

PROSPECTUS



\$40,000,000

Common Stock

We have entered into an At Market Issuance Sales Agreement, or the sales agreement, with Ladenburg Thalmann & Co. Inc., or Ladenburg, relating to shares of our common stock offered by this prospectus. In accordance with the terms of the sales agreement, we may offer and sell shares of our common stock having an aggregate offering price of up to \$40,000,000 from time to time through Ladenburg acting as sales agent.

Our common stock is listed on the Nasdaq Capital Market under the trading symbol "BNGO." On August 25, 2020, the last reported sale price of our common stock was \$0.67 per share.

Sales of our common stock, if any, under this prospectus may be made in sales deemed to be "at-the-market" equity offerings as defined in Rule 415 promulgated under the Securities Act of 1933, as amended, or the Securities Act. Ladenburg is not required to sell any specific number or dollar amounts of securities but will act as sales agent and use commercially reasonable efforts to sell on our behalf all of the shares of common stock requested to be sold by us, consistent with its normal trading and sales practices, on mutually agreed terms between Ladenburg and us. There is no arrangement for funds to be received in any escrow, trust or similar arrangement.

Ladenburg will be entitled to compensation at a commission rate of up to 3.0% of the aggregate gross sales price per share sold. See "Plan of Distribution" beginning on page [11](#) for additional information regarding Ladenburg's compensation. In connection with the sale of our common stock on our behalf, Ladenburg may be deemed to be an "underwriter" within the meaning of the Securities Act and the compensation of Ladenburg may be deemed to be underwriting commissions or discounts.

Investing in our securities involves a high degree of risk. Before making an investment decision, you should review carefully the risks described under the heading "[Risk Factors](#)" on page [4](#) of this prospectus and any similar section contained in the applicable prospectus supplement and in any free writing prospectuses we have authorized for use in connection with a specific offering, and under similar headings in the documents that are incorporated by reference into this prospectus.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or determined if this prospectus is truthful or complete. Any representation to the contrary is a criminal offense.

Ladenburg Thalmann

The date of this prospectus is August 25, 2020

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ABOUT THIS PROSPECTUS

This prospectus is part of a registration statement that we have filed with the Securities and Exchange Commission, or SEC, utilizing a “shelf” registration process. Under the shelf registration statement we may offer shares of our common stock, preferred stock, debt securities and warrants, including common stock or preferred stock upon conversion of debt securities, common stock upon conversion of preferred stock, or common stock, preferred stock or debt securities upon the exercise of warrants, having an aggregate offering price of up to \$125,000,000. Under this prospectus, we may offer shares of our common stock having an aggregate offering price of up to \$40,000,000 from time to time at prices and on terms to be determined by market conditions at the time of offering.

We provide information to you about this offering of shares of our common stock in this prospectus, which describes the specific details regarding this offering. If information in this prospectus is inconsistent with documents incorporated by reference in this prospectus filed prior to the date of this prospectus, you should rely on this prospectus. However, if any statement in one of these documents is inconsistent with a statement in another document having a later date—for example, a document incorporated by reference in this prospectus—the statement in the document having the later date modifies or supersedes the earlier statement as our business, financial condition, results of operations and prospects may have changed since the earlier dates.

You should rely only on the information contained in, or incorporated by reference into, this prospectus and in any free writing prospectus that we may authorize for use in connection with this offering. We have not, and Ladenburg has not, authorized any other person to provide you with different information. If anyone provides you with different or inconsistent information, you should not rely on it. We and Ladenburg take no responsibility for, and can provide no assurance as to the reliability of, any other information that others may give you. We are not, and Ladenburg is not, making an offer to sell or soliciting an offer to buy our securities in any jurisdiction in which an offer or solicitation is not authorized or in which the person making that offer or solicitation is not qualified to do so or to anyone to whom it is unlawful to make an offer or solicitation. You should assume that the information appearing in this prospectus, the documents incorporated by reference into this prospectus, and in any free writing prospectus that we may authorize for use in connection with this offering, is accurate only as of the date of those respective documents. Our business, financial condition, results of operations and prospects may have changed since those dates. You should read this prospectus, the documents incorporated by reference into this prospectus, and any free writing prospectus that we may authorize for use in connection with this offering, in their entirety before making an investment decision. You should also read and consider the information in the documents to which we have referred you in the sections of this prospectus captioned “Where You Can Find More Information” and “Incorporation of Certain Information by Reference.”

We further note that the representations, warranties and covenants made by us in any agreement that is filed as an exhibit to any document that is incorporated by reference into this prospectus were made solely for the benefit of the parties to such agreement, including, in some cases, for the purpose of allocating risk among the parties to such agreements, and should not be deemed to be a representation, warranty or covenant to you. Moreover, such representations, warranties or covenants were accurate only as of the date when made. Accordingly, such representations, warranties and covenants should not be relied on as accurately representing the current state of our affairs.

We are offering to sell, and seeking offers to buy, shares of common stock only in jurisdictions where offers and sales are permitted. The distribution of this prospectus and the offering of our common stock in certain jurisdictions may be restricted by law. 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 our common stock and the distribution of this prospectus outside the United States. This prospectus does not constitute, and may not be used in connection with, an offer to sell, or a solicitation of an offer to buy, any securities offered by this prospectus by any person in any jurisdiction in which it is unlawful for such person to make such an offer or solicitation.

We obtained the industry and market data in this prospectus from our own research as well as from industry and general publications, surveys and studies conducted by third parties. These data involve a number of assumptions and limitations, and you are cautioned not to give undue weight to such estimates. In addition, projections, assumptions and estimates of our future performance and the future performance of the industry in which we

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operate is necessarily subject to a high degree of uncertainty and risk due to a variety of factors, including those described in “Risk Factors” and elsewhere in this prospectus and documents incorporated by reference into this prospectus. These and other factors could cause results to differ materially from those expressed in the estimates made by the independent parties and by us.

This prospectus, including the information incorporated by reference into this prospectus, include trademarks, service marks and trade names owned by us or others. All trademarks, service marks and trade names included or incorporated by reference in this prospectus or any related free writing prospectus are the property of their respective owners.

Unless otherwise stated, all references in this prospectus to “we,” “us,” “our,” “Bionano,” the “Company” and similar designations refer to Bionano Genomics, Inc. The Bionano Genomics logo is a trademark of Bionano Genomics, Inc. We use “Bionano Genomics” as a trademark in the United States and other countries and have registered this trademark in the United States. This prospectus contains references to our trademarks and to trademarks belonging to other entities. Solely for convenience, trademarks and trade names referred to in this prospectus, including logos, artwork and other visual displays, may appear without the ® or ™ symbols, but such references are not intended to indicate, in any way, that we will not assert, to the fullest extent under applicable law, our rights or the rights of the applicable licensor to these trademarks and trade names. We do not intend our use or display of other companies’ trade names or trademarks to imply a relationship with, or endorsement or sponsorship of us by, any other companies.

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus and the documents we have filed with the SEC that are incorporated by reference contain “forward-looking statements” within the meaning of Section 27A of the Securities Act, and Section 21E of the Securities Exchange Act of 1934, or the Exchange Act. These statements relate to future events or to our future operating or financial performance and involve known and unknown risks, uncertainties and other factors which may cause our actual results, performance or achievements to be materially different from any future results, performances or achievements expressed or implied by the forward-looking statements. Forward-looking statements may include, but are not limited to, statements about:

- the size and growth potential of the markets for our products, and our ability to serve those markets;
- the impact of the COVID-19 pandemic on our business and operations;
- the rate and degree of market acceptance of our products;
- ability to expand our sales organization to address effectively existing and new markets that we intend to target;
- impact from future regulatory, judicial, and legislative changes or developments in the U.S. and foreign countries;
- ability to compete effectively in a competitive industry;
- the success of competing technologies that are or may become available;
- the performance of our third-party contract sales organizations, suppliers and manufacturers;
- our ability to attract and retain key scientific or management personnel;
- the accuracy of our estimates regarding expenses, future revenues, reimbursement rates, capital requirements and needs for additional financing;
- our ability to comply with the covenants and satisfy certain conditions of our debt facility;
- our ability to obtain funding for our operations; and
- our ability to attract collaborators and strategic partnerships.

In some cases, you can identify forward-looking statements by terms such as “may,” “will,” “should,” “could,” “would,” “expects,” “plans,” “anticipates,” “believes,” “estimates,” “projects,” “predicts,” “potential” and similar expressions intended to identify forward-looking statements. These statements reflect our current views with respect to future events and are based on assumptions and are subject to risks and uncertainties. Given these uncertainties, you should not place undue reliance on these forward-looking statements. We discuss in greater detail many of these risks under the heading “Risk Factors” contained in the applicable prospectus supplement, in any free writing prospectuses we may authorize for use in connection with a specific offering, and in our most recent annual report on Form 10-K and in our most recent quarterly report on Form 10-Q, as well as any amendments thereto reflected in subsequent filings with the SEC, which are incorporated by reference into this prospectus in their entirety. Also, these forward-looking statements represent our estimates and assumptions only as of the date of the document containing the applicable statement. Unless required by law, we undertake no obligation to update or revise any forward-looking statements to reflect new information or future events or developments. Thus, you should not assume that our silence over time means that actual events are bearing out as expressed or implied in such forward-looking statements. You should read this prospectus, any applicable prospectus supplement, together with the documents we have filed with the SEC that are incorporated by reference and any free writing prospectus that we may authorize for use in connection with this offering 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 the foregoing documents by these cautionary statements.

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 and any related free writing prospectus, as well as the information under the caption “Risk Factors” herein and any related free writing prospectus, and under similar headings in the other documents that are incorporated by reference into this prospectus. You should also carefully read the information incorporated by reference into this prospectus, including our financial statements, and the exhibits to the registration statement of which this prospectus is a part.

Company Overview

We are a genome analysis company providing tools and services based on our Saphyr® system to scientists and clinicians conducting genetic research and patient testing. We developed the Saphyr system, a platform for ultra-sensitive and ultra-specific structural variation detection, that enables researchers and clinicians to accelerate the search for new diagnostics and therapeutic targets and to streamline the evaluation of changes in chromosomes, which is known as cytogenetics. Our commercial offering includes the Saphyr system, which is comprised of an instrument, chip consumables, reagents and a suite of data analysis tools, and genome analysis services to provide access to data generated by the Saphyr system for researchers who prefer not to adopt the Saphyr system in their labs.

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

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

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

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

these guidelines include, among many others, World Health Organization (WHO), National Comprehensive Cancer Network (NCCN), American College of Medical Genetics (ACMG) and American College of Obstetricians & Gynecologists (ACOG).

More than 30 medical institutions are conducting more than 20 human translational research and human clinical studies in 2019 and 2020 to assess Saphyr's ability to detect structural variations and diagnose patients and, in certain studies, to compare those results to those produced via existing cytogenetic methods. We expect the findings from these studies, whether assessed internally or published by the institution, beginning in late 2020 or early 2021.

Saphyr and its predecessor system 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%.

In 2020, we launched a new commercial strategy based on the following three approaches:

- **Get the Service.** Customers can submit samples to Bionano Data Services and receive an appropriately filtered set of structural variant calls. Structural variation data is then presented using the Bionano Access visualization software, and files can be exported in the format of choice. Pricing for this service is \$650 per genome for standard samples and \$750 per genome for mosaic and cancer samples.
- **Get the Consumables.** For customers who commit to purchase at least 120 genomes every six months, the Bionano Support team will install the Saphyr System on the customer's premises and provide training on sample preparation, instrument operation and data analysis. Pricing for this service is \$550 per genome, with installation and training included at no cost, and the Saphyr instrument made available at no charge for the duration of the customer's project.
- **Get the Saphyr System.** For customers who purchase the Saphyr System, the Bionano Support team will install the Saphyr System and provide training on sample preparation, instrument operation and data analysis. Pricing begins at \$150,000 for the Saphyr instrument, \$550 per genome or \$450 per genome with a 240 genome bundle, with installation and training included at no cost.

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.

The Offering

Common stock offered by us	Shares of our common stock having an aggregate offering price of up to \$40,000,000.
Common stock to be outstanding after this offering	Up to 143,923,096 shares (as more fully described in the notes following this table), assuming sales of 51,948,051 shares of our common stock in this offering at an offering price of \$0.77 per share, which was the last reported sale price of our common stock on the Nasdaq Capital Market on August 12, 2020. The actual number of shares issued will vary depending on the sales price under this offering.
Manner of offering	“At-the-market” offering that may be made from time to time through the sales agent, Ladenburg. See “Plan of Distribution” on page 11 .
Use of proceeds	We intend to use the net proceeds from this offering, if any, for working capital and general corporate purposes, including research and development expenses, discharge of indebtedness and capital expenditures. See “Use of Proceeds” on page 6 .
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 common stock.
National Securities Exchange Listing	Our common stock is listed on the Nasdaq Capital Market under the symbol “BNGO.”

The number of shares of our common stock that will be outstanding after this offering is based on 91,975,045 shares of common stock outstanding as of June 30, 2020, and assumes the sale and issuance by us of 51,948,051 shares of common stock in this offering and excludes:

- 2,987,691 shares of common stock issuable upon the exercise of options outstanding as of June 30, 2020 at a weighted average exercise price of \$3.34 per share;
- 5,343,380 shares of common stock reserved for future issuance under our 2018 Equity Incentive Plan as of June 30, 2020;
- 341,427 shares of common stock reserved for future issuance under our 2018 Employee Stock Purchase Plan as of June 30, 2020;
- 75,414,050 shares of common stock issuable upon the exercise of common warrants outstanding as of June 30, 2020 at a weighted-average exercise price of \$0.80 per share, under which 42,005,000 shares of common stock have been issued between July 1, 2020 and August 12, 2020; and
- 4,500,000 shares of common stock issuable upon the exercise of pre-funded warrants outstanding as of June 30, 2020 at a weighted-average exercise price of \$0.001 per share, under which 4,500,000 shares of common stock have been issued between July 1, 2020 and August 12, 2020.

RISK FACTORS

Investing in our common stock involves a high degree of risk. You should consider carefully the following risks and uncertainties as well as the risks and uncertainties described in the section entitled “Risk Factors” contained in our Annual Report on Form 10-K for the year ended December 31, 2019, as filed with the SEC on March 10, 2020, as well as in our subsequent Quarterly and Annual Reports filed with the SEC, which descriptions are incorporated in this prospectus by reference in their entirety, together with other information in this prospectus, the documents incorporated by reference and any free writing prospectus that we may authorize for use in connection with this offering. 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.

Risks Related to This Offering

Management will have broad discretion as to the use of the proceeds from this offering, and may not use the proceeds effectively.

Because we have not designated the amount of net proceeds from this offering to be used for any particular purpose, our management will have broad discretion as to the application of the net proceeds from this offering and could use them for purposes other than those contemplated at the time of the offering. Our management may use the net proceeds for corporate purposes that may not improve our financial condition or market value.

You may experience immediate and substantial dilution.

The offering price per share in this offering may exceed the net tangible book value per share of our common stock outstanding prior to this offering. Assuming that 51,948,051 shares of our common stock are sold in this offering, based on an assumed sale price of \$0.77 per share, the last sale price of a share of our common stock on the Nasdaq Capital Market on August 12, 2020, you will experience immediate dilution, representing the difference between the price you pay and our as adjusted net tangible book value per share as of June 30, 2020, after giving effect to this offering, of \$0.46 per share. The exercise of outstanding stock options may result in further dilution of your investment. See the section titled “Dilution” below for a more detailed illustration of the dilution you would incur if you participate in this offering.

Sales of our common stock in this offering, or the perception that such sales may occur, could cause the market price of our common stock to fall.

We may issue and sell shares of our common stock for aggregate gross proceeds of up to \$40,000,000 from time to time in connection with this offering. The actual number of shares of common stock that may be issued and sold in this offering, as well as the timing of any such sales, will depend on a number of factors, including, among others, the prices at which any shares are actually sold this offering (which may be influenced by market conditions, the trading price of our common stock and other factors) and our determinations as to the appropriate timing, sources and amounts of funding we need. The issuance and sale from time to time of these new shares of common stock, or the mere fact that we are able to issue and sell these shares in this offering, could cause the market price of our common stock to decline.

You may experience future dilution as a result of future equity offerings.

To raise additional capital, we may in the future offer additional shares of our common stock or other securities convertible into or exchangeable for our common stock at prices that may not be the same as the price per share in this offering. We may sell shares or other securities in any other offering at a price per share that is less 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. The price per share at which we sell additional shares of our common stock, or securities convertible or exchangeable into common stock, in future transactions may be higher or lower than the price per share paid by investors in this offering.

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We do not intend to pay dividends in the foreseeable future.

We have never paid cash dividends on our common stock and currently do not plan to pay any cash dividends in the foreseeable future.

It is not possible to predict the aggregate proceeds resulting from sales made under the sales agreement.

Subject to certain limitations in the sales agreement and compliance with applicable law, we have the discretion to deliver a placement notice to the sales agent, Ladenburg, at any time throughout the term of the sales agreement. The number of shares that are sold through Ladenburg after delivering a placement notice will fluctuate based on a number of factors, including the market price of our common stock during the sales period, any limits we may set with Ladenburg in any applicable placement notice and the demand for our common stock. Because the price per share of each share sold pursuant to the sales agreement will fluctuate over time, it is not currently possible to predict the aggregate proceeds to be raised in connection with sales under the sales agreement.

Sales of common stock offered hereby will be in “at the market offerings,” and investors who buy shares at different times will likely pay different prices.

Investors who purchase shares in this offering at different times will likely pay different prices, and accordingly may experience different levels of dilution and different outcomes in their investment results. We will have discretion, subject to market demand, to vary the timing, prices and number of shares sold in this offering. In addition, subject to the final determination by our board of directors or any restrictions we may place in any applicable placement notice delivered to Ladenburg, there is no minimum or maximum sales price for shares to be sold in this offering. Investors may experience a decline in the value of the shares they purchase in this offering as a result of sales made at prices lower than the prices they paid.

USE OF PROCEEDS

We may issue and sell shares of our common stock having aggregate sales proceeds of up to \$40,000,000 from time to time. Because there is no minimum offering amount required pursuant to the sales agreement, the actual total public offering amount, commissions and proceeds to us, if any, are not determinable at this time. Actual net proceeds will depend on the number of shares we sell and the prices at which such sales occur. There can be no assurance that we will sell any shares under or fully utilize the sales agreement as a source of financing.

We currently intend to use the net proceeds from the sale of the common stock offered by us hereunder, if any, for working capital and general corporate purposes, including research and development expenses and capital expenditures. We may also use a portion of the net proceeds from this offering to repay indebtedness under the Innovatus Loan Agreement (as defined below) and co-develop, acquire or invest in products, technologies or businesses that are complementary to our business. However, we currently have no agreements or commitments for any such uses of proceeds.

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

The amounts and timing of our use of the net proceeds from this offering will depend on a number of factors, such as the timing and progress of our research and development efforts, the timing and progress of any partnering and commercialization efforts, technological advances and the competitive environment for our products. As of the date of this prospectus, we cannot specify with certainty all of the particular uses for the net proceeds to us from the sale of the securities offered by us hereunder. Accordingly, our management will have broad discretion in the timing and application of these proceeds. Pending application of the net proceeds as described above, we intend to temporarily invest the proceeds in short-term, interest-bearing instruments.

DILUTION

If you invest in our common stock, 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, 2020 was \$5.8 million, or \$0.06 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, 2020.

After giving effect to the assumed sale of 51,948,051 shares of our common stock at a sale price of \$0.77 per share, the last sale price of our common stock on the Nasdaq Capital Market on August 12, 2020, our net tangible book value as of June 30, 2020, would have been \$44.3 million, or \$0.31 per share of common stock. This represents an immediate increase in the net tangible book value of \$0.25 per share to our existing stockholders and an immediate dilution in net tangible book value of \$0.46 per share to new investors purchasing shares in this offering.

The following table illustrates this per share dilution:

Assumed offering price per share	\$0.77
Historical net tangible book value per share as of June 30, 2020	\$0.06
Increase in as adjusted net tangible book value per share attributable to this offering	<u>0.25</u>
As adjusted net tangible book value per share after giving effect to this offering	<u>0.31</u>
Dilution per share to new investors in this offering	<u>0.46</u>

The discussion and table above assume no exercise of outstanding warrants to purchase our common stock and no exercise of outstanding options to purchase our common stock.

Changes in the assumed public offering price of \$0.25 per share would not affect our as adjusted net tangible book value after this offering because this offering is currently limited to \$40.0 million. However, a \$0.25 increase in the assumed public offering price of \$0.77 per share would increase the dilution per share to new investors by approximately \$0.22 per share, and a \$0.25 decrease in the assumed public offering price of \$0.20 per share would decrease the dilution per share to new investors by approximately \$0.77 per share, in each case assuming that the aggregate dollar amount of shares offered by us, as set forth above, remains at \$40.0 million and after deducting the commissions and estimated offering expenses payable by us. The information discussed above is illustrative only and will adjust based on the actual public offering price, the actual number of shares that we offer in this offering, and other terms of this offering determined at the time of each offer and sale.

The number of shares of our common stock that will be outstanding after this offering is based on 91,975,045 shares of common stock outstanding as of June 30, 2020, and assumes the sale and issuance by us of 51,948,051 shares of common stock in this offering and excludes:

- 2,987,691 shares of common stock issuable upon the exercise of options outstanding as of June 30, 2020 at a weighted average exercise price of \$3.34 per share;
- 5,343,380 shares of common stock reserved for future issuance under our 2018 Equity Incentive Plan as of June 30, 2020;
- 341,427 shares of common stock reserved for future issuance under our 2018 Employee Stock Purchase Plan as of June 30, 2020;
- 75,414,050 shares of common stock issuable upon the exercise of common warrants outstanding as of June 30, 2020 at a weighted-average exercise price of \$0.80 per share, under which 42,005,000 shares of common stock have been issued between July 1, 2020 and August 12, 2020; and
- 4,500,000 shares of common stock issuable upon the exercise of pre-funded warrants outstanding as of June 30, 2020 at a weighted-average exercise price of \$0.001 per share, under which 4,500,000 shares of common stock have been issued between July 1, 2020 and August 12, 2020.

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To the extent that warrants or options outstanding as of June 30, 2020, have been or are exercised, or other shares are issued, investors purchasing shares in this offering could experience further dilution. In addition, we may choose to raise additional capital due to market conditions or strategic considerations, even if we believe we have sufficient funds for our current or future operating plans. To the extent that additional capital is raised through the sale of equity or convertible debt securities, the issuance of these securities could result in further dilution to our stockholders.

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.

Preferred Stock

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

Anti-Takeover Provisions

The provisions of Delaware law, our eighth amended and restated certificate of incorporation and our amended and restated bylaws, certain provisions of which are summarized below, may have the effect of delaying, deferring or discouraging another person from acquiring control of our company. They are also designed, in part, to encourage persons seeking to acquire control of us to negotiate first with our board of directors. We believe that the benefits of increased protection of our potential ability to negotiate with an unfriendly or unsolicited acquirer outweigh the disadvantages of discouraging a proposal to acquire us because negotiation of these proposals could result in an improvement of their terms.

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

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

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

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

Section 203 of the Delaware General Corporation Law

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

Transfer Agent and Registrar

Our transfer agent and registrar for our common stock is American Stock Transfer & Trust Company, LLC.

Listing on the Nasdaq Capital Market

Our common stock is listed on the Nasdaq Capital Market under the symbol "BNGO."

PLAN OF DISTRIBUTION

We have entered into a sales agreement with Ladenburg, under which we may offer and sell up to \$40,000,000 of our shares of common stock from time to time through Ladenburg acting as agent. Sales of our shares of common stock, if any, under this prospectus will be made by any method that is deemed to be an “at the market offering” as defined in Rule 415(a)(4) under the Securities Act, or in privately negotiated transactions.

Each time we wish to issue and sell shares of common stock under the sales agreement, we will notify Ladenburg of the number of shares to be issued, the dates on which such sales may be made, any limitation on the number of shares to be sold in any one day and any minimum price below which sales may not be made. Once we have so instructed Ladenburg, unless Ladenburg declines to accept the terms of such notice, Ladenburg has agreed to use its commercially reasonable efforts consistent with its normal trading and sales practices to sell such shares up to the amount specified on such terms. The obligations of Ladenburg under the sales agreement to sell our shares of common stock are subject to a number of conditions that we must meet.

The settlement of sales of shares between us and Ladenburg is generally anticipated to occur on the second trading day following the date on which the sale was made, or on some other date that is agreed upon by and between us and Ladenburg in connection with a particular transaction, in return for payment of the net proceeds to us. Sales of our shares of common stock as contemplated in this prospectus will be settled through the facilities of The Depository Trust Company or by such other means as we and Ladenburg may agree upon. There is no arrangement for funds to be received in an escrow, trust or similar arrangement.

We will pay Ladenburg a commission in cash of up to 3.0% of the aggregate gross proceeds we receive from each sale of our shares of common stock. Because there is no minimum offering amount required as a condition to close this offering, the actual total public offering amount, commissions and proceeds to us, if any, are not determinable at this time. In addition, we have agreed to reimburse Ladenburg for the fees and disbursements of its counsel, payable upon execution of the sales agreement, in an amount not to exceed \$50,000, in addition to certain ongoing disbursements of its legal counsel up to \$3,000 per calendar quarter. We estimate that the total expenses for the offering, excluding any commissions or expense reimbursement payable to Ladenburg under the terms of the sales agreement, will be approximately \$300,000. The remaining sale proceeds, after deducting any other transaction fees, will equal our net proceeds from the sale of such shares.

Ladenburg will provide written confirmation to us before the open on The Nasdaq Capital Market on the day following each day on which shares of common stock are sold under the sales agreement. Each confirmation will include the number of shares sold on that day, the aggregate gross proceeds of such sales and the proceeds to us.

In connection with the sale of the shares of common stock on our behalf, Ladenburg will be deemed to be an “underwriter” within the meaning of the Securities Act, and the compensation of Ladenburg will be deemed to be underwriting commissions or discounts. We have agreed to indemnify Ladenburg against certain civil liabilities, including liabilities under the Securities Act. We have also agreed to contribute to payments Ladenburg may be required to make in respect of such liabilities.

The offering of our shares of common stock pursuant to the sales agreement will terminate as permitted therein. We and Ladenburg may each terminate the sales agreement at any time upon 10 day’s prior notice.

Ladenburg and its affiliates have previously and may in the future provide various investment banking, commercial banking, financial advisory and other financial services for us and our affiliates, for which services they have and may in the future receive customary fees. In the course of its business, Ladenburg may actively trade our securities for its own account or for the accounts of customers, and, accordingly, Ladenburg may at any time hold long or short positions in such securities.

This prospectus in electronic format may be made available on a website maintained by Ladenburg, and Ladenburg may distribute this prospectus electronically.

EXPERTS

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

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 agent in connection with this offering.

WHERE YOU CAN FIND ADDITIONAL INFORMATION

We must comply with the informational requirements of the Exchange Act, and we are required to file reports and proxy statements and other information with the SEC. You may read and copy these reports, proxy statements and other information on the SEC's website at <http://www.sec.gov>, which contains reports, proxy and information statements and other information regarding issuers like us that file electronically with the SEC. We maintain a website at www.bionanogenomics.com. The information contained in, or that can be accessed through, our website is not incorporated by reference herein and is not part of this prospectus.

Statements contained in this prospectus as to the contents of any contract or other document are not necessarily complete, and in each instance we refer you to the copy of the contract or document filed as an exhibit to the registration statement, each such statement being qualified in all respects by such reference.

INCORPORATION OF CERTAIN INFORMATION BY REFERENCE

The SEC allows us to "incorporate by reference" information 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 an important part of this prospectus. Information in this prospectus supersedes information incorporated by reference that we filed with the SEC prior to the date of this prospectus, while information that we file later with the SEC will automatically update and supersede the information in this prospectus. We also incorporate by reference into this prospectus the documents listed below and any future filings made by us with the SEC (other than current reports or portions thereof furnished under Item 2.02 or Item 7.01 of Form 8-K and exhibits filed on such form that are related to such items and other portions of documents that are furnished, but not filed, pursuant to applicable rules promulgated by the SEC) that are filed by us with the SEC pursuant to Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act (i) after the date of the initial filing of the registration statement of which this prospectus is a part and prior to effectiveness of the registration statement, and (ii) after the effectiveness of the registration statement but prior to the termination of the offering of the securities covered by this prospectus:

- our Annual Report on Form 10-K for the year ended December 31, 2019 filed with the SEC on [March 10, 2020](#);
- our Quarterly Reports on Form 10-Q for the quarter ended March 31, 2020 and June 30, 2020 filed with the SEC on [June 18, 2020](#) and [August 13, 2020](#), respectively;
- our Current Reports on Form 8-K (other than information furnished rather than filed) filed with the SEC on [January 30, 2020](#), [March 2, 2020](#), [April 6, 2020](#), [April 20, 2020](#), [April 24, 2020](#), [May 5, 2020](#), [May 14, 2020](#), [June 19, 2020](#), [July 2, 2020](#), [August 14, 2020](#), [August 24, 2020](#) and [August 26, 2020](#); and
- the description of our common stock which is registered under Section 12 of the Exchange Act, in our registration statement on Form 8-A, filed on [August 17, 2018](#), including any amendment or reports filed for the purposes of updating this description.

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We will furnish without charge to each person, including any beneficial owner, to whom this prospectus is delivered, upon written or oral request, a copy of any document incorporated by reference. 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.

In accordance with Rule 412 of the Securities Act, any statement contained in a document incorporated by reference herein shall be deemed modified or superseded to the extent that a statement contained herein or in any other subsequently filed document which also is or is deemed to be incorporated by reference herein modifies or supersedes such statement.

**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.



\$40,000,000

Common Stock

PROSPECTUS

Ladenburg Thalmann

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 August 25, 2020
