continue as a going concern.

Since inception, we have experienced recurring operating losses and negative cash flows from operating activities, and have significant accumulated deficit. In addition, we were recently out of compliance with certain of the Loan Agreement covenants. We expect to continue to generate operating losses and consume significant cash resources for the foreseeable future and there can be no assurance as to our ability to remain in compliance with Loan Agreement. Without additional financing, these conditions raise substantial doubt about our ability to continue as a going concern, meaning that we may be unable to continue operations for the foreseeable future or realize assets and discharge liabilities in the ordinary course of operations. For example, in connection with the audit of our 2018 financial statements, the report of our independent registered public accounting firm expressed an unqualified opinion and included an explanatory paragraph expressing substantial doubt about our ability to continue as a going concern. Similarly, future reports from our independent registered public accounting firm may also contain statements expressing doubt about our ability to continue as a going concern. If we seek additional financing to fund our business activities in the future and there remains doubt about our ability to continue as a going concern, investors or other financing sources may be unwilling to provide additional funding on commercially reasonable terms or at all. If we are unable to obtain sufficient funding, our business, prospects, financial condition and results of operations will be materially and adversely affected and we may be unable to continue as a going concern. If we are unable to continue as a going concern, we may have to liquidate our assets and may receive less than the value at which those assets are carried on our consolidated financial statements, and it is likely that investors will lose all or a part of their investment.

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 obtain funding for our operations;
- our ability to attract collaborators and strategic partnerships;
- our ability to sell shares of common stock to Aspire Capital pursuant to the terms of the Purchase Agreement and our ability to register and maintain the registration of the shares issued and issuable thereunder; and
- our anticipated use of the net proceeds from the potential sale of shares of our common stock to Aspire Capital.

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.

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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 \$16.4 million from the sale of the securities offered by us in this offering, after deducting underwriting discounts and commissions and estimated offering expenses payable by us, and excluding the proceeds, if any, from the exercise of the pre-funded warrants and the common warrants issued in this offering.

The principal purposes of this offering are to obtain additional capital to support our operations. As of the date of this prospectus, we have no specific plan for the net proceeds from this offering, or any significant portion thereof. However, we intend to use the net proceeds from this offering 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.

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 June 30, 2019 was \$(1.3) million, or \$(0.12) 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 June 30, 2019.

After giving effect to the sale of 10,013,600 shares of common stock and pre-funded warrants to purchase up to 10,923,958 shares of common stock in this offering at the public offering price of \$0.86 per share of common stock and accompanying warrant and \$0.859 per pre-funded warrant and accompanying common warrant, and after deducting underwriting discounts and commissions and estimated offering expenses payable by us, and excluding the proceeds, if any, from the exercise of the pre-funded warrants and the common warrants issued in this offering, our as adjusted net tangible book value as of June 30, 2019 would be \$15.1 million, or \$0.72 per share of common stock. This amount represents an immediate increase in as adjusted net tangible book value of \$0.84 per share to our existing stockholders and an immediate dilution of \$0.14 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 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:

Public offering price per share and accompanying common warrant	\$	0.86
Historical net tangible book value per share as of June 30, 2019	\$	(0.12)
Increase in as adjusted net tangible book value per share attributable to this offering		<u>0.84</u>
As adjusted net tangible book value per share after giving effect to this offering		<u>0.72</u>
Dilution per share to new investors in this offering	\$	<u>0.14</u>

The discussion and table above assume (i) no exercise of pre-funded warrants to purchase up to 10,923,958 shares of common stock and (ii) no exercise of common warrants accompanying the shares of common stock and the pre-funded warrants sold in this offering.

Assuming all of the pre-funded warrants to purchase up to 10,923,958 shares of common stock were immediately exercised for cash at an exercise price of \$0.001 per share, our as adjusted net tangible book value as of June 30, 2019 would be \$15.1 million, or \$0.47 per share of common stock. This amount represents an immediate increase in as adjusted net tangible book value of \$0.59 per share to our existing stockholders and an immediate dilution of \$0.39 per share to investors participating in this offering.

SELECTED FINANCIAL DATA

The selected statements of operations data for the years ended December 31, 2017 and 2018 and the balance sheet data as of December 31, 2017 and 2018 are derived from our audited financial statements appearing in our Annual Report on Form 10-K for the year ended December 31, 2018, which is incorporated by reference herein. The selected statements of operations data for the six months ended June 30, 2018 and 2019 and the balance sheet data as of June 30, 2019 are derived from our unaudited financial statements appearing in our Quarterly Report on Form 10-Q for the quarter ended June 30, 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, 2018 and in our Quarterly Report on Form 10-Q for the quarter ended June 30, 2019, which are 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,		Six Months Ended June 30,	
	2017	2018	2018	2019
	(unaudited)			
Total revenue	\$ 9,505,043	12,000,735	\$ 5,158,494	\$ 4,027,381
Operating expenses				
Cost of revenue	6,030,512	8,711,326	2,654,879	2,702,288
Research and development	12,009,170	9,484,163	4,465,919	4,507,803
Selling, general and administrative	14,079,658	14,220,331	6,385,378	9,846,607
Impairment of property and equipment	604,511	—	—	—
Total operating expenses	32,723,851	32,415,820	13,506,176	17,056,698
Interest expense	(590,927)	(1,381,024)	(709,616)	(838,392)
Other income (expense)	462,923	3,315,228	1,907,742	(1,639,628)
Provision for income taxes	(18,552)	(15,511)	(9,282)	(8,972)
Net loss	\$ (23,365,364)	(18,496,392)	\$ (7,158,838)	(15,516,309)
Net loss per share: ⁽¹⁾				
Basic and diluted	\$ (8.65)	\$ (2.61)	\$ (1.37)	\$ (1.47)
	Year Ended December 31		As of June 30	
	2017	2018	2019	
	(unaudited)			
Balance Sheet Data:				
Cash and cash equivalents	\$ 1,021,897	\$ 16,522,729	\$ 15,294,526	
Working capital	(9,512,886)	18,502,256	16,390,971	
Total assets	10,145,153	24,802,421	25,210,868	
Convertible note	—	—	—	
Long-term debt	6,729,752	9,029,374	18,621,696	
Total liabilities	17,362,227	14,665,070	26,555,678	
Convertible preferred stock	43,010,137	—	—	
Accumulated deficit	(54,266,036)	(72,762,428)	(88,278,737)	
Total stockholders' (deficit) equity	(50,227,211)	10,137,351	(1,344,810)	

PRINCIPAL STOCKHOLDERS

The following table sets forth information regarding beneficial ownership of our capital stock as of July 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 10,897,522 shares of common stock outstanding as of July 31, 2019. The percentage ownership information shown in the column titled “After Offering” in the table is based upon 20,911,122 shares, assuming the sale of 10,013,600 shares of our common stock, and assuming no exercise of the pre-funded warrants or the common warrants issued 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 September 29, 2019, which is 60 days after July 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 does not reflect any purchases in this offering by certain of our existing stockholders, including entities affiliated with them or with certain of our directors.

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	26.7%	13.9%
Wealth Strategy Holding Limited ⁽²⁾	1,950,000	16.4%	8.9%
AIGH Capital Management, LLC and Affiliates ⁽³⁾	651,802	6.0%	3.1%
Entities affiliated with Domain Partners VIII, L.P. ⁽⁴⁾	965,769	8.9%	4.6%
Sio Capital Management, LLC ⁽⁵⁾	1,389,842	12.0%	6.4%
ETP Global Fund, LP ⁽⁶⁾	1,005,400	9.0%	4.7%
Entities affiliated with Innovatus Life Sciences GP, LP ⁽⁷⁾	568,491	5.1%	2.7%
Directors and Named Executive Officers			
David L. Barker, Ph.D. ⁽⁸⁾	28,258	*	*
R. Erik Holmlin, Ph.D. ⁽⁹⁾	252,020	2.3%	1.2%
Albert Luderer, Ph.D. ⁽¹⁰⁾	16,777	*	*
Warren Robinson ⁽¹¹⁾	67,546	*	*
Christopher Twomey ⁽¹²⁾	28,690	*	*
Junfeng Wang ⁽¹⁾	2,915,605	26.7%	13.9%
Mike Ward ⁽¹³⁾	58,942	*	*
Quan Zhou ⁽¹⁾	2,915,605	26.7%	13.9%
Kristiina Vuori, M.D., Ph.D. ⁽¹⁴⁾	2,522	*	*
All directors and executive officers as a group (10 persons)⁽¹⁵⁾	6,356,734	30.2%	16.1%

* Represents beneficial ownership of less than 1%.

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- (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, (v) 8,690 shares of common stock subject to options exercisable as of September 29, 2019 held by Junfeng Wang and (vi) 8,690 shares of common stock subject to options exercisable as of September 29, 2019 held by Quan Zhou. 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 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 October 21, 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 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 October 21, 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.
- (3) Based solely on a Schedule 13G filed with the SEC by the reporting person on February 15, 2019, the indicated ownership consists of (1) 651,802 shares of common stock held by AIGH Capital Management, LLC and (ii) 651,802 shares of common stock held by Orin Hirschman. According to the Schedule 13G, Mr. Hirschman is the Managing Member of AIGH Capital Management, LLC and may be deemed to have sole voting and dispositive power with respect to the shares held by AIGH Capital Management, LLC and himself. The Schedule 13G/A filed by the reporting person provides information as of December 31, 2018 and, consequently, the beneficial ownership of the reporting person may have changed between December 31, 2018 and October 21, 2019. The address of both AIGH Capital Management, LLC and Mr. Hirschman is 6006 Berkeley Avenue, Baltimore, MD 21209.
- (4) Based solely on a Schedule 13G filed with the SEC by the reporting person on January 11, 2019, the indicated ownership consists of (i) 958,878 shares of common stock and 15,000 shares of common stock issuable upon the exercise of warrants held by Domain Partners VIII, L.P. and (ii) 6,891 shares of common stock held by DP VIII Associates, L.P. James C. Blair, Brian H. Dovey, Brian K. Halak, Jesse I. Treu and Nicole Vitullo, the managing members of One Palmer Square VIII, L.L.C., share voting and investment power over the shares held by Domain Partners VIII, L.P. and DP VIII Associates, L.P. The Schedule 13G/A filed by the reporting person provides information as of December 31, 2018 and, consequently, the beneficial ownership of the reporting person may have changed between December 31, 2018 and October 21, 2019. The address for the Domain Entities is One Palmer Square, Suite 515, Princeton, NJ 08542.
- (5) Based solely on a Schedule 13G filed with the SEC by the reporting person on February 14, 2019, the indicated ownership consists of 714,842 shares of common stock held by Sio Capital Management, LLC. According to the Schedule 13G, Sio Capital Management, LLC, or Sio, and Sio GP, LLC, or GP, act as investment advisor and general partner, respectively, to various clients that are the record owners of the common stock held by Sio. Because Sio's investment discretion with respect to such clients is subject to oversight by the GP, the GP may be deemed to be the beneficial owner of the common stock owned by such clients. Both Sio and the GP are controlled by Michael Castor, who may be deemed to control the voting and dispositive decisions with respect to the shares of common stock held by Sio. The Schedule 13G/A filed by the reporting person provides information as of December 31, 2018 and, consequently, the beneficial ownership of the reporting person may have changed between December 31, 2018 and October 21, 2019. The address for Sio is 535 Fifth Avenue, Suite 910, New York, New York 10017.
- (6) ETP Global Fund, LP, or ETP Global, is a limited partnership organized under the laws of the State of Delaware. Emerging Technology Partners LLC is the general partner of ETP Global, and Wei-Wu He is its managing member, who exercises sole voting and investment power over the shares held by ETP Global. Wei-Wu He disclaims beneficial ownership of the shares held by ETP Global, except to the extent of his pecuniary interest therein. The registered address of ETP Global and Emerging Technology Partners LLC is 4919 Rebel Ridge Dr., Sugarland, TX 77478.
- (7) Based solely on a Schedule 13D filed with the SEC by the reporting persons on April 2, 2019, the indicated ownership consists of (i) 312,758 shares of common stock and 161,987 shares of common stock issuable upon the exercise of warrants held by Innovatus Life Sciences Lending Fund I, LP, or Innovatus Fund, and (ii) 93,746 shares of common stock held by Innovatus Life Sciences Offshore Fund I, LP, or Innovatus Offshore Fund. Innovatus Life Sciences GP, LP, or Innovatus GP, is the general partner of Innovatus Fund. Innovatus Capital Partners LLC, or Innovatus Manager, serves as investment manager to each of Innovatus Fund and Innovatus Offshore Fund. Innovatus Life Sciences Offshore GP, LP, or Innovatus Offshore GP, is the general partner of Innovatus Offshore Fund. Each of Innovatus GP, Innovatus Fund, Innovatus Manager, Innovatus Offshore GP and Innovatus Offshore Fund 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 Schedule 13D 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 October 21, 2019. 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.
- (8) Consists of (i) 3,894 shares of common stock, (ii) 20,470 shares of common stock subject to options exercisable as of September 29, 2019 and (iii) 3,894 shares of common stock issuable upon the exercise of warrants.
- (9) Consists of (i) 2,298 shares of common stock, (ii) 248,092 shares of common stock subject to options exercisable as of September 29, 2019 and (iii) 1,630 shares of common stock issuable upon the exercise of warrants.

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- (10) Consists of 16,777 shares of common stock subject to options exercisable as of September 29, 2019.
- (11) Consists of (i) 2,527 shares of common stock and (ii) 65,019 shares of common stock subject to options exercisable as of September 29, 2019.
- (12) Consists of (i) 10,000 shares of common stock, (ii) 8,690 shares of common stock subject to options exercisable as of September 29, 2019 and (iii) 10,000 shares of common stock issuable upon the exercise of warrants.
- (13) Consists of 58,942 shares of common stock subject to options exercisable as of September 29, 2019.
- (14) Consists of 2,522 shares of common stock subject to options exercisable as of September 29, 2019.
- (15) Consists of shares identified in the list of Directors and Named Executive Officers above plus (i) 8,331 shares of common stock, (ii) 61,623 shares of common stock subject to options exercisable as of September 29, 2019, and (iii) 815 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

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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) 10,013,600 shares of our common stock, (ii) pre-funded warrants to purchase 10,923,958 shares of our common stock and (iii) common warrants to purchase up to an aggregate of 20,937,558 shares of our common stock. Each share of common stock and each pre-funded warrant is being sold together with a common warrant to purchase one share of common stock. The shares of common stock, 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 has an initial exercise price per share equal to \$0.001. The pre-funded warrants are 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 are 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 \$0.86. The common warrants are 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 are 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 October 21, 2019. 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, 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, pre-funded warrants and accompanying common warrants, but is not responsible for the commitment of any other underwriter to purchase shares of common stock, 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:

Underwriter	Number of Shares of Common Stock	Number of Pre-Funded Warrants	Number of Common Warrants
Oppenheimer & Co. Inc.	7,510,200	8,192,968	15,703,168
Roth Capital Partners, LLC	2,002,720	2,184,792	4,187,512
Maxim Group LLC	500,680	546,198	1,046,878
Total	10,013,600	10,923,958	20,937,558

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

The shares of common stock, pre-funded warrants and accompanying common warrants offered hereby are expected to be ready for delivery on or about October 23, 2019 against payment in immediately available funds.

The underwriters are offering the shares of common stock, 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, 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 \$0.01204 per share and accompanying common warrant or \$0.03607 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, 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:

	Per Share	Per Pre-Funded Warrant	Per Common Warrant	Total Per Share and Accompanying Common Warrant	Total Per Pre-Funded Warrant and Accompanying Common Warrant
Public offering price	\$ 0.85	\$ 0.849	\$ 0.01	\$ 0.86	\$ 0.859
Underwriting discounts and commissions ⁽¹⁾	\$ 0.0595	\$ 0.0594	\$ 0.0007	\$ 0.0602	\$ 0.0601
Proceeds, before expenses, to us	\$ 0.7905	\$ 0.7896	\$ 0.0093	\$ 0.7998	\$ 0.7989

(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 \$335,000, 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 \$100,000 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 stock and securities that are exchangeable or exercisable for shares of common stock. This means that, subject to

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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, Financier 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^o-or-2^o-or 3^o 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 consolidated financial statements incorporated in this Prospectus by reference from the Company's Annual Report on Form 10-K for the year ended December 31, 2018 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 consolidated financial statements and includes an explanatory paragraph referring to the Company's ability to continue as a going concern). Such consolidated financial statements have been so incorporated by reference 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, 2018 filed with the SEC on [March 14, 2019](#);
- the information specifically incorporated by reference into our Annual Report on Form 10-K for the year ended December 31, 2018 from our Definitive Proxy Statement on Schedule 14A filed with the SEC on [April 24, 2019](#);
- our Quarterly Reports on Form 10-Q for the quarters ended March 31, 2019 and June 30, 2019 filed with the SEC on [May 9, 2019](#) and [August 8, 2019](#), respectively;
- our Current Reports on Form 8-K (other than information furnished rather than filed) filed with the SEC on [January 25, 2019](#), [March 14, 2019](#), [March 22, 2019](#), [May 28, 2019](#), [June 11, 2019](#), [August 22, 2019](#), [September 19, 2019](#) and [October 17, 2019](#); 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.



**10,013,600 Shares of Common Stock
Pre-Funded Warrants to Purchase 10,923,958 Shares of Common Stock
Warrants to Purchase up to 20,937,558 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 October 21, 2019
