

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

**FORM S-3
REGISTRATION STATEMENT
UNDER
THE SECURITIES ACT OF 1933**

Bionano Genomics, Inc.

(Exact name of registrant as specified in its charter)

Delaware	3826	26-1756290
(State or Other Jurisdiction of Incorporation or Organization)	(Primary Standard Industrial Classification Code Number)	(I.R.S. Employer Identification Number)

**Bionano Genomics, Inc.
9540 Towne Centre Drive, Suite 100
San Diego, California 92121
(858) 888-7600**

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

**R. Erik Holmlin, Ph.D.
President and Chief Executive Officer
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San Diego, California 92121
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From time to time after the effective date of this Registration Statement

(Approximate date of commencement of proposed sale to the public)

If the only securities being registered on this Form are being offered pursuant to dividend or interest reinvestment plans, please check the following box.

If any of the securities being registered on this Form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act of 1933, other than securities offered only in connection with dividend or interest reinvestment plans, check the following box.

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

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

If this Form is a registration statement pursuant to General Instruction I.D. or a post-effective amendment thereto that shall become effective upon filing with the Commission pursuant to Rule 462(e) under the Securities Act, check the following box.

If this Form is a post-effective amendment to a registration statement filed pursuant to General Instruction I.D. filed to register additional securities or additional classes of securities pursuant to Rule 413(b) under the Securities Act, check the following box.

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company" and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer	<input type="checkbox"/>	Accelerated filer	<input type="checkbox"/>
Non-accelerated filer	<input checked="" type="checkbox"/>	Smaller reporting company	<input checked="" type="checkbox"/>
		Emerging growth company	<input type="checkbox"/>

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

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

The information in this preliminary prospectus is not complete and may be changed. Neither we nor the Selling Securityholder may sell these securities until the registration statement filed with the Securities and Exchange Commission is effective. This preliminary prospectus is not an offer to sell these securities and is not soliciting an offer to buy these securities in any jurisdiction where the offer or sale is not permitted.

PRELIMINARY PROSPECTUS

SUBJECT TO COMPLETION, DATED OCTOBER 26, 2023



**Up to \$35,000,000 of Senior Secured Convertible Notes due 2025
Up to 12,221,738 Shares of Common Stock**

In October 2023, we issued and sold pursuant to a Securities Purchase Agreement, dated October 11, 2023 (the “Purchase Agreement”), with an institutional investor (the “Selling Securityholder”) (i) in a registered offering to the Selling Securityholder (a) \$45.0 million aggregate principal amount of senior secured convertible notes due 2025 (the “Registered Notes”) initially convertible by the Selling Securityholder into 15,713,663 shares of our common stock, \$0.0001 par value per share (“common stock”), and (b) warrants to purchase up to 21,660,650 shares of our common stock (the “Registered Warrants”), and (ii) in a concurrent private placement, \$35.0 million aggregate principal amount of senior secured convertible notes due 2025 initially convertible by the Selling Securityholder into 12,221,738 shares of our common stock (the “Notes”). We also granted the Selling Securityholder an option to purchase up to an additional \$25.0 million aggregate principal amount of Notes (the “Additional Notes”) and warrants (together with the Registered Warrants, the “Warrants”) to purchase up to 6,768,954 shares of our common stock in a subsequent private placement on substantially the same terms as the Notes and the Registered Warrants. This prospectus relates to the resale of (i) up to \$35,000,000 aggregate principal amount of the Notes and (ii) up to 12,221,738 shares of common stock issuable upon conversion of the Notes (the “Shares”) by the Selling Securityholder. We will not receive any proceeds from the resale by the Selling Securityholder of the Notes and the Shares described in this prospectus.

The Notes do not bear regular interest. The Notes mature on September 1, 2025 (the “Maturity Date”), unless earlier repurchased, redeemed or converted. We sold the Notes at an issue price of 100% of the principal amount, and, as described in more detail in this prospectus, when we repay the principal of the Notes at maturity pursuant to the terms of the Notes, we will be required to pay 115% of the principal amount repaid (the “Repayment Price”). Holders of the Notes have the option to partially redeem the Notes on the first day of each month beginning November 1, 2023 for the principal amounts described in this prospectus at the Repayment Price.

Holders of the Notes may convert their Notes into shares of our common stock at any time prior to the close of business on the second scheduled trading day (or, if earlier, the standard settlement period for the primary Eligible Exchange (as defined herein) (measured in terms of trading volume for our common stock) on which the common stock is traded) immediately before the Maturity Date. The Notes are initially convertible into 349.1925 shares of our common stock per \$1,000 principal amount of Notes, equivalent to an initial conversion price of approximately \$2.8638 per share of our common stock.

The conversion rate will also be subject to adjustment as described in this prospectus.

Subject to certain conditions, at our option, we can require conversion of all, but not less than all, of the Notes and the Registered Notes if the last reported sale price of our common stock exceeds 175% of the conversion price for at least 20 volume-weighted average price (“VWAP”) trading days in any 30 consecutive trading day period.

Subject to terms, conditions and certain exceptions set forth in the Notes, beginning on the thirtieth day following the date that the Resale Registration Statement becomes effective, we have the right to redeem all (but not less than all) of the then outstanding principal amount of the Notes for cash at the redemption price described in this prospectus under the section titled “Description of Notes—Redemption at Our Option.” If a Fundamental Change (as defined herein) occurs the holders of the Notes may require us to repurchase the Notes and the Registered Notes for a cash amount equal to the price described in this prospectus under the section titled “Description of Notes—Repurchase of the Notes upon a Fundamental Change.”

The Notes are secured by a first-priority lien, subject only to certain permitted liens, on substantially all our and our subsidiaries’ (other than certain foreign subsidiaries) assets, whether now owned or hereafter acquired (other than certain excluded property).

As described in more detail in this prospectus, the Notes are our senior secured obligations, rank *pari passu* with the Registered Notes and any Additional Notes, senior in right of payment to all of our indebtedness that is expressly subordinated to the Notes in right of payment, effectively senior to all our unsecured indebtedness to the extent of the collateral securing the Notes, effectively junior to all of our indebtedness secured by permitted liens, to the extent of the value of the assets subject to such permitted liens and to the extent such permitted liens have lien priority by contract or law and structurally junior to all indebtedness and other liabilities (including trade payables) of our subsidiaries that are not party to the security documents (as defined in “Description of Notes—Security”).

Our registration of the securities covered by this prospectus does not mean that the Selling Securityholder will offer or sell any of the Notes or the Shares. See the section entitled “Plan of Distribution” for additional information about how the Selling Securityholder may sell or otherwise dispose the Notes or the Shares. See the section entitled “Selling Securityholder” for additional information regarding the Selling Securityholder.

Our common stock is listed on The Nasdaq Capital Market (“Nasdaq”) under the symbol “BNGO.” On October 25, 2023, the last reported sale price on Nasdaq of our common stock was \$1.31 per share. There is currently no established trading market for the Notes, and we do not expect a market to develop. We do not intend to list the Notes on Nasdaq or any other national securities exchange or any other nationally recognized trading system. Without an active trading market, the liquidity of the Notes will be limited.

We are a “smaller reporting company” as defined under the federal securities laws and, as such, have elected to comply with certain reduced reporting requirements for this prospectus and may elect to do so in future filings.

Investing in our securities involves a high degree of risk. You should review carefully the risks and uncertainties described under the heading “Risk Factors” on page 6 of this prospectus as well as those contained in the applicable prospectus supplement and any related free writing prospectus, and under similar headings in the other 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.

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ABOUT THIS PROSPECTUS

This prospectus is part of a registration statement on Form S-3 that we filed with the Securities and Exchange Commission (the “SEC”) using the “shelf” registration process. Under this shelf registration process, the Selling Securityholder may, from time to time, sell the securities offered by it described in this prospectus. We will not receive any proceeds from the sale of the securities offered by the Selling Securityholder described in this prospectus.

We have not, and the Selling Securityholder has not, authorized anyone to provide you with information different than or inconsistent with the information contained in or incorporated by reference in this prospectus, any applicable prospectus supplement or any free writing prospectus that we have authorized for use in connection with this offering. Neither we nor the Selling Securityholder take responsibility for, and can provide no assurance as to the reliability of, any other information that others may give you. We are not, and the Selling Securityholder is not, making an offer to sell these securities in any jurisdiction where the offer or sale is not permitted 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 contained in or incorporated by reference in this prospectus, any applicable prospectus supplement or in any free writing prospectus that we have authorized for use in connection with this offering, is accurate only as of the date of those respective documents, regardless of the time of delivery of those respective documents. Our business, financial condition, results of operations and prospects may have changed since those dates. You should read this prospectus, any applicable prospectus supplement, any free writing prospectus that we have authorized for use in connection with this prospectus and the documents incorporated by reference in this prospectus, any applicable prospectus supplement, any free writing prospectus that we have authorized for use in connection with this prospectus, 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 titled “Where You Can Find More Information” and “Incorporation of Certain Information by Reference.”

The Selling Securityholder is offering to sell, and seeking offers to buy, the securities offered by the Selling Securityholder described in this prospectus only in jurisdictions where offers and sales are permitted. The distribution of this prospectus and this offering of our securities 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, this offering of our securities 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.

Unless otherwise mentioned or unless the context indicates otherwise, all references in this prospectus to “Bionano,” “the Company,” “we,” “us,” “our” and similar references refer to Bionano Genomics, Inc. and its subsidiaries or, as the context may require, Bionano Genomics, Inc. only. “Bionano Laboratories,” “BioDiscovery” and “Purigen” refer to our wholly owned subsidiaries, Lineagen, Inc. (doing business as Bionano Laboratories), BioDiscovery, LLC and Purigen Biosystems, Inc., respectively.

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.

PROSPECTUS SUMMARY

The following summary highlights certain information about us, this offering and selected information contained elsewhere in or incorporated by reference into this prospectus. This summary is not complete and does not contain all of the information that you should consider before deciding whether to invest in our securities. For a more complete understanding of our company and this offering, you should read and consider carefully the more detailed information included or incorporated by reference in this prospectus, including the factors described under the heading “Risk Factors.”

Company Overview

We are a provider of genome analysis solutions that can enable researchers and clinicians to reveal answers to challenging questions in biology and medicine. Our mission is to transform the way the world sees the genome through optical genome mapping (“OGM”) solutions, diagnostic services and software. We offer OGM solutions for applications across basic, translational and clinical research, and for other applications including bioprocessing. Through our Bionano Laboratories business, we also provide diagnostic testing for patients with clinical presentations consistent with autism spectrum disorder and other neurodevelopmental disabilities. Through our BioDiscovery business, we offer an industry-leading, platform-agnostic software solution, which integrates next-generation sequencing and microarray data designed to provide analysis, visualization, interpretation and reporting of copy number variants, single-nucleotide variants and absence of heterozygosity across the genome in one consolidated view. Through our Purigen business, we offer nucleic acid extraction and purification solutions using proprietary isotachopheresis technology through our Ionic Purification system.

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 or in deciding whether to purchase our securities.

Implications of Being a Smaller Reporting Company

We are a “smaller reporting company” meaning that the market value of our common stock held by non-affiliates is less than \$250.0 million measured on the last business day of our second fiscal quarter or our annual revenue is less than \$100.0 million during the most recently completed fiscal year and the market value of our common stock held by non-affiliates is less than \$700.0 million measured on the last business day of our second fiscal quarter. Accordingly, we 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 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

Securities Offered by the Selling Securityholder	(i) \$35,000,000 aggregate principal amount of the Notes and (ii) up to 12,221,738 Shares.
Financing Restrictions	<p>The Purchase Agreement provides that for 30 calendar days after the effectiveness of the registration statement of which this prospectus forms a part registering the resale of the Notes and the Shares (the “<i>Resale Registration Statement</i>”), neither us nor any of our subsidiaries may directly or indirectly issue, offer, sell, grant any option or right to purchase, or otherwise dispose of (or register or amend any outstanding registration statements or file any shelf registration statements or announce any issuance, offer, sale, grant of any option or right to purchase or other disposition of) any equity security or any equity-linked or related security, subject to limited exceptions, including without limitation, certain sales pursuant to an “at-the-market” sales program (an “<i>ATM Sales Program</i>”).</p> <p>So long as the Registered Notes and the Notes are outstanding, the Purchase Agreement provides that we will not, directly or indirectly, offer, sell, grant any option to purchase, or otherwise dispose of (or announce any offer, sale, grant or any option to purchase or other disposition of) any of our or any of our subsidiaries’ equity, equity-linked, equity equivalent securities or securities convertible into or exercisable for equity (excluding offerings of common stock issued pursuant to an equity line of credit or through an ATM Sales Program (other than an issuance through an ATM Sales Program in which a single investor or group of related investors purchase in excess of \$3,000,000 of common stock)) unless we offer certain participation rights to the holders of the Registered Notes and the Notes as set forth in the Purchase Agreement, subject to limited exceptions.</p>
Use of Proceeds	We will not receive any proceeds from the sale of the Notes or Shares by the Selling Securityholder.
Risk Factors	Investing in our securities involves a high degree of risk. See the section titled “Risk Factors” on page 6 of this prospectus and under similar headings in other documents incorporated by reference herein.
Nasdaq Capital Market Symbol	Our common stock is listed for trading on the Nasdaq Capital Market under the symbol “BNGO.” There is currently no established trading market for the Notes and we do not expect a market to develop. We do not intend to list the Notes on Nasdaq or any other national securities exchange or any other nationally recognized trading system. Without an active trading market, the liquidity of the Notes will be limited.

	The Notes
Maturity Date	September 1, 2025, unless earlier repurchased, redeemed or converted.
Interest	The Notes do not bear regular interest.
Retirement Fee	On the earlier to occur of (i) the date that no principal amount of the Notes remain outstanding or (ii) the Maturity Date, we will pay to the holders of the Notes a cash retirement fee equal to the product of (x) \$2,187,500 <i>multiplied by</i> (y) a fraction, whose numerator is an amount equal to \$35,000,000 less the aggregate principal amount of the Notes converted into shares of our common stock pursuant to the terms of the Notes during the period beginning on, and including, the issue date of the Notes and ending on, and including, the date on which the Notes cease to be outstanding, and whose denominator is \$35,000,000.
Ranking	As described in more detail below under “Description of Notes—Ranking,” the Notes are our senior secured obligations, rank <i>pari passu</i> with the Registered Notes and any Additional Notes, senior in right of payment to all of our indebtedness that is expressly subordinated to the Notes in right of payment, effectively senior to all our unsecured indebtedness to the extent of the collateral securing the Notes, effectively junior to all of our indebtedness secured by permitted liens, to the extent of the value of the assets subject to such permitted liens and to the extent such permitted liens have lien priority by contract or law and structurally junior to all indebtedness and other liabilities (including trade payables) of our subsidiaries that are not party to the security documents (as defined in “Description of Notes—Security”).
Conversion Rights	<p>Holders of the Notes may convert their Notes into shares of our common stock at any time prior to the close of business on the second scheduled trading day (or, if earlier, the standard settlement period for the primary Eligible Exchange (as defined in “Description of Notes—Certain Definitions”) (measured in terms of trading volume for our common stock) on which the common stock is traded) immediately before the Maturity Date.</p> <p>The Notes are initially convertible into 349.1925 shares of our common stock per \$1,000 principal amount of Notes, equivalent to an initial conversion price of approximately \$2.8638 per share of our common stock. The conversion rate is also subject to adjustment as described in this prospectus.</p>
Security	As of the issue date of the Notes, and pursuant to the Purchase Agreement, we and each subsidiary party to the security documents delivered to the collateral agent for the Selling Securityholder under the Notes a U.S. security agreement, a U.S. intellectual property security agreement and UCC financing statements, which created a first lien

Partial Redemptions

security interest in all of our and such subsidiary's tangible and intangible assets, now owned and hereafter created or acquired (except for certain excluded property).

Holders of the Notes will have the option to partially redeem the Notes on the first day of each month beginning November 1, 2023 for the principal amounts described in "Description of Notes—Redemption" at the Repayment Price. Notwithstanding the foregoing, holders of the Notes may subsequently defer any partial redemptions one or more times in the manner and subject to the conditions described in "Description of Notes—Redemption."

Redemption at our Option

Subject to terms, conditions and certain exceptions set forth in the Notes, beginning on the thirtieth day following the date that the Resale Registration Statement becomes effective, we will have the right to redeem all (but not less than all) of the then outstanding principal amount of the Notes for a cash redemption price equal to the greater of (A) 120% of the outstanding principal amount of the Notes, plus accrued and unpaid interest on the Notes; and (B) the sum of (i) 120% of the product of (a) the applicable conversion rate in effect as of the trading day immediately preceding the Company Redemption Date (as defined in "Description of Notes Redemption—Redemption at our Option"); (b) the total then outstanding principal amount (expressed in thousands) of the Notes; and (c) the highest Daily VWAP (as defined in "Description of Notes—Certain Definitions") per share of our common stock during the period beginning on, and including, the fifth VWAP Trading Day (as defined in "Description of Notes—Certain Definitions") prior to the date that our redemption notice is delivered and ending on, and including, the VWAP Trading Day immediately preceding such Company Redemption Date; and (ii) the accrued and unpaid interest on the Notes.

Repurchase or Redemption Upon a Fundamental Change

Holders of the Notes may require us to repurchase the Notes upon a Fundamental Change (as defined in "Description of Notes—Repurchase of the Notes upon a Fundamental Change") for a cash amount equal to the greater of (A) 115% of the outstanding principal amount of the Notes to be repurchased, plus accrued and unpaid interest on such Notes; and (B) the sum of (i) 115% of the product of (a) the applicable conversion rate in effect as of the trading day immediately preceding the effective date of such Fundamental Change; (b) the total then outstanding principal amount (expressed in thousands) of the Notes to be repurchased; and (c) the average of the five Daily VWAPs per share of our common stock during the five consecutive VWAP Trading Days ending on, and including the VWAP Trading Day immediately preceding the effective date of such Fundamental Change; and (ii) accrued and unpaid interest on such Notes.

Forced Conversion

Subject to certain conditions, at our option, we can require conversion of all, but not less than all, the Notes if the Last Reported Sale Price (as defined in “Description of Notes—Certain Definitions”) of our common stock exceeds 175% of the conversion price for at least 20 VWAP Trading Days in any 30 consecutive Trading Day period beginning on any VWAP Trading Day after the effective date with respect to the Resale Registration Statement and ending on the date upon which the conversion notice is delivered by us to the holders.

Events of Default

If an Event of Default (as defined in “Description of Notes—Events of Default”) occurs, the holders may declare the Notes due and payable for cash in an amount equal to the Event of Default Acceleration Amount (as defined in “Description of Notes—Events of Default”).

RISK FACTORS

An investment in our securities involves a high degree of risk. You should carefully consider the following risk factors and the risk factors discussed under the section titled “Risk Factors” contained in our most recent Annual Report on Form 10-K and in our most recent Quarterly Report on Form 10-Q, as updated by any amendments thereto reflected in subsequent filings, which are incorporated by reference into this prospectus in their entirety, together with all of the other information contained in this prospectus or incorporated by reference into this prospectus, any prospectus supplement and any free writing prospectus that we may authorize. The risks and uncertainties described in these documents are not the only ones we face. Other risks and uncertainties, including those that we do not currently consider material, may impair our business. If any of the risks discussed below or incorporated by reference actually occur, our business, financial condition, operating results or cash flows could be materially adversely affected. This could cause the value of our securities to decline, and you may lose all or part of your investment.

Risks Related to our Business

Our future capital needs are uncertain and we will require additional funding in the future to advance the commercialization of our optical genome mapping systems, Ionic Purification system, VIA software, and our other products, technologies and services, as well as continue our research and development efforts. If we fail to obtain additional funding, we will be forced to delay, reduce or eliminate our commercialization and development efforts.

Our operations have consumed substantial amounts of cash since our inception. We expect to continue to spend substantial amounts of cash in order to continue the commercialization of our products and technologies, fund our research and development programs and execute potential strategic transactions. In connection with the preparation of our financial statements for the fiscal year ended December 31, 2022, we had performed an analysis of our ability to continue as a going concern and, based on our current business plan, we believed that our existing cash and cash equivalents will not be sufficient for the next twelve months from the issuance of our report for the fiscal year ended December 31, 2022. Our ability to execute our operating plan depends on our ability to generate sales and obtain additional funding through equity offerings, debt financings or potential licensing and collaboration arrangements. For example, we will likely need to raise substantial additional capital to:

- expand our sales and marketing efforts to further commercialize our products, technologies and services and address competitive developments;
- expand our research and development efforts to improve our existing products, technologies and services and develop and launch new products, technologies and services, particularly if any of our products, technologies and services are deemed by the U.S. Food and Drug Administration (the “FDA”) to be medical devices or otherwise subject to additional regulation by the FDA;
- pursue a regulatory path with the FDA, or a regulatory body outside the United States, to market our existing “research use only” products or new products utilized for diagnostic purposes;
- lease additional facilities or build-out existing facilities as we continue to grow our inventory and research and development;
- further expand our operations outside the United States;
- enter into collaboration arrangements, if any, or in-license products and technologies;
- acquire or invest in complimentary businesses or assets;
- add operational, financial and management information systems; and
- cover increased costs incurred as a result of continued operation as a public company, including costs resulting from our no longer qualifying as an emerging growth company and, if applicable, in the future, loss of our status as a smaller reporting company or changes in our status from a non-accelerated filer to an accelerated filer or large accelerated filer.

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Our future funding requirements will be influenced by many factors, including:

- the cost of integrating our newly acquired businesses or of acquiring future businesses;
- market acceptance of our products, technologies and services, and the variability in costs to achieve such acceptance;
- the cost and timing of establishing additional sales, marketing and distribution capabilities;
- the cost of our research and development activities;
- our ability to satisfy any outstanding or future debt obligations;
- increasing interest rates;
- supply chain disruptions;
- the success of our existing distribution and marketing arrangements and our ability to enter into additional arrangements in the future;
- the effects of geopolitical or macroeconomic developments, such as the ongoing military conflict between Russia and Ukraine, related sanctions, recent and potential future disruptions in access to bank deposits or lending commitments due to bank failures and global pandemics; and
- the effect of competing technological and market developments.

As of June 30, 2023, we had \$77.1 million in cash, cash equivalents and short-term investments. We received net proceeds of approximately \$75.6 million, after deducting placement agent fees and offering expenses from the issuance and sale of our securities to the Selling Securityholder pursuant to the Purchase Agreement in October 2023. Based on our current business plans, we believe the net proceeds together with our existing cash, cash equivalents and short-term investments, will be sufficient to fund our operating expenses and capital expenditure requirements through at least 2024. However, this estimate assumes the inclusion of \$35.0 million that we are required to hold as restricted cash in the Restricted Cash Account (as defined in “Description of Notes—Funding Conditions”), which cash may only be released from such account upon the satisfaction of the Funding Conditions (as defined in “Description of Notes—Funding Conditions”). We expect the Funding Conditions may be difficult to achieve, and there is no assurance that we will be able to meet these Funding Conditions and access such restricted cash. Excluding this amount of restricted cash, our existing cash, cash equivalents and short-term investments will only be sufficient to fund our operating expenses and capital expenditure requirements through at least into the third quarter of 2024. In either situation, our existing cash and cash equivalents and available-for-sale securities, will not be sufficient for us to achieve cash-flow break even and we expect to need to seek additional capital based on favorable market conditions or strategic considerations alternatives in the future.

We have based this estimate on assumptions that may prove to be wrong, and we could use our capital resources sooner than we currently expect, requiring us to seek additional funds sooner than planned, through public or private equity or debt financings or other sources, such as strategic collaborations. The various ways we could raise additional capital carry potential risks. We cannot assure you that we will be able to obtain additional funds on acceptable terms, or at all. If we raise additional funds by issuing equity or equity-linked securities, our stockholders may experience dilution. Any equity or debt securities we issue could provide for rights, preferences, or privileges senior to those of holders of our common stock. Future debt financing, if available, may involve covenants restricting our operations or our ability to incur additional debt. Any debt or equity financing may contain terms that are not favorable to us or our stockholders. If we raise additional funds through collaboration and licensing arrangements with third parties, it may be necessary to relinquish some rights to our technologies or our products, or grant licenses on terms that are not favorable to us. In addition, we may not be able to access a portion of our existing cash, cash equivalents and investments or “restricted cash” in the account control agreement due to market conditions such as recent and potential future disruptions in access to bank deposits or lending commitments due to bank failures.

Global economic conditions have been worsening, with disruptions to, and volatility in, the credit and financial markets in the U.S. and worldwide resulting from the effects of ongoing geopolitical or macroeconomic developments. If these conditions persist or worsen, we could experience an inability to access additional capital. If we do not have, or are not able to obtain, sufficient funds, we may have to delay development or

commercialization of our technologies and products. We also may have to reduce marketing, customer support or other resources devoted to our products or technologies or cease operations. Any of these factors could have a material adverse effect on our financial condition, operating results and business. Any of the foregoing could significantly harm our business, prospects, financial condition and results of operation and could cause the price of our securities to decline. Any additional fundraising efforts may divert our management from their day-to-day activities, which may adversely affect our ability to conduct our strategic operations.

Risks Related to the Notes

The Notes are structurally subordinated to the indebtedness and other liabilities of our subsidiaries that are not party to the security documents.

The Notes rank *pari passu* with the Registered Notes and any Additional Notes, senior in right of payment to all of our indebtedness that is expressly subordinated to the Notes in right of payment, effectively senior to all our unsecured indebtedness to the extent of the collateral securing the Notes, effectively junior to all of our indebtedness secured by permitted liens, to the extent of the value of the assets subject to such permitted liens and to the extent such permitted liens have lien priority by contract or law and structurally junior to all indebtedness and other liabilities (including trade payables) of our subsidiaries that are not party to the security documents. If we acquire or form a subsidiary, other than certain foreign subsidiaries exempted under the terms of the Notes, such subsidiary will be required to become a party to the security documents within 30 days. In the event of our bankruptcy, liquidation, reorganization or other winding up, the assets of our subsidiaries that are not party to the security documents will be available to pay obligations on the Notes only after all indebtedness and other liabilities (including trade payables) of such subsidiaries have been repaid in full.

The terms of the Notes and the Purchase Agreement restrict our current and future operations. Upon an Event of Default, we may not be able to make any accelerated payments under the Notes or our other permitted indebtedness.

The Notes and the Purchase Agreement contain a number of restrictive covenants that impose significant operating and financial restrictions on us and may limit our ability to engage in acts that may be in our long-term best interest. In particular, the Notes contain customary affirmative and negative covenants (including covenants that limit our ability to incur debt, make investments, transfer assets, engage in certain transactions with affiliates and merge with other companies, in each case, other than those permitted by the Notes, and that require us to maintain a share reserve in respect of the Notes and warrants that we issued in connection with the Registered Notes) and events of default, and the Purchase Agreement contains customary covenants (including covenants that limit our ability to issue additional securities during specified periods and enter into variable rate transactions, and that require us to maintain a share reserve in respect of the Notes and warrants that we issued in connection with the Registered Notes). Furthermore, we will be required to maintain: (A) cash and cash equivalents subject to account control agreements in favor of the Selling Securityholder in a minimum amount equal to the greater of (i) \$30 million and (ii) the lesser of (x) \$50 million and (y) our trailing six-month cash burn rate (calculated in the manner set forth in the Notes); (B) an “at the market” program, equity line of credit, or similar program approved by the Selling Securityholder with aggregate available, accessible and unused capacity to generate gross proceeds to us of at least \$50 million; and (C) beginning with the fiscal quarter ending March 31, 2024, our and our wholly owned subsidiaries’ Available Cash (as defined under “Description of Notes—Certain Covenants—Minimum Liquidity”) on the last calendar day of each quarter shall be greater than or equal to (x) our and our wholly owned subsidiaries’ cash and cash equivalents on the last day of the immediately preceding fiscal quarter, less (y) \$30 million. Our ability to meet the financial tests under the Notes can be affected by events beyond our control, and we may be unable to meet them. The Registered Notes and the Additional Notes, if any, contain similar provisions restricting our current and future operations.

A breach of the covenants or restrictions under the Purchase Agreement, the Notes, the Registered Notes and the Additional Notes, if any, or under the agreements governing any of our other permitted indebtedness could result in an event of default under the applicable indebtedness. Such a default may allow holders of the Notes, the Registered Notes and the Additional Notes, if any, or the holders or lenders of our other permitted indebtedness, as applicable, to accelerate the related indebtedness, which may result in the acceleration of other indebtedness to which a cross-acceleration or cross-default provision applies. In addition, such lenders or holders could terminate commitments to lend money, if any. Furthermore, if we were unable to repay the Notes, the Registered Notes and the Additional Notes, if any, or other permitted indebtedness then due and payable, secured

lenders could proceed against the assets, if any, securing such indebtedness. In the event such lenders or holders accelerate the repayment of the Notes, the Registered Notes and the Additional Notes, if any, or our other permitted borrowings, we may not have sufficient assets to repay that indebtedness. A default would also likely significantly diminish the market price of our common stock. Furthermore, as a result of these restrictions, we may be limited in how we conduct and grow our business, be unable to compete effectively or be unable to take advantage of new business opportunities. These restrictions may affect our ability to grow in accordance with our strategy.

Servicing the Notes requires a significant amount of cash, and we may not have sufficient cash flow from our business to pay our obligations under the Notes or our other permitted indebtedness.

Our ability to make scheduled payments of principal or default interest, if any, or to refinance the Notes or our other permitted indebtedness, including the Registered Notes and the Additional Notes, if any, depends on our future performance, which is subject to economic, financial, competitive and other factors, some of which are beyond our control. After giving effect to the issuance of the Notes and the Registered Notes, our and our subsidiaries' outstanding indebtedness is approximately \$80.0 million, and the terms of the Notes and the Registered Notes require us to pay approximately \$92.0 million to repay the full principal amount of the Notes and the Registered Notes at maturity. Our business may not continue to generate cash flow from operations in the future sufficient to satisfy our obligations under the Notes or our other permitted indebtedness. If we are unable to generate such cash flow, we may be required to adopt one or more alternatives, such as reducing or delaying investments or capital expenditures, selling assets, refinancing or obtaining additional equity capital on terms that may be onerous or highly dilutive. We may only prepay the Notes, including the Registered Notes and the Additional Notes, if any, in full without the consent of the holders under certain circumstances, and our ability to refinance the Notes or our other permitted indebtedness will also depend on the capital markets and our financial condition at such time. We may not be able to engage in any of these activities or engage in these activities on desirable terms, which could result in a default on the Notes or our other indebtedness, including the Registered Notes and the Additional Notes, if any.

The value of the collateral securing the Notes may not be sufficient to pay the amounts owed under the Notes. As a result, holders of the Notes may not receive full payment on their Notes following an Event of Default.

The proceeds of any sale of collateral securing the Notes following an Event of Default with respect thereto may not be sufficient to satisfy, and may be substantially less than, amounts due on the Notes.

No appraisal of the value of the collateral securing the Notes has been made. The value of the collateral in the event of liquidation will depend upon market and economic conditions, the availability of buyers and similar factors. The value of the collateral could be impaired in the future as a result of changing economic and market conditions, our failure to successfully implement our business strategy, competition and other factors. By its nature, some or all of the collateral may not have a readily ascertainable market value or may not be saleable or, if saleable, there may be substantial delays in its liquidation.

Bankruptcy laws and other laws relating to foreclosure and sale also could substantially delay or prevent the ability of the collateral agent for the Selling Securityholder under the Notes (the "Collateral Agent"), or any holder of the Notes to obtain the benefit of any collateral securing the Notes. Such delays could have a material adverse effect on the value of the collateral.

If the proceeds of any sale of collateral are not sufficient to repay all amounts due on the Notes, the holders of the Notes (to the extent not repaid from the proceeds of the sale of the collateral) would have only an unsecured claim against our remaining assets.

The imposition of certain permitted liens will cause the assets on which such liens are imposed to be excluded from the collateral securing the Notes.

The Notes and the security documents permit certain liens and exclude certain assets from the collateral. If an Event of Default occurs and the Notes are accelerated, the Notes will be equal in right of payment with our permitted senior indebtedness with respect to such excluded assets and will be effectively subordinated to holders of obligations secured by a lien on such excluded assets.

It may be difficult to realize the value of the collateral securing the notes.

The collateral securing the Notes is subject to certain exceptions, defects, encumbrances, liens and other imperfections permitted by the Notes and the related security documents, whether existing on or after the date

the Notes were issued. The existence of any such exceptions, defects, encumbrances, liens and other imperfections could adversely affect the value of the collateral securing the Notes as well as the ability of the Collateral Agent to realize or foreclose on such collateral. Additionally, future regulatory developments or other inability to obtain or comply with the required licenses or approvals may adversely affect the value of the collateral. In the event of foreclosure, the transfer of such licenses or other approvals may be prohibited, may not be possible or may require us to incur significant cost and expense. If the regulatory authorizations required for such transfers are not obtained or are delayed, the foreclosure may be delayed and the value of the collateral may be significantly impaired. The security interest of the Collateral Agent is subject to practical challenges generally associated with the realization of security interests in collateral. For example, additional filings and/or the consent of a third party may be required in connection with obtaining or enforcing a security interest in an asset. If we are unable to obtain these consents or make these filings, the security interests may be invalid and the holders will not be entitled to the benefits of the security interests in the collateral or any recovery with respect to the sale of such collateral. We cannot assure you that these filings will be made or any such consent of any third parties will be given when required to create a lien or facilitate a foreclosure on such assets. As a result, the Collateral Agent may not have the ability to foreclose upon those assets and the value of the collateral may be significantly impaired as a result, or the security interests may be invalid and the holders of the Notes will not be entitled to the collateral or any recovery with respect thereto.

Rights of holders of Notes in the Collateral may be adversely affected by bankruptcy proceedings.

The right of the Collateral Agent for the Notes to repossess and dispose of the collateral securing the Notes upon acceleration is likely to be significantly impaired by federal bankruptcy law if bankruptcy proceedings are commenced by or against us prior to or possibly even after the Collateral Agent has repossessed and disposed of the collateral. Under Chapter 7, Title 11 of the United States Code (the “*United States Bankruptcy Code*”), a secured creditor, such as the Collateral Agent for the Notes, is prohibited from repossessing its security from a debtor in a bankruptcy case, or from disposing of security repossessed from a debtor, without bankruptcy court approval, which may not be given. Moreover, applicable federal bankruptcy law permits the debtor to continue to retain and to use collateral, and the proceeds, products, rents or profits of the collateral, even though the debtor is in default under the applicable debt instruments, provided that the secured creditor is given “adequate protection.” The meaning of the term “adequate protection” may vary according to circumstances, but it is intended in general to protect the value of the secured creditor’s interest in the collateral as of the commencement of the bankruptcy case and may include cash payments or the granting of additional security, if and at such time as the bankruptcy court in its discretion determines, for any diminution in the value of the collateral as a result of the stay of repossession or disposition or any use of the collateral by the debtor during the pendency of the bankruptcy case. A bankruptcy court may determine that a secured creditor may not require compensation for a diminution in the value of its collateral if the value of the collateral exceeds the debt it secures.

In view of the broad discretionary powers of a bankruptcy court, it is impossible to predict how long payments under the Notes could be delayed following commencement of a bankruptcy case, whether or when the Collateral Agent would repossess or dispose of the collateral, or whether or to what extent holders of the Notes would be compensated for any delay in payment or loss of value of the collateral through the requirements of “adequate protection.” Furthermore, in the event the bankruptcy court determines that the value of the collateral is not sufficient to repay all amounts due on the Notes, the holders of the Notes would have “under secured claims” as to the difference. Federal bankruptcy laws do not permit the payment or accrual of interest, costs and attorneys’ fees for “under-secured claims” during the debtor’s bankruptcy case.

In the event of our bankruptcy, any holders of the Notes may be deemed to have an unsecured claim to the extent that our obligations in respect of the Notes exceed the fair market value of the collateral securing the Notes.

If we are subject to any bankruptcy proceeding, it is possible that the bankruptcy trustee, the debtor-in-possession or competing creditors will assert that the fair market value of the collateral with respect to the Notes on the date of the bankruptcy filing was less than the then-current principal amount of the Notes. Upon a finding by the bankruptcy court that the Notes are under-collateralized, the claims in the bankruptcy proceeding with respect to the Notes would be bifurcated between a secured claim and an unsecured claim, and the unsecured claim would not be entitled to the benefits of security in the collateral. Other consequences of a finding of under-collateralization would be, among other things, a lack of entitlement on the part of the Notes to

receive post-petition interest and a lack of entitlement on the part of the unsecured portion of the Notes to receive “adequate protection” under federal bankruptcy laws. In addition, if any payments of post-petition interest had been made at any time prior to such a finding of under-collateralization, those payments would be recharacterized by the bankruptcy court as a reduction of the principal amount of the secured claim with respect to the Notes.

The value of the collateral securing the Notes may not be sufficient to secure post-petition interest.

In the event of a bankruptcy, liquidation, dissolution, reorganization or similar proceeding against us, holders of the Notes will only be entitled to post-petition interest under the United States Bankruptcy Code to the extent that the value of their security interest in the collateral is greater than their pre-bankruptcy claim. Holders of the Notes that have a security interest in collateral with a value equal or less than their pre-bankruptcy claim will not be entitled to post-petition interest under the United States Bankruptcy Code. No appraisal of the fair market value of the collateral was prepared in connection with the offering of the Notes and we therefore cannot assure you that the value of the holders’ interest in the collateral equals or exceeds the principal amount of the Notes.

Certain pledges of collateral and payments on the Notes might be avoidable by a trustee in bankruptcy.

Any future pledge of collateral, or any future perfection of any other pledge, to secure the Notes might be avoidable under the U.S. bankruptcy preference laws by the pledgor (as debtor in possession), by its trustee in bankruptcy or by someone else acting on behalf of the bankruptcy estate, if certain events or circumstances exist or occur, including, among others, if the pledgor is insolvent at the time of the pledge, the pledge permits the holders of the Notes to receive a greater recovery than they would in a liquidation case under the United States Bankruptcy Code, if the pledge had not been given, and a bankruptcy proceeding in respect of the pledgor is commenced within 90 days following the later of the pledge, and perfection of the pledge, or, in certain circumstances, a longer period. If any pledges of collateral are avoided, the collateral will not be available to the holders of the Notes to satisfy the obligations under the Notes. Certain payments on the Notes might be avoidable under the U.S. bankruptcy preference laws by us (as debtor in possession), by our trustee in bankruptcy or by someone else acting on behalf of the bankruptcy estate if certain events or circumstances exist or occur, including, among others, if we are insolvent at the time of the payment, the payment permits the holders of the Notes to receive a greater recovery than they would have received in a liquidation case under the United States Bankruptcy Code if the payment had not been made, and a bankruptcy proceeding in respect of us commenced within 90 days following the payment, or, in certain circumstances, a longer period.

Your rights in the collateral may be adversely affected by the failure to perfect security interests in certain collateral in the future.

Applicable law requires that a security interest in certain tangible and intangible assets can only be properly perfected and its priority retained through certain actions undertaken by the secured party. The liens on the collateral securing the Notes may not be perfected if we or the Collateral Agent are not able to take the actions necessary to perfect any of these liens. We have limited obligations to perfect the security interest of the holders of the Notes in specified collateral. Applicable law requires that certain property and rights acquired after the grant of a general security interest, such as certain proceeds, can only be perfected at the time such property and rights are acquired and identified. If we become subject to a bankruptcy proceeding, any collateral perfected after October 13, 2023 faces a greater risk of being invalidated than if they had been perfected on the closing date for the offering of the Registered Notes and the Notes. In addition, the Collateral Agent may not monitor, or we may fail to inform the Collateral Agent of, the future acquisition of property and rights that constitute collateral, and necessary action may not be taken to properly perfect the security interest in such after-acquired collateral. The Collateral Agent for the Notes has no obligation to monitor the acquisition of additional property or rights that constitute collateral or the perfection of any security interest in favor of the Notes against third parties. Such failure may result in the loss of the security interest therein or the priority of the security interest in favor of the Notes against third parties.

The collateral is subject to casualty risks.

We maintain insurance or otherwise insure against hazards in a manner appropriate and customary for our business. There are, however, certain losses that may be either uninsurable or not economically insurable, in whole or in part. Insurance proceeds may not compensate us fully for our losses. If there is a complete or partial loss of any of the pledged collateral, the insurance proceeds may not be sufficient to satisfy all of the secured obligations, including obligations under the Notes.

Some significant restructuring transactions may not constitute a “Fundamental Change” under the Notes, in which case we would not be obligated to offer to repurchase the Notes.

Upon the occurrence of a Fundamental Change, holders of the Notes have the right to require us to repurchase their Notes. Events constituting a “Fundamental Change” include (a) any “person” or “group” (within the meaning of Section 13(d)(3) of the Securities and Exchange Act of 1934, as amended (the “Exchange Act”)), other than us or our wholly-owned subsidiaries, our employee benefit plans or those of our wholly-owned subsidiaries or a holder of Notes or any of its affiliates (including a “group” including such holder or any of its affiliates) has become and files any report with the SEC indicating that such person or group has become the direct or indirect beneficial owner of the majority of the voting power of our common stock; provided, however, that, for these purposes, no “person” or “group” will be deemed to be the beneficial owner of any securities tendered pursuant to a tender or exchange offer made by or on behalf of such “person” or “group” until such tendered securities are accepted for purchase or exchange under such offer; (b) the consummation of any sale, lease or other transfer of all or substantially all of our assets, or any transfer or transaction which results in effectively the same; (c) the approval by our stockholders of a plan or proposal to liquidate or dissolve us; or (d) our common stock ceases to be listed on any Eligible Exchange (as defined and described under “Description of Notes—Repurchase of the Notes upon a Fundamental Change”). However, the Fundamental Change provisions will not afford protection to holders of the Notes in the event of other transactions that could adversely affect the Notes. For example, transactions such as leveraged recapitalizations, refinancings, restructurings, or acquisitions initiated by us may not constitute a Fundamental Change requiring us to repurchase the Notes. In the event of any such transaction, the holders would not have the right to require us to purchase the Notes, even though each of these transactions could increase the amount of our indebtedness, or otherwise adversely affect our capital structure or any credit ratings, thereby adversely affecting the holders of the Notes.

We may not have the ability to raise the funds necessary to repurchase the Notes as required upon a Fundamental Change, and our other then-existing debt may contain limitations on our ability to pay cash upon such repurchase of the Notes.

Following a Fundamental Change as described under “Description of Notes—Repurchase of the Notes upon a Fundamental Change,” holders of Notes will have the right to require us to repurchase their Notes for cash. A Fundamental Change may also constitute an event of default or prepayment under, and result in the acceleration of the maturity of, our other then-existing permitted indebtedness. We cannot assure you that we will have sufficient financial resources, or will be able to arrange financing, to pay the Fundamental Change Repurchase Price in cash with respect to any Notes surrendered by holders for repurchase upon a Fundamental Change. In addition, restrictions in our then-existing permitted indebtedness may not allow us to repurchase the Notes upon a Fundamental Change. Our failure to repurchase the Notes upon a Fundamental Change when required would result in an Event of Default with respect to the Notes, which could, in turn, constitute a default under the terms of our other permitted indebtedness. If the repayment of the related indebtedness were to be accelerated after any applicable notice or grace periods, we may not have sufficient funds to repay the indebtedness and repurchase the Notes.

The conversion rate of the Notes may not be adjusted for all dilutive events.

The conversion rate of the Notes is subject to adjustment for certain events, including, but not limited to, certain dividends on our common stock, the issuance of certain rights, options or warrants to holders of our common stock, subdivisions or combinations of our common stock, certain distributions of assets, debt securities, capital stock, cash or other property to holders of our common stock and certain tender or exchange offers, as described under the section titled “Description of Notes—Conversion Rights” in this prospectus. The conversion rate will not be adjusted for other events, such as an issuance of our common stock for cash, that may adversely affect the trading price of the Notes and the market price of our common stock. An event may occur that is adverse to the interests of the holders of the Notes and their value, but that does not result in an adjustment to the conversion rate.

You will not be entitled to receive any shares of our common stock otherwise deliverable upon conversion of the Notes to the extent that such receipt would cause you to become, directly or indirectly, a beneficial owner of shares of our common stock in excess of the then applicable beneficial ownership limits.

Notwithstanding anything to the contrary herein, you will not be entitled to receive any shares of our common stock otherwise deliverable upon conversion of the Notes to the extent, but only to the extent, that such receipt would cause you to become, directly or indirectly, the “beneficial owner” (as defined under “Description

of Notes—Certain Definitions”) of more than 4.99% of the shares of our common stock outstanding at such time. However, you may increase or decrease such percentage to any other percentage not in excess of 9.99%; provided that any increase in such percentage shall not be effective until 61 days after such notice to us. Any purported delivery of shares of our common stock upon conversion of the Notes shall be void and have no effect to the extent, but only to the extent, that such delivery would result in any person becoming the beneficial owner of shares of our common stock outstanding at such time in excess of the beneficial ownership limits then applicable to such person; provided, however that, in the event of a forced conversion (as described in “Description of Notes—Forced Conversion”), the aggregate number of shares of common stock that would otherwise be required to be issued to such holder shall be held in abeyance for the benefit of such holder until such time or times as its right thereto would not result in such holder exceeding the applicable beneficial ownership limitation.

As a result of the beneficial ownership limits, shares otherwise deliverable upon conversion of a holder’s Notes may be delayed, or never delivered at all. These limitations on beneficial ownership may force a holder to sell shares of our common stock or other securities it owns in order to receive shares such holder would otherwise be entitled to receive upon conversion. If a holder converts its Notes and does not receive any shares otherwise deliverable upon conversion of its Notes, we will not be responsible for any lost value due to a delayed delivery, or if they are never delivered as a result of the conversion restrictions described above.

Conversion of the Registered Notes and the Notes, and exercise of the Registered Warrants may dilute the ownership interest of existing stockholders or may otherwise depress the price of our common stock.

The conversion of the Registered Notes and the Notes, and exercise of the Registered Warrants of which this prospectus forms a part, will dilute the ownership interests of existing stockholders to the extent we deliver shares upon conversion of the Notes or exercise of the Registered Warrants. In addition, if the Selling Securityholder exercises its option to purchase the Additional Notes and warrants, this will dilute the ownership interests of existing stockholders further to the extent we deliver shares upon conversion of the Additional Notes and exercise of the warrants. Any sales in the public market of the common stock issuable upon such conversion could adversely affect prevailing market prices of our common stock. In addition, the existence of the Registered Notes, Notes and Registered Warrants may encourage short selling by market participants because the conversion of the Registered Notes or Notes and exercise of the Registered Warrants could be used to satisfy short positions, or anticipated conversion of the Registered Notes or Notes or exercise of the Registered Warrants into shares of our common stock could depress the price of our common stock.

Upon conversion of the Notes, holders of the Notes may receive less valuable consideration than expected because the value of our common stock may decline after holders exercise their conversion right but before we settle our conversion obligation.

Under the Notes, a converting holder will be exposed to fluctuations in the value of our common stock during the period from the date such holder surrenders the Notes for conversion until the date we settle our conversion obligation. We will deliver the consideration due in respect of conversion on the second business day immediately following the relevant conversion date. Accordingly, if the price of our common stock decreases during this period, the amount and/or value of consideration a holder receives will be adversely affected.

The Fundamental Change repurchase feature of the Notes may delay or prevent an otherwise beneficial attempt to take over our company.

The terms of the Notes require us to repurchase the Notes in the event of a Fundamental Change. A takeover of our company would trigger an option of the holders of the Notes to require us to repurchase the Notes. This may have the effect of delaying or preventing a takeover of our company that would otherwise be beneficial to investors in the Notes or shares of our common stock.

Holders of the Notes will not be entitled to certain rights with respect to our common stock, but will be subject to all changes made with respect to them.

Holders of the Notes will not be entitled to certain rights with respect to our common stock (including, without limitation, voting rights) but holders of the Notes will be subject to all changes affecting our common stock. Holders of the Notes will not be entitled to the rights of the common stock underlying such Notes, except to the extent they convert such Notes, and, in such case, will be deemed to be the record holder of such shares

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of common stock as of the related conversion date. For example, if an amendment is proposed to our certificate of incorporation or bylaws requiring stockholder approval and the record date for determining the stockholders of record entitled to vote on the amendment occurs prior to the conversion date of any Note, then the holder of such Note will not be entitled to vote the shares due upon conversion on the amendment, although such holder will, upon conversion, nevertheless be subject to any changes affecting our common stock.

Holders of the Notes may be subject to tax if we make or fail to make certain adjustments to the applicable conversion rate of the Notes even though such holders do not receive a corresponding cash distribution.

The conversion rate of the Notes is subject to adjustment in certain circumstances, including the payment of cash dividends. If the applicable conversion rate is adjusted as a result of a distribution that is taxable to our common stockholders, such as a cash dividend, a holder of the Notes may be deemed to have received a dividend subject to U.S. federal income tax without the receipt of any cash. In addition, a failure to adjust (or to adjust adequately) the applicable conversion rate after an event that increases a holder's proportionate interest in us could be treated as a deemed taxable dividend to the holder. See the section titled "Material U.S. Federal Income Tax Consequences."

We cannot assure you that an active trading market will develop for the Notes.

There has not been and there is no trading market for the Notes, and we do not intend to apply to list the Notes on any securities exchange or to arrange for quotation on any automated dealer quotation system. As a result, we cannot assure you that an active trading market will develop for the Notes. If an active trading market does not develop or is not maintained, the market price and liquidity of the Notes may be adversely affected. In that case holders may not be able to sell their Notes at a particular time or they may not be able to sell their Notes at a favorable price.

Risks Related to Ownership of our Common Stock

The price of our securities has been and may in the future be volatile or may decline regardless of our operating performance, and you could lose all or part of your investment.

Our stock price has been and may continue to be volatile. The daily closing market price for our common stock has varied significantly in the last 12 months, ranging between a high price of \$28.10 on November 15, 2022 and a low price of \$1.31 on October 25, 2023. During this time, the price per share of common stock has ranged from an intra-day low of \$1.25 per share to an intra-day high of \$30.10 per share.

The trading price of our securities is likely to be highly volatile and could be subject to wide fluctuations in response to various factors, some of which are beyond our control, including limited trading volume. We cannot predict the actions of market participants and, therefore, can offer no assurances that the market for our common stock will be stable or appreciate over time. The market price of our common stock may be influenced by many factors, including but not limited to:

- our commercial progress in marketing and selling our genome analysis systems, including sales and revenue trends;
- changes in laws or regulations applicable to our systems;
- adverse developments related to our laboratory facilities;
- increased competition in the diagnostics services industry;
- changes in the structure or funding of research at academic and governmental research institutions, as well as pharmaceutical, biotechnology and contract research companies, including changes that would affect their ability to purchase our products, consumables and technologies;
- the failure to obtain and/or maintain coverage and adequate reimbursement for our Bionano Laboratories products and diagnostic assays and patients' willingness to pay out-of-pocket in the absence of such coverage and adequate reimbursement;
- the failure of our customers to obtain and/or maintain coverage and adequate reimbursement for their services using our Saphyr systems, Ionic Purification systems or our NxClinical software;

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- adverse developments concerning our manufacturers and suppliers;
- our inability to establish future collaborations;
- additions or departures of key scientific or management personnel;
- introduction of new testing services offered by us or our competitors;
- announcements of significant acquisitions, dispositions, strategic partnerships, joint ventures or capital commitments by us or our competitors;
- our ability to effectively manage our growth;
- the size and growth, if any, of our targeted markets;
- the failure or discontinuation of any of our product development and research programs;
- actual or anticipated variations in quarterly operating results;
- our cash position;
- our failure to meet the estimates and projections of the investment community and securities analysts or that we may otherwise provide to the public;
- publication of research reports about us or our industries or positive or negative recommendations or withdrawal of research coverage by securities analysts;
- changes in the market valuations of similar companies;
- overall performance of the equity markets;
- issuances of debt or equity securities;
- sales of our securities by us or our stockholders in the future;
- trading volume of our securities;
- changes in accounting practices;
- ineffectiveness of our internal controls;
- data breaches of our company, providers, vendors or customers;
- regulatory or legal developments in the United States and other countries;
- disputes or other developments relating to proprietary rights, including our ability to adequately protect our proprietary rights in our technologies;
- significant lawsuits, including patent or stockholder litigation;
- natural disasters, infectious diseases, conflict, including the ongoing military conflict between Russia and Ukraine, the Israel-Hamas war and the related sanctions, civil unrest, epidemics or pandemics including COVID-19, outbreaks, resurgences or major catastrophic events;
- general political and economic conditions, including recent and potential future disruptions in access to bank deposits or lending commitments due to bank failures;
- our cost savings initiative announced in May 2023 and the operating and manufacturing cost reductions committed to on October 9, 2023;
- the reverse stock split of our common stock effected on August 4, 2023;
- other events or factors, many of which are beyond our control; and
- other uncertainties affecting us including those described in the sections titled “Risk Factors” in this prospectus, in our most recent Annual Report on Form 10-K, in our Quarterly Reports on Form 10-Q and in our Current Reports on Form 8-K filed with the SEC.

As a result, you may not be able to sell your shares of our common stock at or above the price at which you purchase them. In addition, the stock market in general, and the market for life science technology

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companies in particular (including companies in the diagnostic, genomic and biotechnology related sectors), have experienced extreme price and volume fluctuations that have often been unrelated or disproportionate to the operating performance of these companies. Broad market and industry factors may negatively affect the market price of our securities, regardless of our actual operating performance. In the past, securities class action litigation has often been instituted against companies following periods of volatility in the market price of a company's securities. Because of the volatility of our stock price, we may become the target of securities litigation in the future. This type of litigation, if instituted, could result in substantial costs and a diversion of management's attention and resources, which would harm our business, operating results or financial condition.

The reverse stock split we implemented may not achieve the intended results and the market price of our common stock may be materially and negatively impacted.

At our 2023 Annual Meeting of Stockholders, our stockholders approved a proposal for a series of alternate amendments to our Amended and Restated Certificate of Incorporation, as amended, to effect, at the option of our board of directors, a reverse stock split of our common stock at a ratio between 1-for-5 and 1-for-10, inclusive, as determined by our board of directors in its sole discretion. On August 2, 2023, our board of directors approved a reverse stock split at a ratio of 1-for-10, and on August 4, 2023, we filed a certificate of amendment to effect the reverse split ratio chosen by our board of directors. We cannot assure you that we will achieve any of the intended results of the reverse stock split, including improved marketability and liquidity of our common stock, maintaining compliance with Nasdaq listing standards and encouraging trading in our common stock by long-term investors. Accordingly, the market price and the value of your investment could be materially and negatively impacted.

The effective increase in the number of shares of our common stock available for issuance as a result of the reverse stock split could result in further dilution to our existing stockholders and have antitakeover implications.

The total number of authorized shares of our common stock will remain the same as before the reverse stock split discussed in the above risk factor. The reverse stock split increased the number of shares of our common stock (or securities convertible or exchangeable for our common stock) available for issuance by decreasing the number of shares of our common stock issued and outstanding. The additional available shares are available for issuance from time to time at the discretion of our board of directors when opportunities arise, without further stockholder action, except as may be required for a particular transaction by law, the rules of any exchange on which our securities may then be listed, or other agreements or restrictions. Any issuance of additional shares of our common stock would increase the number of outstanding shares of our common stock and (unless such issuance was pro-rata among all existing stockholders) the percentage ownership of existing stockholders would be diluted accordingly. In addition, any such issuance of additional shares of our common stock could have the effect of diluting the earnings per share and book value per share of outstanding shares of our common stock.

Additionally, such effective increase in the number of shares of our common stock available for issuance could, under certain circumstances, have anti-takeover implications. For example, without further stockholder approval, our board of directors could adopt a "poison pill" which would, under certain circumstances related to an acquisition of our securities that is not approved by the board of directors, give certain holders the right to acquire additional shares of our common stock at a low price. Our board of directors also could strategically sell shares of common stock in a private transaction to purchasers who would oppose a takeover or favor the current board of directors. Although the reverse stock split was prompted by business and financial considerations, you should be aware the reverse stock split could facilitate future efforts by us to deter or prevent changes in control, including transactions in which you might otherwise receive a premium for your shares over then current market prices.

If we are not able to comply with the applicable continued listing requirements or standards of Nasdaq, 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 Nasdaq or if we are unable to transfer our listing to another stock 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 bid price of the Company's common stock of \$1.00 per share.

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In the past, we have failed to comply with the per share minimum required for continued listing on Nasdaq pursuant to Nasdaq Listing Rule 5550(a)(2) (the “*Minimum Bid Price Requirement*”). On May 30, 2023, we received a letter (the “*Notice*”) from Nasdaq advising us that for 30 consecutive trading days preceding the date of the Notice, the bid price of our common stock had closed below the Minimum Bid Price Requirement. The Notice has no effect on the listing of our common stock at this time, and our common stock continues to trade on Nasdaq under the symbol “BNGO.”

Under Nasdaq Listing Rule 5810(c)(3)(A), we have 180 calendar days following the date of the Notice to regain compliance with the Minimum Bid Price Requirement. If at any time during this 180-day period the closing bid price of our common stock is at least \$1.00 for a minimum of 10 consecutive business days, we will regain compliance with the Minimum Bid Price Requirement and the matter will be closed.

If we do not regain compliance with the Minimum Bid Price Requirement within the applicable compliance period, our common stock will be subject to delisting. In addition, if we fail to satisfy another Nasdaq requirement for continued listing, Nasdaq staff could provide notice that our common stock may become subject to delisting.

While we implemented a reverse stock split, effective August 4, 2023, to attempt to regain compliance with the Minimum Bid Price Requirement, we cannot assure you that the reverse stock split will allow us to successfully regain compliance with the Minimum Bid Price Requirement, or that such an event leading to notice from Nasdaq staff will not happen and, if it does, that we will be able to regain compliance. Accordingly, there can be no guarantee that we will be able to maintain our Nasdaq listing. 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. Moreover, any such delisting could trigger a default or event of default under certain agreements that we have in place with third parties; for example, a delisting for a period of at least five Trading Days constitutes an Event of Default under the Registered Notes and the Notes, which entitles the holder thereof to declare the Registered Notes or Notes (as applicable) immediately due and payable in an amount equal to the Event of Default Acceleration Amount (as defined below) as described in “Description of Notes—Acceleration Upon Event of Default and Event of Default Stock Payments.” Delisting could also cause a loss of confidence of our customers, collaborators, vendors, suppliers and employees, which could harm our business and future prospects.

Our principal stockholders and management own a significant percentage of our stock and will be able to exert significant control over matters subject to stockholder approval.

Our executive officers, directors and 5% stockholders and their affiliates currently beneficially own a significant percentage of our outstanding voting stock. These stockholders may be able to determine all matters requiring stockholder approval. For example, these stockholders may be able to control elections of directors, amendments of our organizational documents, or approval of any merger, sale of assets or other major corporate transaction. This may prevent or discourage unsolicited acquisition proposals or offers for our securities that you may feel are in your best interest as one of our stockholders.

We are a smaller reporting company, and the reduced reporting requirements applicable to smaller reporting companies could make our securities less attractive to investors.

We currently qualify as a smaller reporting company and a non-accelerated filer, which allows us to take advantage of many exemptions from various reporting requirements that are applicable to other public companies that are not smaller reporting companies, including not being required to comply with the auditor attestation requirements of Section 404 of the Sarbanes-Oxley Act and reduced disclosure obligations regarding executive compensation in our periodic reports and proxy statements, but we still expect to incur substantial legal and financial compliance costs. As we have chosen to avail ourselves of certain scaled disclosure requirements applicable to smaller reporting companies, the content of our disclosures may differ from period to period. We may no longer qualify as a smaller reporting company in the future should the market value of our common stock held by non-affiliates as of the end of the second quarter of any given year once again exceed

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\$700.0 million or our revenue as of the end of any fiscal year exceed \$100.0 million. There may be further variance in the content of our disclosures as we avail ourselves of certain scaled disclosure requirements if we subsequently no longer qualify as a smaller reporting company because we would be required to provide the full disclosures required of non-smaller reporting companies. We cannot predict if investors will find our securities less attractive because we 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.

A significant portion of our total outstanding shares are restricted from immediate resale but may be sold into the market in the near future. This could cause the market price of our common stock to drop significantly, even if our business is doing well.

Sales of a substantial number of shares of our common stock in the public market could occur at any time, subject to the restrictions and limitations described below. If our stockholders sell, or the market perceives that our stockholders intend to sell, substantial amounts of our common stock in the public market, the market price of our common stock could decline significantly. All of our outstanding shares of common stock are available for sale in the public market, subject only to the restrictions of Rule 144 under the Securities Act in the case of our affiliates.

In addition, as of the date of this registration statement, we have filed registration statements on Form S-8 under the Securities Act registering the issuance of an aggregate of 5,286,720 shares of common stock subject to options or other equity awards issued or reserved for future issuance under our equity incentive plans. We also intend to file future registration statements on Form S-8 under the Securities Act registering the issuance of additional shares of common stock as the number of shares that may be issued under certain employee equity benefit plans automatically increase due to “evergreen” provisions. Shares registered under these registration statements on Form S-8 are available for sale in the public market subject to vesting arrangements and exercise of options, the lock-up agreements described above and the restrictions of Rule 144 in the case of our affiliates.

Anti-takeover provisions under our charter documents and Delaware law could delay or prevent a change of control which could limit the market price of our securities and may prevent or frustrate attempts by our security holders to replace or remove our current management.

Our amended and restated certificate of incorporation and amended and restated bylaws, contain provisions that could delay or prevent a change of control of our company or changes in our board of directors that our stockholders might consider favorable. Some of these provisions include:

- a board of directors divided into three classes serving staggered three-year terms, such that not all members of the board will be elected at one time;
- a prohibition on stockholder action through written consent, which requires that all stockholder actions be taken at a meeting of our stockholders;
- a requirement that special meetings of stockholders be called only by the chairman of the board of directors, the chief executive officer, the president or by a majority of the total number of authorized directors;
- advance notice requirements for stockholder proposals and nominations for election to our board of directors;
- a requirement that no member of our board of directors may be removed from office by our stockholders except for cause and, in addition to any other vote required by law, upon the approval of not less than two-thirds of all outstanding shares of our voting stock then entitled to vote in the election of directors;
- a requirement of approval of not less than two-thirds of all outstanding shares of our voting stock to amend any bylaws by stockholder action or to amend specific provisions of our certificate of incorporation; and
- the authority of the board of directors to issue preferred stock on terms determined by the board of directors without stockholder approval and which preferred stock may include rights superior to the rights of the holders of common stock.

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In addition, because we are incorporated in Delaware, we are governed by the provisions of Section 203 of the General Corporation Law of the State of Delaware, which may prohibit certain business combinations with stockholders owning 15% or more of our outstanding voting stock. These anti-takeover provisions and other provisions in our amended and restated certificate of incorporation and amended and restated bylaws could make it more difficult for stockholders or potential acquirers to obtain control of our board of directors or initiate actions that are opposed by the then-current board of directors and could also delay or impede a merger, tender offer or proxy contest involving our company. These provisions could also discourage proxy contests and make it more difficult for you and other stockholders to elect directors of your choosing or cause us to take other corporate actions you desire. Any delay or prevention of a change of control transaction or changes in our board of directors could cause the market price of our securities to decline.

Our recurring losses, negative cash flows and significant accumulated deficit 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. We expect to continue to generate operating losses and consume significant cash resources for the foreseeable future. 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. As a result, our financial statements include an explanatory paragraph expressing substantial doubt about our ability to continue as a going concern. 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. 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.

Our amended and restated certificate of incorporation provides that the Court of Chancery of the State of Delaware and the federal district courts of the United States of America will be the exclusive forums for substantially all disputes between us and our stockholders, which could limit our stockholders' ability to obtain a favorable judicial forum for disputes with us or our directors, officers or other employees.

Our amended and restated certificate of incorporation provides that the Court of Chancery of the State of Delaware is the exclusive forum for the following types of actions or proceedings under Delaware statutory or common law:

- any derivative action or proceeding brought on our behalf;
- any action asserting a breach of fiduciary duty;
- any action asserting a claim against us arising under the Delaware General Corporation Law, our amended and restated certificate of incorporation, or our amended and restated bylaws; and
- any action asserting a claim against us that is governed by the internal-affairs doctrine.

This provision would not apply to suits brought to enforce a duty or liability created by the Exchange Act. Furthermore, Section-22 of the Securities Act creates concurrent jurisdiction for federal and state courts over all such Securities Act actions. Accordingly, both state and federal courts have jurisdiction to entertain such claims. To prevent having to litigate claims in multiple jurisdictions and the threat of inconsistent or contrary rulings by different courts, among other considerations, our amended and restated certificate of incorporation further provides that the federal district courts of the United States of America will be the exclusive forum for resolving any complaint asserting a cause of action arising under the Securities Act. While the Delaware courts have determined that such choice of forum provisions are facially valid, a stockholder may nevertheless seek to bring a claim in a venue other than those designated in the exclusive forum provisions. In such instance, we would

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expect to vigorously assert the validity and enforceability of the exclusive forum provisions of our amended and restated certificate of incorporation. This may require significant additional costs associated with resolving such action in other jurisdictions and there can be no assurance that the provisions will be enforced by a court in those other jurisdictions.

These exclusive forum provisions may limit a stockholder's ability to bring a claim in a judicial forum that it finds favorable for disputes with us or our directors, officers or other employees, which may discourage lawsuits against us and our directors, officers and other employees. If a court were to find either exclusive-forum provision contained in our amended and restated certificate of incorporation to be inapplicable or unenforceable in an action, we may incur further significant additional costs associated with resolving the dispute in other jurisdictions, all of which could adversely affect our results of operations and financial condition.

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

Our shares of common stock began trading on Nasdaq 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.

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus, including the documents incorporated by reference herein and therein, contain forward-looking statements within the meaning of Section 27A of the Securities Act and Section 21E of the Exchange Act. These statements are based on our management’s current beliefs, expectations and assumptions about future events, conditions and results and on information currently available to us. Discussions containing these forward-looking statements may be found, among other places, in the sections titled “Business,” “Risk Factors” and “Management’s Discussion and Analysis of Financial Condition and Results of Operations” incorporated by reference from our most recent Annual Report on Form 10-K and our most recent Quarterly Report on Form 10-Q filed with the SEC, as well as any amendments thereto reflected in subsequent filings with the SEC.

Any statements in this prospectus or incorporated by reference herein or therein about our expectations, beliefs, plans, objectives, assumptions or future events or performance are not historical facts and are forward-looking statements. Within the meaning of Section 27A of the Securities Act and Section 21E of the Exchange Act, these forward-looking statements may include, but are not limited to, statements regarding:

- our ability to finance our operations and business initiatives, including our ability to successfully implement our strategic restructuring plan and other cost-reduction activities;
- 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;
- our ability to manage the growth of our business and integrate acquired businesses;
- our ability to expand our commercial organization to address effectively existing and new markets that we intend to target;
- the impact from future regulatory, judicial, and legislative changes or developments in the U.S. and foreign countries;
- our ability to successfully execute our strategy and meet anticipated goals and milestones;
- our ability to compete effectively in a competitive industry;
- the introduction of competitive technologies or improvements in existing technologies and the success of any such technologies;
- 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;
- the impact of geopolitical and macroeconomic developments, such as the ongoing conflict between Ukraine and Russia, the Israel-Hamas war, related sanctions and global pandemics on our business and operations, as well as the business or operations of our suppliers, customers, manufacturers, research partners and other third parties with whom we conduct business and our expectations with respect to the duration of such impacts and the resulting effects on our business;
- our ability to realize the anticipated benefits and synergies of our recent and any future acquisitions or other strategic transactions;
- our anticipated cash runway, our ability to continue as a going concern and our ability to obtain funding for our operations;
- our ability to attract collaborators and strategic partnerships; and
- other uncertainties affecting us including those described in the sections titled “Risk Factors” in this prospectus, in our most recent Annual Report on Form 10-K, in our Quarterly Reports on Form 10-Q and in our Current Reports on Form 8-K filed with the SEC.

In some cases, you can identify forward-looking statements by terminology such as “anticipate,” “believe,” “continue,” “could,” “estimate,” “expects,” “intend,” “may,” “might,” “plan,” “potential,” “predict,”

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“project,” “should,” “will,” “would” or the negative or plural of those terms, and similar expressions intended to identify statements about the future, although not all forward-looking statements contain these words. These statements involve known and unknown risks, uncertainties and other factors that may cause our actual results, levels of activity, performance or achievements to be materially different from the information expressed or implied by these forward-looking statements. In addition, statements that “we believe” and similar statements reflect our beliefs and opinions on the relevant subject. These statements are based upon information available to us as of the date of this prospectus, and while we believe such information forms a reasonable basis for such statements, such information may be limited or incomplete, and our statements should not be read to indicate that we have conducted an exhaustive inquiry into, or review of, all potentially available relevant information. These statements are inherently uncertain and investors are cautioned not to unduly rely upon these statements.

You should refer to the risks and uncertainties described in the sections titled “Risk Factors” in this prospectus, and under similar headings in the other documents that are incorporated by reference into this prospectus, for a discussion of important factors that may cause our actual results to differ materially from those expressed or implied by our forward-looking statements. Given these risks, uncertainties and other factors, many of which are beyond our control, we cannot assure you that the forward-looking statements in this prospectus will prove to be accurate, and you should not place undue reliance on these forward-looking statements. Although we believe that the expectations reflected in the forward-looking statements are reasonable, we cannot guarantee that the future results, levels of activity, performance or events and circumstances reflected in the forward-looking statements will be achieved or occur. Furthermore, if our forward-looking statements prove to be inaccurate, the inaccuracy may be material. In light of the significant uncertainties in these forward-looking statements, you should not regard these statements as a representation or warranty by us or any other person that we will achieve our objectives and plans in any specified time frame, or at all.

Except as required by law, we assume no obligation to update these forward-looking statements publicly, or to revise any forward-looking statements to reflect events or developments occurring after the date of this prospectus, even if new information becomes available in the future.

USE OF PROCEEDS

We will not receive any of the proceeds from the sale by the Selling Securityholder of the Notes or Shares in this offering. The Selling Securityholder will receive all of the proceeds from the sale of the Notes or Shares hereunder.

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 General Corporation Law of the State of Delaware.

As of the date of this prospectus, our certificate of incorporation authorized us to issue 400,000,000 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, as amended, 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.

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

We are subject to Section 203 of the General Corporation Law of the State of Delaware. Section 203 generally prohibits a public Delaware corporation from engaging in a “business combination” with an “interested stockholder” for a period of three years after the date of the transaction in which the person became an interested stockholder, unless:

- prior to the date of the transaction, the board of directors of the corporation approved either the business combination or the transaction which resulted in the stockholder becoming an interested stockholder;
- upon consummation of the transaction which resulted in the stockholder becoming an interested stockholder, the interested stockholder owned at least 85% of the voting stock of the corporation outstanding at the commencement of the transaction, excluding for purposes of determining the number of shares outstanding (but not the outstanding voting stock owned by the interested stockholder) (a) shares owned by persons who are directors and also officers and (b) shares owned by employee stock plans in which employee participants do not have the right to determine confidentially whether shares held subject to the plan will be tendered in a tender or exchange offer; or
- on or subsequent to the consummation of the transaction, the business combination is approved by the board of directors and authorized at an annual or special meeting of stockholders, and not by written consent, by the affirmative vote of at least 66 2/3% of the outstanding voting stock which is not owned by the interested stockholder.

Section 203 of the DGCL defines a business combination to include:

- any merger or consolidation involving the corporation and the interested stockholder;
- any sale, lease, exchange, mortgage, pledge, transfer or other disposition involving the interested stockholder of 10% or more of the assets of the corporation;
- subject to exceptions, any transaction involving the corporation that has the effect of increasing the proportionate share of the stock of any class or series of the corporation beneficially owned by the interested stockholder;
- subject to exceptions, any transaction that results in the issuance or transfer by the corporation of any stock of the corporation to the interested stockholder; and
- the receipt by the interested stockholder of the benefit of any loans, advances, guarantees, pledges or other financial benefits provided by or through the corporation.

In general, Section 203 defines an interested stockholder as any entity or person beneficially owning 15% or more of the outstanding voting stock of the corporation and any entity or person affiliated with or controlling or controlled by the entity or person.

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

Among other things, our amended and restated certificate of incorporation, as amended, and amended and restated bylaws:

- do not provide stockholders with cumulative voting rights such that stockholders holding a majority of the voting power of our shares of common stock may be able to elect all of our directors;
- provide for stockholder actions to be taken at a duly called meeting of stockholders and not by written consent;
- provide that a special meeting of stockholders may only be called by a majority of our board of directors, the chair of our board of directors or our chief executive officer;
- 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;
- divide our board of directors into three classes with staggered three-year terms;

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- provide that the authorized number of directors may be changed only by resolution adopted by a majority of the authorized number of directors constituting the board of directors;
- provide that the board of directors or any individual director may only be removed with cause and the affirmative vote of the holders of at least 66 2/3% of the voting power of all of our then outstanding common stock;
- provide that all vacancies, including newly created directorships, may, except as otherwise required by law or subject to the rights of holders of preferred stock as designated from time to time, be filled by the affirmative vote of a majority of directors then in office, even if less than a quorum;
- provide that the Court of Chancery of the State of Delaware will be the sole and exclusive forum for (i) any derivative action or proceeding brought on our behalf, (ii) any action asserting a claim of breach of a fiduciary duty owed by any of our directors or officers to us or our stockholders, (iii) any action asserting a claim against us arising pursuant to any provision of the General Corporation Law of the State of Delaware or our certificate of incorporation or bylaws, or (iv) any action asserting a claim against us governed by the internal affairs doctrine (these choice of forum provisions do not apply to suits brought to enforce a duty or liability created by the Securities Act, the Exchange Act, or any other claim for which the federal courts have exclusive jurisdiction).

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 General Corporation Law of the State of Delaware

We are subject to Section 203 of the General Corporation Law of the State of Delaware, 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 Equiniti Trust Company, LLC.

Listing on the Nasdaq Capital Market

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

DESCRIPTION OF NOTES

The following is a summary of the material terms and provisions of the Notes that are being offered hereby. This summary is subject to and qualified in its entirety by the form of Note and related security documents, each of which were filed with the SEC as an exhibit to a Current Report on Form 8-K filed by us and incorporated by reference into the registration statement of which this prospectus forms a part. You should carefully review the terms and provisions of the form of Note and related security documents for a complete description of the terms and conditions of the Notes. See the sections titled “Where You Can Find More Information” and “Incorporation of Certain Information by Reference” in this prospectus.

We issued the \$35,000,000 aggregate principal amount of the Notes pursuant to the Purchase Agreement as a series of our senior debt securities to the Selling Securityholder.

For purposes of this summary, the terms “Company”, “we”, “us” and “our” refer only to Bionano Genomics, Inc. and not to any of our subsidiaries.

General

The Notes are our senior secured obligations. We issued \$35,000,000 aggregate principal amount of the Notes on October 13, 2023 (the “Closing Date”) in a private placement exempt from the registration requirements of the Securities Act. We sold the Notes to the Selling Securityholder pursuant to the Purchase Agreement at an issue price of 100.00% of their principal amount.

The entire principal amount of the Notes will mature and become due and payable on September 1, 2025, unless earlier repurchased, redeemed or converted. On the maturity date, we will pay the holders an amount of cash equal to 115% for the then-outstanding principal amount of the Notes (the “Maturity Principal Amount”) plus any accrued and unpaid interest on the Notes.

The Notes are not subject to any sinking fund provision.

The Selling Securityholder has the option to purchase up to an additional \$25,000,000 aggregate principal amount of the senior secured convertible notes due 2025 in a private placement exempt from the registration requirements of the Securities Act, on substantially the same terms as the Notes being offered by this prospectus (the “Additional Notes”).

Ranking

As described below under “—Security,” the Notes are our senior secured obligations, are *pari passu* with the Registered Notes and any Additional Notes, senior in right of payment to all of our indebtedness that is expressly subordinated to the Notes in right of payment, effectively senior to all our unsecured indebtedness to the extent of the collateral securing the Notes, effectively junior to all of our indebtedness secured by permitted liens, to the extent of the value of the assets subject to such permitted liens and to the extent such permitted liens have lien priority by contract or law and structurally junior to all indebtedness and other liabilities (including trade payables) of our subsidiaries that are not party to the security documents (as defined in “—Security”). If we acquire or form a subsidiary, other than certain foreign subsidiaries exempted under the terms of the Notes, such subsidiary will be required to become a party to the security documents within 30 days. In the event of our bankruptcy, liquidation, reorganization or other winding up, the assets of our subsidiaries that are not party to the security documents will be available to pay obligations on the Notes only after all indebtedness and other liabilities (including trade payables) of such subsidiaries have been repaid in full.

Security

On the Closing Date, pursuant to the Purchase Agreement, we delivered to the collateral agent for the Selling Securityholder under the Notes (the “Collateral Agent”) a U.S. security agreement and a U.S. intellectual property security agreement (collectively, the “security documents”), which created a first lien, subject only to certain permitted liens, on substantially all of the tangible and intangible assets, now owned and hereafter created or acquired (except for certain excluded property) by us and the subsidiaries party to the security documents.

Interest; Default Interest

The Notes do not bear regular interest. If a Default or an Event of Default (each as defined in “—Events of Default”) occurs, then in each case, to the extent lawful, interest will automatically accrue on the Notes

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outstanding as of the date of such Default or Event of Default at a rate per annum equal to 15%, from, and including, the date of such Default or Event of Default, as applicable, to, but excluding, the date such Default is cured and all outstanding Default Interest under this Note has been paid.

Funding Conditions

On the Closing Date, \$35,000,000 of the aggregate purchase price of the Notes and the Registered Notes was deposited into a bank account subject to a “holder directed” account control agreement that does not provide us or our subsidiaries access to the amounts in such account and only permits funds to be released from such account upon the direction of the Collateral Agent (the “*Restricted Cash Account*”). Not more than once per calendar month (unless the Collateral Agent otherwise agrees), we may request the Collateral Agent to release cash to us from the Restricted Cash Account by delivering a written request duly executed by our chief executive officer or chief financial officer to the Collateral Agent (a “*Restricted Cash Request*”), including the amount of cash requested to be released and certifying to the satisfaction of the Funding Conditions (as defined below) as of the date of such request, at least two Trading Days prior to the last day of a calendar month in order to make an effective election for such calendar month. Subject to the Funding Conditions (any of which may be waived by the Collateral Agent) continuing to be satisfied through and including the date upon which cash is released from the Restricted Cash Account, the Collateral Agent will cause the amount of cash set forth in the applicable request to be released to us from the Restricted Cash Account on the first business day of the calendar month commencing immediately following the receipt of such Restricted Cash Request (such date a “*Restricted Cash Release Date*”); provided that, if the Restricted Cash Request is delivered less than two Trading Days prior to the last day of a calendar month, the Restricted Cash Release Date shall be the first calendar day of the second calendar month following the calendar month in which the Restricted Cash Request is delivered.

“*Funding Conditions*” will be deemed to be satisfied as of any date if (A) the average daily dollar trading volume (as reported on Bloomberg) of our common stock on The Nasdaq Stock Market during the ten Trading Days prior to the date on which a Restricted Cash Request is delivered is not less than \$3,500,000; (B) the holder is not in possession of any material non-public information concerning us or any of our subsidiaries, which material non-public information was provided to the holder by or on behalf of us or by or on behalf of any of our employees, agents or advisors; (C) no pending, proposed or intended Fundamental Change or Fundamental Transaction (as defined in the Purchase Agreement) has occurred that has not been abandoned, terminated or consummated; (D) no Default will have occurred or be continuing and no Event of Default will have occurred; (E) our “Adjusted Indebtedness” (as defined below) is less than 25% of our daily market capitalization as calculated on each Trading Day during the 20 consecutive Trading Day period ending on the Trading Day immediately prior to the Restricted Cash Release Date, (F) the Resale Registration Statement (as defined in the Purchase Agreement) registering all shares of our common stock required to be registered pursuant to the Purchase Agreement shall be effective; (G) our common stock (1) shall be listed on The Nasdaq Stock Market and (2) shall not have been suspended by the SEC or Nasdaq from trading on The Nasdaq Stock Market nor shall suspension by the SEC or Nasdaq have been threatened either (x) in writing by the SEC or Nasdaq or (y) by falling below the minimum maintenance requirements of Nasdaq; and (H) we have no reason to believe that the ATM Program or Equity Line of Credit, as applicable, will not be accessible for the foreseeable future, but in any event not less than 12 months from such date. Notwithstanding the foregoing, any waiver of our satisfaction of any Funding Condition will only apply to the Restricted Cash Request and Restricted Cash Release Date to which such Funding Condition so waived relates.

“*Adjusted Indebtedness*” means (A) our total indebtedness at the time a Restricted Cash Request is delivered, less (B) an amount equal to the difference of (i) the balance of the Restricted Cash Account at the time a Restricted Cash Request is delivered less (ii) the amount of such Restricted Cash Request.

Redemption

Partial Redemption at the Option of the Holder

Beginning on November 1, 2023, on the first calendar day of each month through, and including, the Maturity Date (each, a “*Partial Redemption Date*”), the holders of the Notes will have the right to require us to redeem up to \$4,500,000 in aggregate principal amount of the Notes and Registered Notes for a Partial Redemption Payment, payable in cash.

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A “*Partial Redemption Payment*” is an amount equal to 115% of the principal amount of a Note being redeemed.

Partial Redemption Payments will be applied to either the Notes or the Registered Notes at the holders’ option.

Notwithstanding the foregoing, holders of the Notes may, in their sole discretion, defer any Partial Redemption Payments (including any prior Deferred Partial Redemption Payment) (or any portion thereof) one or more times prior to the applicable Partial Redemption Date to any subsequent Partial Redemption Date (in which case such deferred Partial Redemption Payment shall become a “*Deferred Partial Redemption Payment*”), in which case, on the applicable Partial Redemption Date, we will pay such holders an amount in cash equal to such Partial Redemption Payment (including any Deferred Partial Redemption Payments) to be paid on such date, provided, that the holders may not defer any Partial Redemption Payment or prior Deferred Partial Redemption Payment (or any portion thereof) to the extent that, following such deferral, the total amount of Deferred Partial Redemption Payments outstanding pursuant the Notes and the Registered Notes would exceed \$10,350,000.

Any Partial Redemption Payment (or applicable portion thereof) will reduce the principal amount of a Note by the paid amount divided by 1.15.

Upon our mutual agreement with the holders of the Notes, we may agree to increase any single Partial Redemption Payment.

Redemption at Our Option

Subject to terms, conditions and certain exceptions set forth in the Notes, beginning on the thirtieth day following the date that the Resale Registration Statement becomes effective, we will have the right to redeem all (but not less than all) of the then outstanding principal amount of the Notes (a “*Company Redemption*”), on a date to be determined by us (any such date a “*Company Redemption Date*”), for a cash redemption price equal to the Company Redemption Price (as defined below).

“*Company Redemption Price*” means, unless prior to the Company Redemption Date, (i) any Default will have occurred and be continuing or Event of Default will have occurred under the Notes that has not been waived by the Required Holders or (ii) any event or circumstance will have occurred and be continuing which, with the giving of notice or passage of time or both, could constitute an Event of Default and has not been waived by the Required Holders (such circumstances constituting collectively a “*Company Default Redemption*”), means a cash amount equal to the greater of (A) 120% of the outstanding principal amount of the Notes, plus accrued and unpaid interest and (B) the sum of (i) 120% of the product of (a) the applicable conversion rate in effect as of the Trading Day immediately preceding such Company Redemption Date; (b) the total then outstanding principal amount (expressed in thousands) of the Notes; and (c) the highest Daily VWAP per share of our common stock during the period beginning on, and including, the fifth VWAP Trading Day prior to the date that the Company Redemption Notice is delivered and ending on, and including, the VWAP Trading Day immediately preceding such Company Redemption Date and (ii) the accrued and unpaid interest on the Notes. In the event of a Company Default Redemption, Company Redemption Price will mean, a cash amount equal to the greater of (A) the sum of (i) 110% of 115% of the then outstanding principal amount of the Notes and (ii) the accrued and unpaid interest on the Notes and (B) the sum of (i) 120% of the product of (a) the applicable conversion rate in effect as of the Trading Day immediately preceding such Company Redemption Date; (b) the total then outstanding principal amount (expressed in thousands) of the Notes; and (c) the greater of (x) the highest Daily VWAP per share of our common stock occurring during the 30 consecutive VWAP Trading Days ending on, and including, the VWAP Trading Day immediately before the date we deliver notice of our intent to exercise a Company Redemption and (y) the average of the five Daily VWAPs per share of our common stock occurring during the five consecutive VWAP Trading Days ending on, and including, the VWAP Trading Day immediately before the date the applicable Event of Default occurred (or the date on which the Default underlying such Event of Default initially occurred, or the date on which the event or circumstance occurred which, with the giving of notice or passage of time or both, could constitute an Event of Default, if different than the date on which the Event of Default occurred) and (ii) the accrued and unpaid interest on the Notes.

Repurchase of the Notes upon a Fundamental Change

If a Fundamental Change occurs, a holder of Note has the right to require us to repurchase such Note for a cash purchase price equal to the Fundamental Change Repurchase Price, plus accrued interest.

A “*Fundamental Change*” means any of the following events:

- any “person” or “group” (within the meaning of Section 13(d)(3) of the Exchange Act), other than us or our wholly-owned subsidiaries, or our employee benefit plans or those of our wholly-owned subsidiaries, or the holder of any Note or any affiliate of such holder (including a “group” including the holder of any of its affiliates) has become and files any report with the SEC indicating that such person or group has become the direct or indirect beneficial owner (as determined in accordance with Rule 13(d)(3) of the Exchange Act) of share of our common equity representing more than 50% of the voting power of all of our then-outstanding common equity; provided, however, that, for these purposes, no “person” or “group” will be deemed to be the beneficial owner of any securities tendered pursuant to a tender or exchange offer made by or on behalf of such “person” or “group” until such tendered securities are accepted for purchase or exchange under such offer;
- any sale, lease or other transfer, in one transaction or a series of transactions, of all or substantially all of our and our subsidiaries’ assets, taken as a whole, to any person (other than solely to one or more of our wholly-owned subsidiaries); or any transaction or series of related transactions in connection with which (whether by means of merger, consolidation, share exchange, combination, reclassification, recapitalization, acquisition, liquidation or otherwise) all of our common stock is exchanged for, converted into, acquired for, or constitutes solely the right to receive, other securities, cash or other property (other than a subdivision or combination, or solely a change in par value, of our common stock); provided, however, that any merger, consolidation, share exchange or combination of us pursuant to which the persons that directly or indirectly beneficially owned all classes of our common equity immediately before such transaction directly or indirectly beneficially own, immediately after such transaction, more than 50% of all classes of common equity of the surviving, continuing or acquiring company or other transferee, as applicable, or the parent thereof, in substantially the same proportions vis-à-vis each other as immediately before such transaction will be deemed not to be a Fundamental Change pursuant to this clause;
- the approval by our stockholders of a plan or proposal to liquidate or dissolve us; or
- our common stock ceases to be listed on any Eligible Exchange.

The “*Fundamental Change Repurchase Price*” means a cash amount equal to the greater of (A) 115% of the outstanding principal amount of the Note to be so repurchased, plus accrued and unpaid interest on such Note and (B) the sum of (i) 115% of the product of (a) the applicable conversion rate in effect as of the Trading Day immediately preceding the effective date of the Fundamental Change; (b) the total then outstanding principal amount (expressed in thousands) of the Notes repurchased; and (c) the average of the five Daily VWAPs per share of our common stock during the five consecutive VWAP Trading Days immediately preceding the effective date of such Fundamental Change and (ii) the accrued and unpaid interest on the Notes repurchased.

Retirement Fee

On the earlier to occur of (i) the date that no principal amount of the Notes remain outstanding (regardless of whether as a result of redemption, prepayment, payment of the Fundamental Change Repurchase Price, conversion, acceleration upon an Event of Default, or otherwise) or (ii) the Maturity Date, we will pay by wire transfer of immediately available funds the Retirement Fee to the holders of the Notes.

The “*Retirement Fee*” means an amount equal to the product of (x) \$2,187,500 multiplied by (y) a fraction, whose numerator is an amount equal to \$35,000,000 less the aggregate principal amount of the Notes converted into shares of our common stock pursuant to the terms of the Notes during the period beginning on, and including, the issue date of the Notes and ending on, and including, the date on which the Notes cease to be outstanding, and whose denominator is \$35,000,000.

General

The initial conversion rate is 349.1925 of the Notes per \$1,000 principal amount of the Notes to be converted (which is equivalent to an initial conversion price of approximately \$2.8638 per share of common stock).

The conversion rate with respect to the Notes and the conversion price for Notes in effect at any given time are referred to as the “*applicable conversion rate*” and the “*applicable conversion price*”, respectively, and will also be subject to adjustment as described below. The applicable conversion price at any given time will be computed by dividing \$1,000 by the applicable conversion rate at such time.

Forced Conversion

If a Forced Conversion Trigger occurs, then we may elect to convert the entire principal amount of each Note into shares of our common stock; provided that (x) no forced conversion will be effected unless the Equity Conditions are satisfied on each VWAP Trading Day from the date of our notice of forced conversion until the corresponding conversion consideration, as provided in the Note, is delivered and (y) if we receive a conversion notice from a holder prior to the date we deliver a notice of forced conversion and any conversion due thereunder remains undelivered by us, the forced conversion may not occur until after such conversion shares are delivered to such holder. The principal amount subject to forced conversion shall be subject to reduction by any principal amount for which a holder has submitted a conversion notice between the time that we provided its notice of forced conversion to the holder and the completion of such forced conversion.

“*Forced Conversion Trigger*” means (A) the Last Reported Sale Price exceeds 175% of the then applicable conversion price on at least 20 VWAP Trading Days in any 30 consecutive Trading Day period beginning on any VWAP Trading Day after the effective date with respect to the registration statement registering the resale of the Notes and the Underlying Shares (as defined in the Purchase Agreement) pursuant to the Notes and ending on the date upon which we deliver our conversion notice to the holder of the Note and (B) the Equity Conditions are satisfied on the date our conversion notice is delivered by us to the holder.

Additional Conversion Rate Adjustments

The applicable conversion rate, as provided in the Notes, is subject to adjustment as a result of the following events:

- our distribution of a common stock dividend or distribution on all or substantially all shares of our common stock, or our splitting or combining of shares of common stock;
- our issuance to all or substantially all holders of our common stock of rights, options or warrants (other than rights issued or otherwise distributed pursuant to a restricted right plan), entitling the holder, for a period of not more than 60 days after the record date of such distribution, to purchase shares of our common stock at a price less than the average of the Last Reported Sales Prices per share for the 10 consecutive Trading Days ending on the Trading Day immediately before such distribution is announced;
- our distribution of capital stock, evidence of indebtedness or other assets or property of ours, or other rights, options or warrants to acquire capital stock or other securities of ours, to all or substantially all holders of our common stock, subject to certain exceptions set forth in the Notes;
- our distribution or dividend of capital stock or a similar equity interest, which is listed or quoted on a U.S. national securities exchange, as a result of the spinning off of a subsidiary, affiliate or other business unit to all or substantially all holders of our common stock;
- our distribution of cash dividends to all or substantially all holders of our common stock; or
- our payment in respect of a tender or exchange offer for shares of our common stock and the value (determined as of the time such tender offer expires by our Board of Directors) of the cash and other consideration paid per share of common stock in such tender or exchange offer exceeds the Last Reported Sale Price per share of common stock on the Trading Day immediately after the last date on which tenders or exchanges may be made pursuant to such tender or exchange offer.

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The conversion consideration, as provided in the Notes, is also subject to adjustment as a result of the following events:

- certain recapitalizations, reclassifications or changes of our common stock;
- certain consolidations, mergers, combinations or binding or statutory share exchanges involving us;
- the sale, lease or other transfer of all or substantially all of our assets; or
- other similar events.

Limitations on Conversion

No party may convert all or a portion of a Note or otherwise issue shares of our common stock pursuant to the Note if as a result of the conversion or issuance, a holder and its affiliates would beneficially own in excess of 4.99% of the shares of our common stock. However, upon 61 days' advance notice to us, a holder may increase the limit of beneficially owned shares of our common stock from 4.99% to any amount up to 9.99% of the shares of our common stock. In the event that the issuance of shares of common stock to a holder upon conversion of, or otherwise pursuant to, the Notes results in such holder and its affiliates being deemed to beneficially own, in the aggregate, more than the maximum percentage described in the preceding sentence of the number of outstanding shares of our common stock (as determined under Section 13(d) of the Exchange Act), the number of shares so issued by which the holder's and its affiliates' aggregate beneficial ownership exceeds such maximum percentage will be deemed null and void and will be cancelled ab initio, and the holder will not have the power to vote or to transfer such excess shares; provided, however that, in the event of a forced conversion (as described herein under "—Forced Conversion"), if the aggregate number of shares of our common stock that would otherwise be required to be issued to a holder pursuant to such forced conversion would cause such holder to beneficially own shares of our common stock in excess of the maximum percentage described in the preceding sentence, such shares of common stock in excess of such maximum percentage will be held in abeyance for the benefit of the holder until such time or times as its right thereto would not result in the holder and its affiliates exceeding the maximum percentage, at which time or times the holder will be issued such shares (and any such shares declared or made on such initial issuance or on any subsequent issuance held similarly in abeyance) to the same extent as if there had been no such limitation.

Certain Covenants

Limitation on Indebtedness

The Notes require that we do not and do not permit any of our subsidiaries to:

- create, incur, assume, guarantee or be or remain liable with respect to any indebtedness, other than Permitted Indebtedness;
- prepay any indebtedness (other than Permitted Indebtedness) except by converting the indebtedness into equity securities (other than certain disqualified stock specified in the Notes) and paying cash in lieu of fractional shares in connection with such conversion;
- amend or modify the terms of any indebtedness (other than Permitted Indebtedness (excluding Permitted Indebtedness under the second and fourth bullet points of the definition thereof)) in such a way as to shorten the maturity date or any amortization, redemption or interest payment date thereof or otherwise impose additional material burdens on us or our subsidiaries without the prior written consent of a holder; or
- incur any indebtedness that would cause a breach or Default under the Notes or prohibit or restrict the performance of our obligations under the Notes, including without limitation, the payment of interest and principal thereon.

"Permitted Indebtedness" includes:

- indebtedness under the Notes, the Registered Notes and the Additional Notes;
- certain indebtedness existing as of the date of the Purchase Agreement;
- indebtedness to trade creditors incurred in the ordinary course of business consistent with past practices;

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- our subordinated indebtedness, but not subordinated indebtedness of our subsidiaries;
- reimbursement obligations in connection with letters of credit or similar instruments that are secured by cash or Cash Equivalents (as defined herein) and issued on our behalf or on behalf of our subsidiaries in an aggregate amount not to exceed \$500,000 at any time then outstanding;
- Indebtedness constituting an investment described in the seventh bullet point under “Permitted Investments”;
- indebtedness in respect of the financing of insurance premiums in the ordinary course of business;
- indebtedness outstanding at any time secured by liens permitted under the thirteenth bullet of the definition of “Permitted Liens”, provided such indebtedness does not exceed the cost of the equipment or real property interests and related expenses financed with such indebtedness or in the form of purchase money indebtedness (whether in the form of a loan or a lease) used solely to acquire equipment or real property interests used in the ordinary course of business and secured only by such equipment and sale and insurance proceeds in respect thereof; provided that the total amount of Permitted Indebtedness described in this bullet may not exceed \$1,000,000;
- indebtedness to any entity that provides worker’s compensation, health, disability, or other employee benefits or property, casualty or liability insurance to us or any one of our subsidiaries to pay customary reimbursements or indemnities to such entity;
- guarantees or liabilities incurred in the ordinary course of business for performance, surety, statutory, appeal or similar obligations but excluding guaranties for any obligations for borrowed money;
- indebtedness for payment processing services, netting services, overdrafts and related liabilities arising from treasury, depository and cash management services incurred in the ordinary course of business;
- indebtedness for business credit card programs in an aggregate amount not to exceed \$400,000 at any time;
- indebtedness for hedging agreements entered into for bona fide hedging purposes in the ordinary course and not for speculative purposes;
- performance based royalty or milestone obligations, in each case, characterized as such and arising expressly out of purchase and sale contracts, development arrangements or licensing arrangements not otherwise prohibited under the Notes; and
- contingent obligations that are guarantees of Permitted Indebtedness;

provided that the aggregate amount of indebtedness specified in sixth, seventh, ninth, tenth, eleventh and fifteenth bullets above may not collectively exceed \$2,000,000 at any time in the aggregate.

Limitation on Liens

The Notes require that we do not, and do not permit our subsidiaries to, directly or indirectly, create, incur, assume or permit to exist any lien of any kind on any asset now owned or hereafter acquired, other than the following “*Permitted Liens*”:

- liens in favor of holders of the Notes or the Collateral Agent;
- certain liens existing as of the date of the Purchase Agreement;
- liens for taxes, fees, assessments or other governmental charges or levies, either not delinquent or being contested in good faith by appropriate proceedings; provided, that we maintain adequate reserves therefor in accordance with U.S. generally accepted accounting principles (“GAAP”);
- liens securing claims or demands of materialmen, artisans, mechanics, carriers, warehousemen, landlords and other similar persons arising in the ordinary course of business, provided that such claims or demands are not yet delinquent;
- liens arising from judgments, decrees or attachments in circumstances which do not constitute a Default or an Event of Default;

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- the following deposits, to the extent made in the ordinary course of business: deposits under workers' compensation, unemployment insurance, social security and other similar laws, or to secure the performance of bids, tenders or contracts (other than for the repayment of borrowed money) or to secure indemnity, performance or other similar bonds for the performance of bids, tenders or contracts (other than for the repayment of borrowed money) or to secure statutory obligations (other than liens arising under the Employee Retirement Income Security Act of 1974, as amended, and the regulations promulgated thereunder, or environmental liens) or surety or appeal bonds, or to secure indemnity, performance or other similar bonds;
- leasehold interests in leases or subleases and licenses granted in the ordinary course of our business and not interfering in any material respect with the business of the licensor;
- liens in favor of customs and revenue authorities arising as a matter of law to secure payment of custom duties that are promptly paid on or before the date they become due;
- liens on insurance proceeds securing the payment of financed insurance premiums that are promptly paid on or before the date they become due (provided that such liens extend only to such insurance proceeds and not to any other property or assets);
- any liens, statutory and common law rights of set-off and other similar rights as to deposits of cash and securities in favor of banks, other depository institutions and brokerage firms;
- easements, zoning restrictions, rights-of-way and similar encumbrances on real property imposed by law or arising in the ordinary course of business, so long as they do not materially impair the value or marketability of the related property;
- liens on cash or Cash Equivalents securing obligations permitted under the fifth, eleventh, twelfth and thirteenth bullets of the definition of Permitted Indebtedness;
- purchase money liens, liens in respect of equipment leases, or liens securing indebtedness under the eighth bullet point listed under "Permitted Indebtedness" above, if the lien is confined to the property and improvements and the proceeds of the equipment;
- any other liens, solely to the extent not securing indebtedness for borrowed money, not to exceed collectively \$1,000,000 at any time in the aggregate;
- Permitted Intellectual Property Licenses; and
- liens incurred in connection with the extension, renewal or refinancing of the indebtedness secured by liens of the type described in the third through fifteenth bullets above; provided, that any extension, renewal or replacement lien will be limited to the property encumbered by the existing lien and the principal amount of the indebtedness being extended, renewed or refinanced (as may have been reduced by any payment thereon) does not increase.

Limitation on Investments

The Notes require that we do not directly or indirectly acquire or own, or make any investment in or to any person, or permit any of our subsidiaries to do so, other than the following permitted investments (each, a "*Permitted Investment*"):

- certain investments existing as of the date of the Purchase Agreement;
- investments in cash and Cash Equivalents;
- investments accepted in connection with Permitted Transfers;
- investments (including debt obligations) received in connection with the bankruptcy or reorganization of customers or suppliers and in settlement of delinquent obligations of, and other disputes with, customers or suppliers arising in the ordinary course of our business;
- investments consisting of notes receivable of, or prepaid royalties and other credit extensions, to customers and suppliers in the ordinary course of business and consistent with past practice, provided that this clause shall not apply to investments by us in any subsidiary;

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- investments consisting of (i) loans not involving the net transfer on a substantially contemporaneous basis of cash proceeds to employees, officers or directors relating to the purchase of our capital stock pursuant to employee stock purchase plans or other similar agreements approved by our Board of Directors; and (ii) travel advances and employee relocation loans and other employees loans in the ordinary course of business, provided that the aggregate of all such loans outstanding may not exceed \$50,000 in the aggregate;
- investments in wholly-owned subsidiaries, subject to the limitations on Foreign Subsidiaries set forth in “—Limitations on Foreign Subsidiaries”;
- Permitted Intellectual Property Licenses;
- extensions of credit to customers or advances, deposits or payment to or with suppliers, lessors or utilities or for workers’ compensation incurred in the ordinary course of business; and
- additional investments that do not exceed \$500,000 in the aggregate in any twelve-month period.

In addition, the Notes will not permit us to make any investment (including a Permitted Investment), or to permit any of our subsidiaries to make any investment (including a Permitted Investment) (i) if the Notes have automatically accelerated as a result of a payment or bankruptcy Event of Default, (ii) if an Event of Default has occurred, unless we have delivered a notice of such Event of Default to the holders with respect to such Event of Default and the holders have not declared the Notes (or any portion of the principal amount thereunder) to become due and payable in connection with such Event of Default within two business days of the delivery of such notice, or (iii) any event or circumstance has occurred and is continuing which, with the giving of notice or passage of time or both, could constitute an Event of Default with respect to the third, eighth, ninth, tenth, thirteenth or eighteenth bullet points of the definition thereof.

Limitation on Distributions

The Notes require that we do not, and do not permit any subsidiary to:

- repurchase or redeem any class of stock or other equity interest of us or any of our subsidiaries other than (i) pursuant to employee, director or consultant equity incentive plan, stock purchase or repurchase plan or awards granted thereunder or similar agreements provided under plans approved by our Board of Directors, provided, however, that such repurchase or redemption price does not exceed the original consideration paid for such stock or equity interest, (ii) repurchases of equity interests deemed to occur upon the cashless or net exercise of stock options, warrants or other convertible or exchangeable securities, and (iii) repurchases of equity interests deemed to occur upon the withholding of a portion of the equity interests granted or awarded to a current or former officer, director, employee or consultant to pay for the taxes payable by such person upon such grant or award or upon vesting or exercise thereof;
- declare or pay any cash dividend or make a cash distribution on any class of stock or other equity interest of us or any of our subsidiaries, except (i) that a subsidiary of ours may pay dividends or make distributions to us or a parent company that is a direct or indirect wholly-owned subsidiary of ours and (ii) we may make payments of cash in lieu of issuing fractional shares;
- lend money to any employees, officers or directors (except as permitted under the sixth bullet of the definition of Permitted Investment), or guarantee the payment of any such loans granted by a third party in excess of \$50,000; or
- waive, release or forgive any indebtedness owed by any employees, officers or directors in excess of \$50,000.

If there are dividends or distributions made by us or any subsidiary to any third party pursuant to the distributions covenant, within one business day following the date on which we file an Annual Report on Form 10-K or Quarterly Report on Form 10-Q with the SEC, we will provide the holder with a written notice setting forth the aggregate amount of such dividends or distributions made by us or any subsidiary for the period covered by such Annual Report on Form 10-K or Quarterly Report on Form 10-Q, as applicable.

Notwithstanding the foregoing, we are not permitted to, nor allow any of our subsidiaries to, take the actions described in clause (i) of the first bullet point above in this section, the third bullet point above in this

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section or the fourth bullet point above in this section if (A) any Event of Default has occurred and has not been waived by the Required Holders or (B) any event or circumstance has occurred and is continuing which, with the giving of notice or passage of time or both, could constitute an Event of Default with respect to the third, fifth, eighth, ninth, tenth, thirteenth or eighteenth bullet points thereof.

Limitation on Transfers

The Notes require that we do not, nor permit our subsidiaries to, voluntarily or involuntarily, transfer, sell, lease, license, lend or in any other manner convey any equitable, beneficial or legal interest in any material portion of our and our subsidiaries' assets (taken as a whole), other than Permitted Transfers and Permitted Investments.

"Permitted Transfers" include:

- dispositions of cash or Cash Equivalents in the ordinary course of business;
- dispositions of inventory, goods and other assets, lease assignments or subleases of any personal property in the ordinary course of business;
- entry into Permitted Intellectual Property Licenses;
- dispositions of worn-out, obsolete or surplus property in the ordinary course of business, provided that if any individual piece of property with a fair market value equal to or greater than \$25,000 is disposed of in reliance on this bullet, such disposition shall be made for fair market value consideration;
- the abandonment or other disposition of intellectual property that is, in our reasonable judgment, no longer profitable, economically practicable to maintain or useful in the conduct of our business or of our subsidiaries' business, taken as a whole;
- dispositions of accounts or payment intangibles (each as defined in the UCC) resulting from the compromise or settlement thereof in the ordinary course of business for less than the full amount thereof;
- transfers consisting of certain Permitted Investments in our wholly-owned subsidiaries (pursuant to the seventh bullet point under the definition of "Permitted Investments");
- other transfers of assets to any person other than to a joint venture and which have a fair market value of not more than \$50,000 in the aggregate in any twelve-month period;
- dispositions in connection with Permitted Liens;
- the disposition of all or substantially all of our and our subsidiaries' assets in a manner permitted under "—Merger, Consolidation and Sale of Assets" below and any disposition that constitutes a Fundamental Change; and
- subleases of real property.

Minimum Liquidity

We are required to maintain at all times liquidity calculated as unrestricted, unencumbered cash and Cash Equivalents (and for the avoidance of doubt not including any cash or Cash Equivalents held in the Restricted Cash Account) in one or more deposit accounts and/or securities accounts located in the United States and subject to control agreements in favor of the Collateral Agent in a minimum amount equal to the greater of (i) \$30,000,000 and (ii) the lesser of (x) \$50,000,000 and (y) an amount equal to our cash and Cash Equivalents on the last calendar day of the Fiscal Half (as defined below) immediately preceding the most recently completed Fiscal Half less the Available Cash as of the last calendar day of the most recently completed Fiscal Half (such most recently completed Fiscal Half, the "*Liquidity Cash Burn Period*").

For purposes of the liquidity covenant:

"Available Cash" means, as of any date of determination, (A) the sum of (i) our and our wholly owned subsidiaries' cash and Cash Equivalents, (ii) any cash paid by us to a holder pursuant to a Note, Registered Note or Additional Note, if any, during the Liquidity Cash Burn Period, and (iii) any cash paid by us or any of our wholly owned subsidiaries in respect of Covered Milestone Payments during the Liquidity Cash Burn Period,

less (B) any cash actually received pursuant to any financings or series of related financings during the Liquidity Cash Burn Period, including for the avoidance of doubt, from the sale and issuance of our capital stock, convertible securities, equity-linked securities or indebtedness (including, for the avoidance of doubt, cash actually received in connection with the exercise or settlement of any convertible securities or equity-linked securities).

“*Fiscal Half*” means each six-month period ending March 31, June 30, September 30 and December 31.

Limitation on Transaction with Affiliates

The Notes require that we and our subsidiaries do not enter into, renew, extend, or be a party to, any transaction or series of related transactions (including, without limitation, the purchase, sale, lease, transfer or exchange of property or assets of any kind or the rendering of services of any kind) with any affiliate (other than us or any of our wholly owned subsidiaries), except transactions actually disclosed pursuant to the Purchase Agreement, as in effect on the Closing Date, and any transactions for fair consideration and on terms no less favorable than would be obtainable in a comparable arm’s length transaction with a person that is not an affiliate.

Required Funding Programs

So long as any Note remains outstanding, we are required at all times to have access to an ATM Program, Equity Line of Credit, or similar program approved by the Required Holders, with aggregate available, accessible and unused capacity to generate gross proceeds to us of at least \$50,000,000.

“*ATM Program*” means an “at-the-market” offering within the meaning of Rule 415(a)(4) of the Securities Act.

“*Equity Line of Credit*” means an equity line of credit approved by written agreement by the Required Holders (as defined in the Purchase Agreement) (which approval may be granted or revoked at any time by the Required Holders in their sole discretion).

Minimum Cash Spend Availability

So long as any Note remains outstanding, the Notes require that, for each fiscal quarter beginning with the fiscal quarter ending March 31, 2024 (each such period, a “*Quarterly Cash Burn Period*”), we and our wholly owned subsidiaries’ Available Cash on the last calendar day of such Quarterly Cash Burn Period be an amount greater than or equal to (A) our and our wholly owned subsidiaries’ cash and Cash Equivalents on the last calendar day of the immediately preceding fiscal quarter, less (B) \$30,000,000.

For purposes of the quarterly cash spend covenant:

“*Available Cash*” means, as of any date of determination, (A) the sum of (i) our and our wholly owned subsidiaries’ cash and Cash Equivalents, (ii) any Cash paid by us to a holder pursuant to a Note, Registered Note or Additional Note, if any, during the Quarterly Cash Burn Period, and (iii) any cash paid by us or any of our wholly owned subsidiaries in respect of Covered Milestone Payments during the Quarterly Cash Burn Period, less (B) any cash raised from any financings or series of related financings involving the holder during the Quarterly Cash Burn Period.

Merger, Consolidation and Sale of Assets

We will not consolidate with or merge with or into, or (directly, or indirectly through one or more of our subsidiaries) sell, lease or otherwise transfer, in one transaction or a series of transactions, all or substantially all of our and our subsidiaries’ assets, taken as a whole, to another person, other than a holder of a Note or any of its affiliates (a “*Business Combination Event*”), unless:

- the resulting, surviving or transferee person either (x) is us or (y) if not us, is a corporation (the “*Successor Corporation*”) duly organized and existing under the laws of the United States of America, any state thereof or the District of Columbia that expressly assumes (by executing and delivering to the holders, at or before the effective time of such Business Combination Event, a supplement to the Notes) all of our obligations under the Notes; and
- immediately after giving effect to such Business Combination Event, no Event of Default will have occurred that has not been waived and no Default will have occurred and be continuing which has not been waived.

Limitations on Foreign Subsidiaries

At no time will any intellectual property (regardless of the value of such intellectual property) or any other assets with a fair market value in excess of \$2,000,000 in the aggregate be held by our foreign subsidiaries, unless the holder shall have been previously granted a perfected first lien security interest in such assets pursuant to security documents, in form and substance reasonably acceptable to the Collateral Agent. Notwithstanding the foregoing, no assets may be held by our foreign subsidiaries in the event that holding such assets would be in violation of the security documents.

Other Covenants

We are also required, among other covenants, to:

- maintain our corporate existence and our material rights, licenses and franchises, as well as the material rights, licenses and franchises of our subsidiaries;
- pay when due all taxes, fees or other charges and cause our subsidiaries to do the same;
- file on or before the due date therefor all personal property tax returns and cause our subsidiaries to do the same (except where the failure to pay would not, individually or in the aggregate, have a material effect on us or any of our subsidiaries); provided, that we and our subsidiaries may contest, in good faith and by appropriate proceedings, taxes for which we maintain adequate reserves therefor in accordance with GAAP;
- not engage, directly or indirectly in any material line of business substantially different from those lines of business conducted by or publicly contemplated to be conducted by us as of the issue date or any business substantially related or incidental thereto;
- maintain and preserve all of our tangible properties which are necessary or useful in the proper conduct of our business in good working order and condition, and comply in all material respects with the provisions of all leases to which we or our subsidiaries are a party as lessee or under which we or our subsidiaries occupy property, so as to prevent any loss or forfeiture thereof or thereunder, and cause our subsidiaries to do the same;
- take all action necessary or advisable to maintain and preserve all of our intellectual property rights that are necessary or material to the conduct of our business in full force and effect and cause our subsidiaries to do the same;
- maintain insurance with responsible and reputable insurance companies or associations with respect to our properties and business in such amounts covering such risks as is required by any governmental agency having jurisdiction over us or as is carried generally in accordance with sound business practice by companies in similar businesses similarly situated and cause our subsidiaries to do the same;
- so long as any Note remains outstanding, at all times have no less than a number of authorized but unissued shares of common stock equal to the sum of (i) 100% of the shares of common stock issuable upon the conversion of any warrants issued under the Purchase Agreement and outstanding, which shall be reserved for issuance pursuant to the terms of such warrants, and (ii) a fraction, the numerator of which shall be the then outstanding principal amount of all Notes, Registered Notes and Additional Notes, if any, issued pursuant to the Purchase Agreement, and the denominator of which shall be the conversion price of the Notes, which shall be reserved for issuance pursuant to the terms of the Notes and (iii) 50,000,000 shares of our common stock, which need not be reserved for issuance pursuant to the terms of such warrants or the Notes; and
- on a monthly basis, and immediately in the event certain Events of Default occur, we are required to deliver compliance certificates to the holders of the Notes certifying as to our satisfaction of certain specified covenants for the period since the previously submitted compliance certificate.

Events of Default

A “*Default*” means any event that is (or, after notice, passage of time or both, would be) an Event of Default.

An “*Event of Default*” means the occurrence of any of the following:

- a default in the payment when due of any Partial Redemption Payment (or applicable portion thereof), principal amount, Maturity Principal Amount, Fundamental Change Repurchase Price, or the Retirement Fee;
- a default in our obligation to issue shares within three Trading Days of the applicable conversion settlement date;
- a default in our obligation to timely deliver a notice of a Fundamental Change or a Compliance Certificate, and such default continues for three business days, or the delivery of a materially false or inaccurate notice of a Fundamental Change, conversion notice, Compliance Certificate, Restricted Cash Request or notice of our intent to exercise an optional redemption;
- a default in our obligation to timely deliver a notice of an Event of Default or the delivery of a materially false or inaccurate certification as to whether an Event of Default has occurred or whether the Equity Conditions have been satisfied;
- certain defaults in the performance of any of our obligations or agreements under the Notes or the other transaction documents related to the Notes, or a breach of any representation or warranty in any material respect (other than representations or warranties subject to material adverse effect or materiality, which may not be breached in any respect) of any transaction document as of the date when made (except for representations and warranties that speak as of a specific date, which shall be true and correct as of such specific date); provided, however, that if such default or breach can be cured, then such default or breach will not be an Event of Default unless we have failed to cure such default within 20 days after its occurrence;
- any provision of any transaction document related to the Notes at any time for any reason (other than pursuant to the express terms thereof) ceases to be valid and binding on or enforceable against the parties thereto, or the validity or enforceability thereof is contested, directly or indirectly, by us or any of our subsidiaries, or a proceeding is commenced by us or any of our subsidiaries or any governmental authority having jurisdiction over any of them, seeking to establish the invalidity or unenforceability thereof;
- we fail to comply with certain specified covenants, including the covenants described above under “—Limitation on Indebtedness,” “—Limitation on Liens,” “—Limitation on Investments,” “—Limitation on Distributions,” “—Limitation on Transfers,” “—Minimum Liquidity”, “—Minimum Cash Spend Availability”, “—Required Funding Programs”, and “—Limitations on Foreign Subsidiaries”;
- the suspension from trading or failure of our common stock to be trading or listed on our primary Eligible Exchange (measured in terms of trading volume for our common stock) on which our common stock is traded for a period of five consecutive Trading Days;
- (i) our failure or the failure of any of our subsidiaries to pay when due or within any applicable grace period any of our or such subsidiary’s indebtedness having an individual principal amount in excess of at least \$250,000 (or its foreign currency equivalent) in the aggregate; or (ii) the occurrence of any breach or default under any terms or provisions of any of our or any of our subsidiaries’ other indebtedness of at least \$250,000 (or its foreign currency equivalent) in the aggregate, if the effect of such failure or occurrence is to cause or to permit the holder or holders of any such indebtedness, to cause, indebtedness having an individual principal amount in excess of \$250,000 to become or be declared due prior to its stated maturity;
- one or more final judgments, orders or awards (or any settlement of any litigation or other proceeding that, if breached, could result in a judgment, order or award) for the payment of at least \$250,000 (or its foreign currency equivalent) in the aggregate (excluding any amounts covered by insurance pursuant to which the insurer has been notified and has not denied coverage), is rendered against us or the subsidiaries and remains unsatisfied and (i) enforcement proceedings shall have been commenced by

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- any creditor upon any such judgment, order, award or settlement or (ii) there shall be a period of 15 consecutive Trading Days after entry thereof during which (A) a stay of enforcement thereof is not in effect or (B) the same is not vacated, discharged, stayed or bonded pending appeal;
- we fail to timely file our quarterly reports on Form 10-Q or our annual reports on Form 10-K with the SEC in the manner and within the time periods required by the Exchange Act (it being understood that such time periods include any permitted filing deadline extension under Rule 12b-25 under the Exchange Act), or (B) we withdraw or restate (solely with respect to a “Big R” Restatement and not a “little r” restatement) any such quarterly report or annual report previously filed with the SEC or (C) we at any time cease to satisfy the eligibility requirements set forth under Section I.A of the General Instructions to Form S-3;
 - any security document related to the Notes shall for any reason fail or cease to create a separate valid and perfected and, except to the extent permitted by the terms of the Notes or thereof, first priority lien on the Collateral, in each case, in favor of the Collateral Agent in accordance with the terms thereof, or any material provision of any such security document shall at any time for any reason cease to be valid and binding on or enforceable against us or the validity or enforceability thereof shall be contested by any party thereto, or a proceeding shall be commenced by us or any governmental authority having jurisdiction over us, seeking to establish the invalidity or unenforceability thereof;
 - (A) any material damage to, or loss, theft or destruction of, any material portion of the Collateral (provided that any damage, loss, theft or destruction of the Collateral that reduces the value of such Collateral by \$500,000 or more shall be deemed to be material), whether or not insured, or (B) any strike, lockout, labor dispute, embargo, condemnation, act of God or public enemy, or other casualty which causes, for more than 15 consecutive days, the cessation or substantial curtailment of revenue producing activities at any facility of ours or any subsidiary, if in each case ((A) and (B)) any such event or circumstance could reasonably be expected to have a material adverse effect (as defined in the Purchase Agreement);
 - [reserved];
 - we or any of our significant subsidiaries, pursuant to or within the meaning of any Bankruptcy Law, either:
 - commences a voluntary case or proceeding;
 - consents to the entry of an order for relief against us or it in an involuntary case or proceeding;
 - consents to the appointment of a custodian of us or it or for any substantial part of our or its property;
 - makes a general assignment for the benefit of our creditors;
 - takes any comparable action under any foreign Bankruptcy Law; or
 - generally is not paying its debts as they become due;
 - a court of competent jurisdiction enters an order or decree under any Bankruptcy Law that either:
 - is for relief against us or any of our significant subsidiaries in an involuntary case or proceeding;
 - appoints a custodian of us or any of our significant subsidiaries, or for any substantial part of our property or any of our significant subsidiaries;
 - orders the winding up or liquidation of us or any of our significant subsidiaries; or
 - grants any similar relief with respect to us or any of its Significant Subsidiaries under any foreign Bankruptcy Law;
 - our stockholders approve any plan for our liquidation or dissolution; or
 - we fail to remove any restrictive legend on any certificate or any shares of our common stock issued to the holder of any Note or other Securities (as defined in the Purchase Agreement) as and when required by such Securities or the Purchase Agreement, unless otherwise then prohibited by applicable federal securities laws and such failure continues for more than five Trading Days.
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Automatic Acceleration in Certain Circumstances

If an Event of Default set forth in the fifteenth or sixteenth bullets under “—Events of Default” occurs with respect to the us (and not solely with respect to one of our significant subsidiaries), then the then outstanding portion of the Maturity Principal Amount of, and all accrued and unpaid interest on, the Notes will immediately become due and payable without any further action or notice by any person.

Optional Acceleration Upon Event of Default

If an Event of Default (other than an Event of Default set forth in the fifteenth or sixteenth bullets under “—Events of Default”) occurs with respect to us but not solely with respect to one of our subsidiaries and has not been waived, then a holder of a Note may declare such Note to become due and payable on the Business Day immediately following the date of such notice for cash in an amount equal to the Event of Default Acceleration Amount.

“*Event of Default Acceleration Amount*” means a cash amount equal to the greater of (A) the sum of (i) 110% of 115% of the then outstanding principal amount of the Note (or such lesser outstanding principal amount accelerated pursuant to such notice) and (ii) the accrued and unpaid interest on the Note and (B) the sum of (i) 115% of the product of (a) the applicable conversion rate in effect as of the Trading Day immediately preceding the date that the holder of the Note delivers the applicable acceleration notice; (b) the total then outstanding principal amount (expressed in thousands) of the Note; and (c) the greater of (x) the highest Daily VWAP per share of our common stock occurring during the thirty consecutive VWAP Trading Days ending on, and including, the VWAP Trading Day immediately before the date the holder delivers such notice and (y) the average of the five Daily VWAP per share of our common stock occurring during the five consecutive VWAP Trading Days ending on, and including, the VWAP Trading Day immediately before the date the applicable Event of Default occurred (or the date on which the Default underlying such Event of Default initially occurred, if different than the date on which the Event of Default occurred) and (ii) the accrued and unpaid interest on the Note.

Certain Definitions

“*Bankruptcy Law*” means Title 11, United States Code, or any similar U.S. federal or state or non-U.S. law for the relief of debtors.

“*Cash Equivalents*” means, as of any date of determination, any of the following: (A) marketable securities (i) issued or directly and unconditionally guaranteed as to interest and principal by the United States Government, or (ii) issued by any agency of the United States the obligations of which are backed by the full faith and credit of the United States, in each case maturing within one year after such date; (B) marketable direct obligations issued by any state of the United States of America or any political subdivision of any such state or any public instrumentality thereof, in each case maturing within one year after such date and having, at the time of the acquisition thereof, a rating of at least A-1 from Standard & Poor’s Corporation or at least P-1 from Moody’s Investors Service; (C) commercial paper maturing no more than one year from the date of creation thereof and having, at the time of the acquisition thereof, a rating of at least A-1 from Standard & Poor’s Corporation or at least P-1 from Moody’s Investors Service; (D) certificates of deposit or bankers’ acceptances maturing within one (1) year after such date and issued or accepted by any commercial bank organized under the laws of the United States of America or any State, or the District of Columbia that (i) is at least “adequately capitalized” (as defined in the regulations of its primary federal banking regulator), and (ii) has Tier 1 capital (as defined in such regulations) of not less than \$5,000,000,000; and (E) shares of any money market mutual fund that (i) has substantially all of its assets invested continuously in the types of investments referred to in clauses (A) and (B) above, (ii) has net assets of not less than \$5,000,000,000, and (iii) has the highest rating obtainable from either Standard & Poor’s Corporation or Moody’s Investors Service.

“*Covered Milestone Payments*” means milestone payments paid by us pursuant to (i) that certain Agreement and Plan of Merger, dated as of November 23, 2022, by and among us, Mazdan Merger Sub, Inc., Purigen Biosystems, Inc. and Shareholder Representative Services LLC, as the Shareholders’ Representative, and (ii) that certain Agreement and Plan of Merger, dated October 8, 2021, by and among us, Starship Merger Sub I, Inc.,

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Starship Merger Sub II, LLC, BioDiscovery, Inc., and Soheil Shams, as the Securityholders' Representative, as amended by that certain First Amendment to Agreement and Plan of Merger, dated as of March 4, 2023, as such agreements are in effect as of the date of the Purchase Agreement.

"Daily VWAP" means, for any VWAP Trading Day, the per share volume-weighted average price of our common stock on The Nasdaq Stock Market (or the principal, in terms of volume, Eligible Exchange on which our common stock is listed for trading) as displayed under the heading "Bloomberg VWAP" on Bloomberg page "BNGO <EQUITY> VAP" (or, if such page is not available, its equivalent successor page) in respect of the period from the scheduled open of trading until the scheduled close of trading of the primary trading session on such VWAP Trading Day (or, if such volume-weighted average price is unavailable, the market value of one share of our common stock on such VWAP Trading Day, determined, using a volume-weighted average price method, by a nationally recognized independent investment banking firm selected by us). The Daily VWAP will be determined without regard to after-hours trading or any other trading outside of the regular trading session.

"Eligible Exchange" means any of The New York Stock Exchange, The NYSE American LLC, The Nasdaq Stock Market, The Nasdaq Capital Market, The Nasdaq Global Market or The Nasdaq Global Select Market (or any of their respective successors).

"Equity Conditions" will be deemed to be satisfied as of any date if all of the following conditions are satisfied: as of such date and on each of the 30 previous VWAP Trading Days (A) the holder is not in possession of any material non-public information provided by or on behalf of us or by or on behalf of any of our employees, agents or advisors; (B) the issuance of such shares will not be limited as provided under "—Limitations on Conversions"; (C) such shares will be newly issued or treasury shares and will be duly and validly issued, fully paid, non-assessable, free from preemptive rights and free of any lien or adverse claim, and will satisfy certain conditions set forth in the Notes; (D) no pending, proposed or intended Fundamental Change has occurred that has not been abandoned, terminated or consummated; (E) the daily dollar trading volume (as reported on Bloomberg) of our common stock on The Nasdaq Stock Market is not less than \$3,500,000; (F) no Default will have occurred and be continuing and no Event of Default will have occurred which has not been waived; and (G) the shares issuable pursuant to the Notes are Freely Tradable.

"Equity Interest" shall mean, with respect to any person, any and all shares, interests, participations or other equivalents, including preferred stock or membership interests (however designated, whether voting or non-voting), of equity of such person, including, if such person is a partnership, partnership interests (whether general or limited) and including, without limitation, any "equity security" (as that term is defined under Rule 405 promulgated under the Securities Act), and any other interest or participation that confers on a person the right to receive a share of the profits and losses of, or distributions of assets of, such partnership; provided that, the Notes shall not constitute Equity Interests.

"Foreign Subsidiary" means any Subsidiary that is organized under the laws of a jurisdiction other than the United States of America, any state thereof or the District of Columbia.

"Freely Tradable" means, with respect to any shares of our common stock issued or issuable pursuant to a Note, that (A) such shares are (or, when issued, will be) issued by us pursuant to an effective registration statement and would not constitute "restricted securities" within the meaning of Rule 144 under the Securities Act and without any requirement for registration under any state securities or "blue sky" laws; (B) such shares are (or, when issued, will be) (i) represented by book-entries at Depository Trust Company and identified therein by an "unrestricted" CUSIP number; (ii) not represented by any certificate that bears a legend referring to transfer restrictions under the Securities Act or other securities laws; and (iii) listed and admitted for trading, without suspension or material limitation on trading, on an Eligible Exchange; and (C) no delisting or suspension by such Eligible Exchange is pending or has been threatened (with a reasonable prospect of delisting occurring after giving effect to all applicable notice, appeal, compliance and hearing periods) or reasonably likely to occur or pending as evidenced by (x) a writing by such Eligible Exchange or (y) our fall below the minimum listing maintenance requirements of such Eligible Exchange.

"Last Reported Sale Price" of the shares of our common stock for any Trading Day means the closing sale price per share (or, if no closing sale price is reported, the average of the last bid price and the last ask price per share or, if more than one in either case, the average of the average last bid prices and the average last ask prices per share) of our common stock on such Trading Day as reported in composite transactions for the principal U.S. national or regional securities exchange on which the shares of common stock are then listed. If

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our common stock is not listed on a U.S. national or regional securities exchange on such Trading Day, then the Last Reported Sale Price will be the last quoted bid price per share of our common stock on such Trading Day in the over-the-counter market as reported by OTC Markets Group Inc. or a similar organization. If our common stock is not so quoted on such Trading Day, then the Last Reported Sale Price will be the average of the mid-point of the last bid price and the last ask price per share of our common stock on such Trading Day from a nationally recognized independent investment banking firm selected by us. The “Last Reported Sale Price” will be determined without regard to after-hours trading or any other trading outside of the regular trading session.

“*Market Disruption Event*” means, with respect to any date, the occurrence or existence, during the one-half hour period ending at the scheduled close of trading on such date on the principal, in terms of volume, Eligible Exchange on which our common stock is listed for trading or trades, of any material suspension or limitation imposed on trading (by reason of movements in price exceeding limits permitted by the relevant exchange or otherwise) in our common stock or in any options contracts or futures contracts relating to our common stock.

“*Permitted Intellectual Property Licenses*” means (A) intellectual property licenses actually disclosed pursuant to the Purchase Agreement as of the date of the Purchase Agreement and (B) non-perpetual intellectual property licenses granted in the ordinary course of business on arm’s length terms consisting of the licensing of technology, the development of technology or the providing of technical support which may include licenses with unlimited renewal options solely to the extent such options require mutual consent for renewal or are subject to financial or other conditions as to the ability of licensee to perform under the license; provided such license was not entered into during an Event of Default or continuance of a default.

“*Required Holders*” means the holders of a majority of the Underlying Shares in the aggregate as of such time issued or issuable hereunder or pursuant to the Notes or Warrants, as applicable.

“*Trading Day*” means any day on which (A) trading in our common stock generally occurs on the principal U.S. national or regional securities exchange on which our common stock is then listed or, if our common stock is not then listed on a U.S. national or regional securities exchange, on the principal, in terms of volume, Eligible Exchange on which our common stock is listed for trading; and (B) there is no Market Disruption Event, provided that the holder, by written notice to us, may waive any such Market Disruption Event. If our common stock is not so listed or traded, then “Trading Day” means a business day.

“*UCC*” means the Uniform Commercial Code as the same is, from time to time, in effect in the State of New York.

“*VWAP Market Disruption Event*” means, with respect to any date, (A) the failure by the principal U.S. national or regional securities exchange on which our common stock is then listed, or, if our common stock is not then listed on a U.S. national or regional securities exchange, the principal, in terms of volume, Eligible Exchange on which our common stock is then traded, to open for trading during its regular trading session on such date; or (B) the occurrence or existence, for more than one half hour period in the aggregate, of any suspension or limitation imposed on trading (by reason of movements in price exceeding limits permitted by the relevant exchange or otherwise) in our common stock or in any options contracts or futures contracts relating to our common stock, and such suspension or limitation occurs or exists at any time before 1:00 p.m., New York City time, on such date.

“*VWAP Trading Day*” means a day on which (A) there is no VWAP Market Disruption Event, provided that the holder, by written notice to us, may waive any such VWAP Market Disruption Event; and (B) trading in our common stock generally occurs on the principal U.S. national or regional securities exchange on which our common stock is then listed or, if our common stock is not then listed on a U.S. national or regional securities exchange, on the principal, in terms of volume, Eligible Exchange on which our common stock is then traded. If our common stock is not so listed or traded, then “VWAP Trading Day” means a business day.

MATERIAL U.S. FEDERAL INCOME TAX CONSEQUENCES

The following is a summary of certain material U.S. federal income tax considerations for a U.S. holder (as defined below) generally applicable to (i) the purchase, ownership, disposition, and conversion of the Notes and (ii) the ownership and disposition of the Shares. For purposes of this discussion, the Notes and the Shares are referred to collectively as the “Securities.”

This summary is based upon provisions of the Internal Revenue Code of 1986, as amended (the “Code”), applicable U.S. Treasury Regulations, administrative rulings, and judicial decisions in effect as of the date hereof, any of which may subsequently be changed or interpreted differently, possibly retroactively, so as to result in U.S. federal income tax consequences different from those discussed below. This summary applies only to Securities that are held as “capital assets” within the meaning of Section 1221 of the Code (generally, property held for investment) by a U.S. holder that purchased the Securities on original issuance at the “issue price”. This summary is general in nature, and does not address all aspects of U.S. federal income taxation, any estate or gift tax consequences, any alternative minimum tax consequences, the Medicare contribution tax on net investment income, the special tax accounting rules under Section 451(b) of the Code, or any state, local, or non-U.S. tax consequences. In addition, this summary does not deal with all tax consequences that may be relevant to a U.S. holder in light of its personal circumstances or particular situations, such as:

- U.S. holders that may be subject to special tax treatment, including brokers or dealers in securities or currencies, banks, financial institutions, regulated investment companies, real estate investment trusts, tax-exempt entities, insurance companies, pension or retirement plans, or traders in securities that elect to use a mark-to-market method of tax accounting for their securities;
- U.S. holders holding the Securities as a part of a hedging, integrated, or conversion transaction or a straddle or persons deemed to sell the Securities under the constructive sale provisions of the Code;
- U.S. holders whose “functional currency” is not the U.S. dollar;
- corporations that accumulate earnings to avoid U.S. federal income tax;
- certain former citizens or long-term residents of the United States;
- U.S. holders that own, or are deemed to own, 5% or more (by vote or value) of our stock; or
- partnerships or other pass-through entities or investors in such entities.

If an entity or arrangement that is treated as a partnership for U.S. federal income tax purposes holds the Securities, the tax treatment of a partner generally will depend upon the status of the partner and the activities of the partnership. Partnerships holding the Securities and partners in such partnerships should consult their tax advisors regarding the tax consequences in their particular circumstances.

We have not sought, nor will we seek, a ruling from the Internal Revenue Service (the “IRS”), with respect to the matters discussed below. There can be no assurance that the IRS will not take a different position concerning the tax consequences described herein or that any such position would not be sustained by a court.

As used herein, the term “U.S. holder” means a beneficial owner of the Securities that is, for U.S. federal income tax purposes:

- individual who is a citizen or resident of the United States;
- a corporation (or any other entity treated as a corporation for U.S. federal income tax purposes) created or organized in or under the laws of the United States, any state thereof, or the District of Columbia;
- an estate the income of which is subject to U.S. federal income taxation regardless of its source; or
- a trust, if it (i) is subject to the primary supervision of a court within the United States and one or more U.S. persons have the authority to control all substantial decisions of the trust or (ii) has a valid election in effect under applicable U.S. Treasury Regulations to be treated as a U.S. person.

A “non-U.S. holder” is a beneficial owner of the Securities (other than an entity or arrangement treated as a partnership for U.S. federal income tax purposes) that is not a U.S. holder. This summary does not apply to non-U.S. holders.

THIS SUMMARY OF CERTAIN U.S. FEDERAL INCOME TAX CONSIDERATIONS IS FOR GENERAL INFORMATION ONLY AND IS NOT TAX ADVICE. U.S. HOLDERS SHOULD CONSULT THEIR TAX ADVISORS REGARDING THE U.S. FEDERAL, STATE, AND LOCAL AND NON-U.S. INCOME AND NON-INCOME TAX CONSEQUENCES OF THE PURCHASE, OWNERSHIP, DISPOSITION, AND CONVERSION OF THE NOTES AND THE OWNERSHIP AND DISPOSITION OF THE SHARES IN THEIR PARTICULAR CIRCUMSTANCES.

Characterization of the Notes and Allocation of Purchase Price

We intend to treat the Notes (including for purposes of this subsection, the Registered Notes, but excluding the Registered Notes converted into shares of our common stock (the “*Initial Conversion Shares*”) pursuant to the “Initial Conversion” as that term is used in the Purchase Agreement), the Registered Notes, and the Initial Conversion Shares as an “investment unit” for U.S. federal income tax purposes. The purchase price paid for the investment unit must be allocated among the Notes, the Registered Warrants, and the Initial Conversion Shares, each based on their relative fair market values at the time of the sale, and the portion of such purchase price allocated to the Notes will be the issue price of the Notes. Our allocation of the purchase price among the Notes, the Registered Warrants, and the Initial Conversion Shares is binding on a U.S. holder of the investment unit, unless the U.S. holder explicitly discloses that the U.S. holder’s allocation is different from our allocation. The disclosure generally must be made on a statement attached to the U.S. holder’s timely filed U.S. federal income tax return for the taxable year that includes the U.S. holder’s purchase of the investment unit. U.S. holders may obtain our allocation by contacting us as set forth in the section titled “Where You Can Find More Information.” There can be no assurance that the IRS will respect our allocation or, as applicable, a U.S. holder’s allocation. If the IRS successfully challenges our allocation or, as applicable, a U.S. holder’s allocation, the tax consequences resulting from the new allocation could be different from the tax consequences resulting from our allocation or, as applicable, the U.S. holder’s allocation. U.S. holders should consult their tax advisors regarding the tax treatment of the Notes, the Registered Warrants and the Initial Conversion Shares and the allocation of the purchase price for the Notes, the Registered Warrants and the Initial Conversion Shares.

Original Issue Discount on the Notes

The Notes were issued with original issue discount (the “*OID*”) for U.S. federal income tax purposes. The amount of OID is equal to the excess of the Notes’ “stated redemption price at maturity” over its “issue price.” Regardless of a U.S. holder’s method of accounting, the U.S. holder generally will be required to accrue OID on a constant yield to maturity basis, and include such accruals in gross income as ordinary interest income, potentially in advance of the receipt of cash attributable to that income.

The amount of OID allocable to an accrual period generally will equal to the excess of the product of the “adjusted issue price” of the Notes at the beginning of the accrual period and the Notes’ “yield to maturity” (generally determined on the basis of a compounding assumption that reflects the length of the accrual period). The adjusted issue price of the Notes at the beginning of the first accrual period will be the Notes’ issue price. The adjusted issue price of the Notes at the beginning of any subsequent accrual period generally will be the adjusted issue price of the Notes at the beginning of the previous accrual period, increased by the amount of OID allocable to the previous accrual period and decreased by the amount of any payment made on the Notes during the previous accrual period. The yield to maturity of the Notes is the rate that, when used to compute the present value of all payments to be made on the Notes (including for this purpose any scheduled redemption payments on the Notes), produces an amount equal to the issue price of the Notes. The payment schedule of the Notes for OID purposes will include assumptions regarding the holder’s “partial redemptions”, as described in “Description of Notes—Notes—Redemption.” If, contrary to these assumptions, a partial redemption payment is not made, the Notes will be treated as retired and reissued solely for purposes of the OID rules described above.

The rules governing OID are complex. U.S. holders should consult their tax advisors regarding the application of such rules to the Notes, including the amount of OID and the inclusion of OID in gross income.

Contingent Payments on the Notes

We may be required to make additional payments on the Notes as described, for example, in the section titled “Description of Notes—Repurchase of the Notes upon a Fundamental Change,” and the amount and timing of certain other payments on the Notes are subject to contingencies. We intend to treat the foregoing

contingencies as not causing the Notes to be subject to the rules governing contingent payment debt instruments. If, contrary to expectations, we make additional payments, although it is not free from doubt, such additional payments should be taxable to a U.S. holder as ordinary income at the time it accrues or is paid in accordance with the U.S. holder's regular method of tax accounting. U.S. holders should consult their own tax advisors regarding the tax treatment of such additional payments.

Due to a lack of relevant authority regarding these payments, the applicability of the rules governing contingent payment debt instruments to the Notes is uncertain. Our position that the Notes are not subject to the rules governing contingent payment debt instruments is not binding on the IRS. If the IRS successfully challenged this position, and the Notes were treated as a contingent payment debt instruments, a U.S. holder generally would, among other things, be required to accrue interest income at a higher rate than the yield determined under the OID rules, and to treat any gain recognized on the sale or other taxable disposition, or upon the conversion, of the Notes as ordinary income rather than as capital gain. If a U.S. holder disagrees with our position, the U.S. holder generally must explicitly disclose the U.S. holder's position on a statement attached to the U.S. holder's timely filed U.S. federal income tax return for the taxable year that includes the U.S. holder's purchase of the Notes. U.S. holders should consult their tax advisors regarding the applicability of the rules governing contingent payment debt instruments to the Notes and the tax consequences if the Notes were treated as a contingent payment debt instruments.

The remainder of this summary assumes that the Notes are not treated as contingent payment debt instruments.

Sale, Exchange, Redemption, Repurchase, or Other Taxable Disposition of the Notes

Except as provided below under the section titled “—Conversion of the Notes,” a U.S. holder generally will recognize capital gain or loss upon the sale, exchange, redemption, repurchase, or other taxable disposition of the Notes (for purposes of this subsection, excluding any scheduled redemption as described under “—Original Issue Discount on the Notes”) equal to the difference, if any, between the sum of the cash plus the fair market value of any other property received upon such disposition and such U.S. holder's adjusted tax basis in the Notes. A U.S. holder's adjusted tax basis in the Notes generally will be equal to the amount that the U.S. holder paid for the Notes (taking into account the allocation of purchase price discussion in the section titled “—Characterization of the Notes and Allocation of Purchase Price” above), plus the amount, if any, included in income by the U.S. holder as OID or on an adjustment to the conversion rate of the Notes, as described in the section titled “—Constructive Distributions” below, less the amount of any scheduled redemption payments received on the Notes. Such gain or loss will be capital gain or loss. If, at the time of the sale, exchange, redemption, repurchase, or other taxable disposition of the Notes, the U.S. holder held the Notes for more than one year, any such capital gain or loss would be long-term capital gain or loss. Long-term capital gains recognized by certain non-corporate U.S. holders, including individuals, generally will be subject to a reduced rate of U.S. federal income tax. A U.S. holder's ability to deduct capital losses may be limited.

Conversion of the Notes

If a U.S. holder presents the Notes for conversion, the U.S. holder will receive shares of our common stock in exchange for the principal of the Notes and may receive a retirement fee in cash. The U.S. holder generally will not recognize gain or loss upon the conversion of the Notes, except with respect to the cash received, which may be treated as boot gain in a recapitalization transaction, or alternatively, as gain received in partial redemption of the Notes converted (with the remainder of the Notes treated as converted solely into stock). The tax basis of shares of our common stock received upon a conversion (excluding any Initial Conversion Shares, for which basis will be determined via allocation of purchase price as described in the section titled “—Characterization of the Notes and Allocation of Purchase Price” above) will equal the adjusted tax basis of the Notes that were converted, except that if cash is received in a transaction treated as a recapitalization, the basis will be increased by the amount of gain recognized and decreased by the amount of cash received, and, alternatively, if cash is received in partial redemption, the basis of the Notes will be allocated between the Notes treated as converted and the Notes treated as redeemed. The U.S. holder's holding period for the shares of common stock will include the period during which the U.S. holder held the Notes.

Possible Effect of Change in the Notes' Conversion Consideration after Certain Changes of our Common Stock

If we undergo certain of the events described in the section titled “Description of Notes—Conversion Rights—Additional Conversion Rate Adjustments,” the conversion rate and the related conversion consideration may be adjusted such that a U.S. holder would be entitled to convert the Notes into shares, property, or assets

other than our common stock described in such section. Depending on the facts and circumstances at the time of such event, such adjustment may result in a deemed exchange of the Notes, which may be a taxable event for U.S. federal income tax purposes. Furthermore, depending on the circumstances, subsequent to any such event, the U.S. federal income tax consequences of the ownership and conversion of the modified Notes as well as the ownership of the property into which the Notes are convertible may be different from the U.S. federal income tax consequences addressed in this discussion. A U.S. holder should consult its tax advisor regarding the U.S. federal income tax consequences of such an adjustment.

Constructive Distributions

The conversion rate of the Notes will be adjusted in certain circumstances. Under Section 305 of the Code, adjustments (or failures to make adjustments) that have the effect of increasing a U.S. holder's proportionate interest in our assets or earnings may in some circumstances result in a constructive distribution to a U.S. holder for U.S. federal income tax purposes. Adjustments to the conversion rate made pursuant to a bona fide reasonable adjustment formula that has the effect of preventing the dilution of the interest of U.S. holders, however, generally will not be considered to result in a constructive distribution to a U.S. holder. Certain of the possible conversion rate adjustments provided in the Notes (including, without limitation, adjustments in respect of taxable dividends to holders of our common stock) will not qualify as being pursuant to a bona fide reasonable adjustment formula. If such adjustments are made, depending on the circumstances, including whether we have paid in the past or will pay in the future distributions on our stock or interest on other convertible debt, a U.S. holder may be deemed to have received a distribution even though the U.S. holder has not received any cash or property as a result of such adjustments. In addition, an adjustment to the conversion rate in connection with a make-whole fundamental change may be treated as a constructive distribution. Any constructive distributions will be taxable as a dividend, return of capital, or capital gain as described in the section titled "—Distributions" below.

It is not clear whether a constructive dividend deemed paid to a non-corporate U.S. holder would be eligible for the preferential rates of U.S. federal income tax applicable in respect of certain dividends received. It is also unclear whether corporate U.S. holders would be entitled to claim the dividends-received deduction with respect to any such constructive dividends. Because a constructive dividend deemed received by a U.S. holder would not give rise to any cash from which any applicable withholding could be satisfied, if backup withholding is paid on behalf of a U.S. holder (because such U.S. holder failed to establish an exemption from backup withholding), such backup withholding may be set off against payments of cash and the Shares (or, in certain circumstances, against any payments on the Shares).

We are required under current law to report the amount of any constructive distributions on our website or to the IRS and to U.S. holders not exempt from information reporting. The IRS has proposed regulations addressing the amount and timing of constructive distributions, obligations of withholding agents, and filing and notice obligations of issuers, effective for constructive distributions occurring on or after the date the regulations are adopted in final form. If adopted as proposed, the regulations generally would provide that (i) the amount of a constructive distribution is the excess of the fair market value of the right to acquire the Shares immediately after the conversion rate adjustment over the fair market value of the right to acquire the Shares without the adjustment, (ii) the constructive distribution occurs at the earlier of the date the adjustment occurs under the terms of the Notes and the date of the actual distribution of cash or other property that results in the constructive distribution, (iii) subject to certain limited exceptions, a withholding agent is required to impose any applicable withholding on constructive distributions and, if there is no associated cash payment, may set off its withholding obligations against payments on the Securities or sales proceeds received by, or other funds or assets, of the applicable U.S. holder, and (iv) we will continue to be required to report the amount of any constructive distributions on our website or to the IRS and to all U.S. holders (including those that would otherwise be exempt from information reporting). The final regulations will be effective for constructive distributions occurring on or after the date of adoption, but U.S. holders and withholding agents may rely on them prior to that date under certain circumstances.

U.S. holders should consult their tax advisors regarding the tax consequences of any constructive distributions in their particular circumstances.

Distributions

Distributions, if any, made on the Shares to a U.S. holder (and constructive distributions, if any, as described above under the section titled “—Constructive Distributions”) generally will be included in the U.S. holder’s income as ordinary dividend income to the extent of our current or accumulated earnings and profits, as determined under U.S. federal income tax principles. However, with respect to dividends received by individuals, such dividends generally are taxed at the lower applicable long-term capital gains rates, provided that certain holding period and other requirements are satisfied. Distributions (and constructive distributions) in excess of our current and accumulated earnings and profits will be treated as a return of capital to the extent of a U.S. holder’s tax basis in the Shares or Notes, as applicable, and thereafter as capital gain from the sale or exchange of the Shares or Notes, as applicable. Dividends received by a corporation may be eligible for a dividends-received deduction, subject to applicable limitations.

Sale or Other Taxable Disposition of the Shares

Upon the sale or other taxable disposition of the Shares, a U.S. holder generally will recognize capital gain or loss equal to the difference between (i) the amount of cash and the fair market value of all other property received upon such disposition and (ii) the U.S. holder’s tax basis in the Shares. Such capital gain or loss will be long-term capital gain or loss if the U.S. holder’s holding period in the Shares is more than one year at the time of the taxable disposition. Long-term capital gains recognized by certain non-corporate U.S. holders (including individuals) generally will be subject to reduced rates of U.S. federal income tax. A U.S. holder’s ability to deduct capital losses may be limited.

Information Reporting and Backup Withholding

Information reporting requirements generally will apply to OID accrued on the Notes, dividends paid on the Shares (and constructive dividends paid on the Notes) and proceeds from a sale or other taxable disposition of the Securities, unless the U.S. holder is an exempt recipient (such as a corporation). Backup withholding (currently at a 24% rate) will apply to those payments if the U.S. holder fails to provide its correct taxpayer identification number, or certification of exempt status, or if the U.S. holder is notified by the IRS that it has failed to report in full payments of interest and dividend income. Backup withholding is not an additional tax. Any amounts withheld under the backup withholding rules generally will be allowed as a refund or a credit against a U.S. holder’s U.S. federal income tax liability, provided that the required information is furnished timely to the IRS. U.S. holders should consult their tax advisors regarding their information reporting and backup withholding obligations in their particular circumstances.

THIS SUMMARY IS FOR GENERAL INFORMATION ONLY AND IS NOT TAX ADVICE. U.S. HOLDERS SHOULD CONSULT THEIR TAX ADVISORS REGARDING THE U.S. FEDERAL, STATE, AND LOCAL AND NON-U.S. INCOME AND NON-INCOME TAX CONSEQUENCES OF THE PURCHASE, OWNERSHIP, DISPOSITION, AND CONVERSION OF THE NOTES AND THE OWNERSHIP AND DISPOSITION OF THE SHARES IN THEIR PARTICULAR CIRCUMSTANCES, INCLUDING ANY INFORMATION REPORTING REQUIREMENTS AND THE IMPACT OF ANY POTENTIAL CHANGE IN LAW.

SELLING SECURITYHOLDER

On October 13, 2023, we issued and sold to the Selling Securityholder pursuant to the Purchase Agreement in a registered offering the Registered Notes and Registered Warrants and in a concurrent private placement \$35.0 million aggregate principal amount of Notes initially convertible by the Selling Securityholder into 12,221,738 Shares. The Purchase Agreement provided the Selling Securityholder with registration rights with respect to the Notes and Shares. The Selling Securityholder, which term includes any additional selling stockholder listed in a prospectus supplement, and their donees, pledgees, assignees, transferees, distributees or other successors in interest selling securities received after the date of this prospectus from the Selling Securityholder as a non-sale transfer, may from time to time offer and sell the Notes and the Shares pursuant to this prospectus or any applicable prospectus supplement.

The following table sets forth certain information as of the date of this prospectus, concerning the principal amount of Notes beneficially owned and the Shares that may be offered from time to time under this prospectus by the Selling Securityholder named in the table. We prepared this table based on the information supplied to us by the Selling Securityholder named in the table and we have not sought to verify such information. This table only reflects information the Selling Securityholder provided us. Information concerning the Selling Securityholder may change from time to time and any changed information will be set forth in supplements to this prospectus if and when necessary.

The number of Shares issuable upon conversion of the Notes shown in the table below assumes conversion of the full amount of Notes held by the Selling Securityholder at an initial conversion rate of 349.1925 shares per \$1,000 principal amount of notes. This conversion price is subject to adjustment in certain events. Accordingly, the number of conversion shares may increase or decrease from time to time. The percentages of common stock beneficially owned and being offered are based on 37,722,920 shares of our common stock outstanding as of October 23, 2023. Because the Selling Securityholder may offer all or some portion of the Notes or the Shares pursuant to this prospectus, we have assumed for purposes of the table below that the Selling Securityholder will sell all of the Notes and all of the shares of common stock offered pursuant to this prospectus. In addition, the Selling Securityholder identified below may have sold, transferred or otherwise disposed of all or a portion of its Notes in transactions exempt from the registration requirements of the Securities Act since the date on which they provided the information to us regarding their holdings.

Based upon information provided by the Selling Securityholder, none of the Selling Securityholder or any of its affiliates, officers, directors or principal equity holders has held any position or office or has had any material relationship with us within the past three years.

In addition, except as indicated in the table below, the selling securityholders have represented to us that they are not, nor are they affiliated with, a registered broker-dealer.

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Under the terms of the Notes, the Selling Securityholder may not receive any shares of our common stock otherwise deliverable upon conversion of the Notes to the extent, but only to the extent, that such receipt would cause the Selling Securityholder to become, directly or indirectly, the beneficial owner of more than 4.99% of the shares of our common stock outstanding at such time. The number of shares of common stock in the fifth column do not reflect these limitations, but the percentage set forth in the seventh column does give effect to such limitations. The Selling Stockholders may sell all, some or none of their shares in this offering. In addition, we do not know how long the Selling Securityholder will hold the Notes or any Shares upon conversion of the Notes before selling them, and we currently have no agreements, arrangements or understandings with the Selling Securityholder regarding the sale or other disposition of any Notes or Shares. See the section titled “Plan of Distribution.”

Name	Notes				Shares of Common Stock			
	Principal Amount of Notes Beneficially Owned Prior to the Offering ⁽¹⁾	Maximum Principal Amount at Maturity of Notes Registered Hereunder for Sale	Principal Amount of Notes Beneficially Owned Upon Completion of the Offering		Number of Shares of Common Stock Beneficially Owned Prior to the Offering ⁽²⁾	Maximum Number of Shares of Common Registered Hereunder for Sale ⁽⁴⁾	Common Stock Beneficially Owned Upon Completion of the Offering	
			Principal Amount of Notes ⁽¹⁾	Percentage			Number of Shares	Percentage
High Trail Special Situations LLC ⁽³⁾	\$35,000,000	\$35,000,000	\$35,000,000	100%	49,596,051	12,221,738	49,596,051	4.99%

- (1) Figures in this column do not include the \$45.0 million aggregate principal amount of Registered Notes.
- (2) Figures in this column include the shares of common stock issuable upon exercise of the Warrants, the shares of common stock issuable upon conversion of the Registered Notes, and the shares of common stock issuable upon Notes listed in column four, in each case, without taking account of any limitation on conversion and exercise pursuant to the terms of the Notes and the Warrants, as applicable.
- (3) Hudson Bay Capital Management LP, the investment manager of High Trail Special Situations LLC, has voting and investment power over these securities. Sander Gerber is the managing member of Hudson Bay Capital GP LLC, which is the general partner of Hudson Bay Capital Management LP. Each of High Trail Special Situations LLC and Sander Gerber disclaims beneficial ownership over these securities. The address of each Selling Stockholder is c/o Hudson Bay Capital Management LP, 28 Havemeyer Place, 2nd Place, Greenwich, CT 06830.
- (4) Figures in this column do not include the additional shares of common stock that may be issued upon the conversion of the Notes in connection with the occurrence of a fundamental change. See “Description of Notes—Repurchase of the Notes upon a Fundamental Change.”

PLAN OF DISTRIBUTION

We are registering the resale by the Selling Securityholder or its permitted transferees from time to time of (i) up to \$35,000,000 aggregate principal amount of Notes and (ii) up to 12,221,738 Shares. We will not receive any of the proceeds from the sale of the securities by the Selling Securityholder. The aggregate proceeds to the Selling Securityholder will be the purchase price of the securities less any discounts and commissions borne by the Selling Securityholder. We are required to pay all fees and expenses incident to the registration of the securities to be offered and sold pursuant to this prospectus. The Selling Securityholder will bear all commissions and discounts, if any, attributable to its sale of securities.

The shares of common stock beneficially owned by the Selling Securityholder covered by this prospectus may be offered and sold from time to time by the Selling Securityholder. The term "Selling Securityholder" includes any additional selling stockholder listed in a prospectus supplement, and their donees, pledgees, assignees, transferees, distributees or other successors in interest selling securities received after the date of this prospectus from the Selling Securityholder as a non-sale transfer, may from time to time offer and sell the Notes and the Shares pursuant to this prospectus or any applicable prospectus supplement. The Selling Securityholder will act independently of us in making decisions with respect to the timing, manner and size of each sale. Such sales may be made on one or more exchanges or in the over-the-counter market or otherwise, at prices and under terms then prevailing or at prices related to the then current market price or in negotiated transactions. The Selling Securityholder may sell its securities by one or more of, or a combination of, the following methods:

- purchases by a broker-dealer as principal and resale by such broker-dealer for its own account pursuant to this prospectus;
- ordinary brokerage transactions and transactions in which the broker solicits purchasers;
- block trades in which the broker-dealer so engaged will attempt to sell the shares as agent but may position and resell a portion of the block as principal to facilitate the transaction;
- an over-the-counter distribution in accordance with the rules of Nasdaq;
- through trading plans entered into by the Selling Securityholder pursuant to Rule 10b5-1 under the Exchange Act, that are in place at the time of an offering pursuant to this prospectus and any applicable prospectus supplement hereto that provide for periodic sales of its securities on the basis of parameters described in such trading plans;
- short sales;
- distribution to employees, members, limited partners or stockholders of the Selling Securityholder, as applicable; through the writing or settlement of options or other hedging transaction, whether through an options exchange or otherwise;
- by pledge to secured debts and other obligations;
- delayed delivery arrangements;
- to or through underwriters or broker-dealers;
- in "at the market" offerings, as defined in Rule 415 under the Securities Act, at negotiated prices, at prices prevailing at the time of sale or at prices related to such prevailing market prices, including sales made directly on a national securities exchange or sales made through a market maker other than on an exchange or other similar offerings through sales agents;
- in privately negotiated transactions;
- in options transactions;
- through a combination of any of the above methods of sale; or
- any other method permitted pursuant to applicable law.

In addition, any securities that qualify for sale pursuant to Rule 144 or another exemption from registration under the Securities Act or other such exemption may be sold under Rule 144 or such other exemption rather than pursuant to this prospectus.

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To the extent required, this prospectus may be amended or supplemented from time to time to describe a specific plan of distribution. In connection with distributions of the securities or otherwise, the Selling Securityholder may enter into hedging transactions with broker-dealers or other financial institutions. In connection with such transactions, broker-dealers or other financial institutions may engage in short sales of the securities in the course of hedging the positions they assume with the Selling Securityholder. The Selling Securityholder may also sell the securities short and redeliver the securities to close out such short positions. The Selling Securityholder may also enter into option or other transactions with broker-dealers or other financial institutions which require the delivery to such broker-dealer or other financial institution of securities offered by this prospectus, which securities such broker-dealer or other financial institution may resell pursuant to this prospectus (as supplemented or amended to reflect such transaction). The Selling Securityholder may also pledge securities to a broker-dealer or other financial institution, and, upon a default, such broker-dealer or other financial institution, may effect sales of the pledged securities pursuant to this prospectus (as supplemented or amended to reflect such transaction).

In effecting sales, broker-dealers or agents engaged by the Selling Securityholder may arrange for other broker-dealers to participate. Broker-dealers or agents may receive commissions, discounts or concessions from the Selling Securityholder in amounts to be negotiated immediately prior to the sale.

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

We also have agreed to indemnify the Selling Securityholder and certain other persons against certain liabilities in connection with the offering of Notes and Shares offered hereby, including liabilities arising under the Securities Act or, if such indemnity is unavailable, to contribute amounts required to be paid in respect of such liabilities. The Selling Securityholder has agreed to indemnify us against liabilities under the Securities Act that may arise from certain written information furnished to us by the Selling Securityholder specifically for use in this prospectus or, if such indemnity is unavailable, to contribute amounts required to be paid in respect of such liabilities. 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.

We have advised the Selling Securityholder that the anti-manipulation rules of Regulation M under the Exchange Act may apply to sales of securities in the market and to the activities of the Selling Securityholder and its affiliates. In addition, we will make copies of this prospectus available to the Selling Securityholder for the purpose of satisfying the prospectus delivery requirements of the Securities Act. The Selling Securityholder may indemnify any broker-dealer that participates in transactions involving the sale of the securities against certain liabilities, including liabilities arising under the Securities Act.

At the time a particular offer of securities is made, if required, a prospectus supplement will be distributed that will set forth the number of securities being offered and the terms of the offering, including the name of any underwriter, dealer or agent, the purchase price paid by any underwriter, any discount, commission and other item constituting compensation, any discount, commission or concession allowed or reallocated or paid to any dealer, and the proposed selling price to the public.

LEGAL MATTERS

The validity of the Shares and the Notes have been passed upon by Morris, Nichols, Arsht & Tunnell LLP, Wilmington, Delaware.

EXPERTS

The consolidated financial statements as of December 31, 2022 and 2021 and for each of the years then ended incorporated by reference in this prospectus have been so incorporated in reliance on the report of BDO USA, LLP (n/k/a BDO USA, P.C.), an independent registered public accounting firm, incorporated herein by reference, given on the authority of said firm as experts in auditing and accounting. The report on the consolidated financial statements contains an explanatory paragraph regarding the Company's ability to continue as a going concern.

WHERE YOU CAN FIND MORE INFORMATION

This prospectus is part of the registration statement on Form S-3 we filed with the SEC under the Securities Act and do not contain all of the information set forth or incorporated by reference in the registration statement and the exhibits to the registration statement. For further information with respect to us and the securities we are offering under this prospectus, we refer you to the registration statement and the exhibits and schedules filed as a part of the registration statement. We file annual, quarterly and current reports, proxy statements and other information with the SEC. The SEC maintains a website that contains reports, proxy and information statements and other information regarding issuers that file electronically with the SEC, including Bionano. The address of the SEC website is www.sec.gov.

We maintain a website at www.bionanogenomics.com. Information contained in or accessible through our website does not constitute a part of this prospectus.

INCORPORATION OF CERTAIN INFORMATION BY REFERENCE

The SEC allows us to “incorporate by reference” information into this prospectus, which means that we can disclose important information to you by referring you to another document filed separately with the SEC. The SEC file number for the documents incorporated by reference in this prospectus is 001-38613. The documents incorporated by reference into this prospectus contain important information about us that you should read.

The following documents are incorporated by reference into this document:

- our Annual Report on Form 10-K for the year ended December 31, 2022, filed with the SEC on [March 9, 2023](#);
- our Definitive Proxy Statement on Schedule 14A, filed with the SEC on [April 28, 2023](#) (to the extent incorporated by reference into Part III of our Annual Report on Form 10-K for the fiscal year ended December 31, 2022);
- our Quarterly Reports on Form 10-Q for the quarters ended March 31, 2023 and June 30, 2023 filed with the SEC on [May 9, 2023](#) and [August 9, 2023](#), respectively;
- our Current Reports on Form 8-K filed with the SEC on [February 3, 2023](#) (with respect to Item 8.01 only), [March 13, 2023](#), [April 14, 2023](#), [June 2, 2023](#), [June 16, 2023](#), [July 19, 2023](#), [August 4, 2023](#), [August 14, 2023](#) (with respect to Items 5.02 and 9.01 only) and [October 11, 2023](#) (with respect to Items 1.01, 2.03, 2.05, 3.02 and 9.01 only); 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 amendments or reports filed for the purposes of updating this description.

We also incorporate by reference into this prospectus all documents (other than Current Reports 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) that are filed by us with the SEC pursuant to Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act, including those made 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, as well as after the date of this prospectus until we file a post-effective amendment that indicates the termination of the offering of the Notes and shares of our common

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stock made by this prospectus and will become a part of this prospectus from the date that such documents are filed with the SEC. These documents include periodic reports, such as Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q and Current Reports on Form 8-K, as well as proxy statements.

We will provide to each person, including any beneficial owner, to whom a prospectus is delivered, without charge upon written or oral request, a copy of any or all of the documents that are incorporated by reference into this prospectus but not delivered with this prospectus, including exhibits which are specifically incorporated by reference into such 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.

Any statement contained herein or in a document incorporated or deemed to be incorporated by reference into this document will be deemed to be modified or superseded for purposes of the document to the extent that a statement contained in this document or any other subsequently filed document that is deemed to be incorporated by reference into this document modifies or supersedes the statement.

PART II

INFORMATION NOT REQUIRED IN PROSPECTUS

Item 14. Other Expenses of Issuance and Distribution.

The following table sets forth the estimated costs and expenses payable by us in connection with the offering of the securities being registered. All the amounts shown are estimates, except for the SEC registration fee.

SEC registration fee	\$ 5,166
Accounting fees and expenses	45,000
Legal fees and expenses	\$150,000
Printing and miscellaneous expenses	<u>4,834</u>
Total	<u>\$205,000</u>

Item 15. Indemnification of Directors and Officers.

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

Our amended and restated certificate of incorporation, as amended, and amended and restated bylaws provide for the indemnification of our directors and officers to the fullest extent permitted under the General Corporation Law of the State of Delaware. Section 102(b)(7) of the General Corporation Law of the State of Delaware permits a corporation to provide in its certificate of incorporation that a director or officer of the corporation shall not be personally liable to the corporation or its stockholders for monetary damages for breach of fiduciary duties as a director or officer, except for liability for any:

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

Our amended and restated certificate of incorporation, as amended, includes such a provision with respect to our directors. Expenses incurred by any officer or director in defending any such action, suit or proceeding in

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advance of its final disposition will be paid by us upon delivery to us of an undertaking, by or on behalf of such director or officer, to repay all amounts so advanced if it shall ultimately be determined that such director or officer is not entitled to be indemnified by us.

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

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

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

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

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

Pursuant to certain underwriting agreements we may enter, the underwriters are obligated, under some circumstances, to indemnify our directors, officers and controlling persons against specified liabilities, including liabilities under the Securities Act.

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Item 16. Exhibits.

Exhibit Number	Description
3.1	Amended and Restated Certificate of Incorporation, as amended (incorporated by reference to Exhibit 3.1 of the Registrant’s Annual Report on Form 10-K, filed with the SEC on March 23, 2021).
3.2	Certificate of Amendment to Amended and Restated Certificate of Incorporation, as amended (incorporated by reference to Exhibit 3.1 of the Registrant’s Current on Form 8-K, filed with the SEC on August 4, 2023).
3.3	Amended and Restated Bylaws (incorporated by reference to Exhibit 3.2 of the Registrant’s Current Report on Form 8-K, filed with the SEC on August 24, 2018).
3.4	Amendment to Amended and Restated Bylaws (incorporated by reference to Exhibit 3.2 of the Registrant’s Current Report on Form 8-K, filed with the SEC on April 14, 2023).
4.1	Form of Note, representing the Company’s Senior Secured Convertible Notes due 2025 (incorporated by reference to Exhibit 4.1 of the Registrant’s Current Report on Form 8-K, filed with the SEC on October 11, 2023).
4.2	Form of Warrant to Purchase Common Stock.
5.1	Opinion of Morris, Nichols, Arsht & Tunnell LLP.
10.1*	Securities Purchase Agreement, dated October 11, 2023, by and among the Company and the Selling Securityholder named therein (incorporated by reference to Exhibit 10.1 of the Registrant’s Current on Form 8-K, filed with the SEC on October 11, 2023).
23.1	Consent of BDO USA LLP, independent registered public accounting firm.
23.2	Consent of Morris, Nichols, Arsht & Tunnell LLP (included in Exhibit 5.1).
24.1	Power of Attorney (included on signature page).
107	Filing Fee Table.

* Certain schedules to this agreement have been omitted pursuant to Item 601(a)(5) of Regulation S-K. The Company agrees to furnish a copy of all omitted schedules to the SEC upon its request. Portions of this exhibit have been omitted pursuant to Item 601(b)(2)(ii) of Regulation S-K. The Company agrees to furnish supplementally an unredacted copy of the Exhibit to the SEC upon its request.

Item 17. Undertakings.

- (a) The undersigned registrant hereby undertakes:
- (1) To file, during any period in which offers or sales are being made, a post-effective amendment to this registration statement:
 - (i) To include any prospectus required by Section 10(a)(3) of the Securities Act;
 - (ii) To reflect in the prospectus any facts or events arising after the effective date of the registration statement (or the most recent post-effective amendment thereof) which, individually or in the aggregate, represent a fundamental change in the information set forth in the registration statement. Notwithstanding the foregoing, any increase or decrease in volume of securities offered (if the total dollar value of securities offered would not exceed that which was registered) and any deviation from the low or high end of the estimated maximum offering range may be reflected in the form of prospectus filed with the SEC pursuant to Rule 424(b) if, in the aggregate, the changes in volume and price represent no more than a 20 percent change in the maximum aggregate offering price set forth in the “Calculation of Registration Fee” table in the effective registration statement; and
 - (iii) To include any material information with respect to the plan of distribution not previously disclosed in the registration statement or any material change to such information in the registration statement;

provided, however, that the undertakings set forth in paragraphs (1)(i), (1)(ii) and (1)(iii) of this section do not apply if the information required to be included in a post-effective amendment by those paragraphs is contained in reports filed with or furnished to the SEC by the registrant pursuant to Section 13 or Section 15(d) of the Exchange Act that are incorporated by reference in this registration statement or are contained in a form of prospectus filed pursuant to Rule 424(b) that is part of this registration statement.

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- (2) That, for the purpose of determining any liability under the Securities Act, each such post-effective amendment shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.
 - (3) To remove from registration by means of a post-effective amendment any of the securities being registered which remain unsold at the termination of the offering.
 - (4) That, for the purpose of determining liability under the Securities Act to any purchaser:
 - (i) Each prospectus filed by the registrant pursuant to Rule 424(b)(3) shall be deemed to be part of the registration statement as of the date the filed prospectus was deemed part of and included in the registration statement; and
 - (ii) Each prospectus required to be filed pursuant to Rule 424(b)(2), (b)(5), or (b)(7) as part of a registration statement in reliance on Rule 430B relating to an offering made pursuant to Rule 415(a)(1)(i), (vii), or (x) for the purpose of providing the information required by Section 10(a) of the Securities Act shall be deemed to be part of and included in the registration statement as of the earlier of the date such form of prospectus is first used after effectiveness or the date of the first contract of sale of securities in the offering described in the prospectus. As provided in Rule 430B, for liability purposes of the issuer and any person that is at that date an underwriter, such date shall be deemed to be a new effective date of the registration statement relating to the securities in the registration statement to which that prospectus relates, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof. Provided, however, that no statement made in a registration statement or prospectus that is part of the registration statement or made in a document incorporated or deemed incorporated by reference into the registration statement or prospectus that is part of the registration statement will, as to a purchaser with a time of contract of sale prior to such effective date, supersede or modify any statement that was made in the registration statement or prospectus that was part of the registration statement or made in any such document immediately prior to such effective date.
 - (5) That, for purposes of determining any liability under the Securities Act, each filing of the registrant's annual report pursuant to Section 13(a) or 15(d) of the Exchange Act (and, where applicable, each filing of an employee benefit plan's annual report pursuant to Section 15(d) of the Exchange Act) that is incorporated by reference in the registration statement shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.
- (b) Insofar as indemnification for liabilities arising under the Securities Act of 1933 may be permitted to directors, officers and controlling persons of the registrant pursuant to the foregoing provisions, or otherwise, the registrant has been advised that in the opinion of the Securities and Exchange Commission such indemnification is against public policy as expressed in the Act and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the registrant of expenses incurred or paid by a director, officer or controlling person of the registrant in the successful defense of any action, suit or proceeding) is asserted by such director, officer or controlling person in connection with the securities being registered, the registrant will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Act and will be governed by the final adjudication of such issue.

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, as amended, the Registrant certifies that it has reasonable grounds to believe that it meets all of the requirements for filing on Form S-3 and has duly caused this Registration Statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of San Diego, State of California, on the 26th day of October, 2023.

BIONANO GENOMICS, INC.

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

R. Erik Holmlin, Ph.D.

President and Chief Executive Officer

POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints R. Erik Holmlin, Ph.D. and Gülsen Kama, and each of them, as his or her true and lawful attorneys-in-fact and agents, each with the full power of substitution and resubstitution, for him or her and in his or her name, place or stead, in any and all capacities, to sign any and all amendments (including post effective amendments, exhibits thereto and other documents in connection therewith) to this Registration Statement, and to sign any registration statement for the same offering covered by this registration statement that is to be effective upon filing pursuant to Rule 462 under the Securities Act of 1933, as amended, and to file the same, with all exhibits thereto and other documents in connection therewith, with the SEC, granting unto said attorneys-in-fact and agents, and each of them, full power and authority to do and perform each and every act and thing requisite and necessary to be done in connection therewith, as fully to all intents and purposes as he or she might or could do in person, hereby ratifying and confirming all that said attorneys-in-fact and agents, or any of them, or their or his substitute or substitutes, may lawfully do or cause to be done by virtue hereof.

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

<u>Signature</u>	<u>Title</u>	<u>Date</u>
<u>/s/ R. Erik Holmlin, Ph.D.</u> R. Erik Holmlin, Ph.D.	President, Chief Executive Officer and Director <i>(Principal Executive Officer)</i>	October 26, 2023
<u>/s/ Gülsen Kama</u> Gülsen Kama	Chief Financial Officer <i>(Principal Financial and Accounting Officer)</i>	October 26, 2023
<u>/s/ David L. Barker, Ph.D.</u> David L. Barker, Ph.D.	Director	October 26, 2023
<u>/s/ Yvonne Linney, Ph.D.</u> Yvonne Linney, Ph.D.	Director	October 26, 2023
<u>/s/ Albert A. Luderer, Ph.D.</u> Albert A. Luderer, Ph.D.	Director	October 26, 2023
<u>/s/ Hannah Mamuszka</u> Hannah Mamuszka	Director	October 26, 2023
<u>/s/ Aleksandar Rajkovic, M.D., Ph.D.</u> Aleksandar Rajkovic, M.D., Ph.D.	Director	October 26, 2023
<u>/s/ Christopher Twomey</u> Christopher Twomey	Director	October 26, 2023
<u>/s/ Kristiina Vuori, M.D., Ph.D.</u> Kristiina Vuori, M.D., Ph.D.	Director	October 26, 2023
<u>/s/ Vincent Wong, J.D., M.B.A.</u> Vincent Wong, J.D., M.B.A.	Director	October 26, 2023

FORM OF WARRANT

BIONANO GENOMICS, INC.

WARRANT TO PURCHASE COMMON STOCK

Warrant No.: BNGOW-1

Number of Shares of Common Stock: 21,660,650

Date of Issuance: [], 2023 (“**Issuance Date**”)

Bionano Genomics, Inc., a corporation organized under the laws of Delaware (the “**Company**”), hereby certifies that, for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, [***], the registered holder hereof or its permitted assigns (the “**Holder**”), is entitled, subject to the terms set forth below, to purchase from the Company, at the Exercise Price (as defined below) then in effect, at any time or times on or after the Issuance Date (the “**Initial Exercisability Date**”), but not after 11:59 p.m., New York time, on the Expiration Date (as defined below), 21,660,650 duly authorized, validly issued, fully paid and non-assessable shares of Common Stock (as defined below), subject to adjustment as provided herein (the “**Warrant Shares**”). Except as otherwise defined herein, capitalized terms in this Warrant to Purchase Common Stock (including any Warrants to Purchase Common Stock issued in exchange, transfer or replacement hereof, this “**Warrant**”), shall have the meanings set forth in Section 18. This Warrant is one of the Warrants to Purchase Common Stock (the “**Warrants**”) issued pursuant to that certain Securities Purchase Agreement (the “**Securities Purchase Agreement**”), dated as of October 11, 2023 (the “**Subscription Date**”) by and between the Company and the Holder.

1. EXERCISE OF WARRANT.

(a) **Mechanics of Exercise.** Subject to the terms and conditions hereof (including, without limitation, the limitations set forth in Section 1(f), this Warrant may be exercised by the Holder at any time or times on or after the Initial Exercisability Date, in whole or in part, by delivery (whether via electronic mail or otherwise) of a duly completed and executed written notice, in the form attached hereto as Exhibit A (the “**Exercise Notice**”), of the Holder’s election to exercise this Warrant. Within two Trading Days (as defined below) following the delivery of the Exercise Notice, the Holder shall make payment to the Company of an amount equal to the Exercise Price in effect on the date of such exercise multiplied by the number of Warrant Shares as to which this Warrant is being exercised (the “**Aggregate Exercise Price**”) in cash by wire transfer of immediately available funds or, if the provisions of Section 1(d) are applicable, by notifying the Company that this Warrant is being exercised pursuant to a Cashless Exercise (as defined in Section 1(d)). The Holder shall not be required to deliver the original Warrant in order to effect an exercise hereunder, nor shall any ink-original signature or medallion guarantee (or other type of guarantee or notarization) with respect to any Exercise Notice be required. Execution and delivery of the Exercise Notice with respect to less than all of the Warrant Shares shall have the same effect as cancellation of the original Warrant and issuance of a new Warrant evidencing the right to purchase the remaining number of Warrant Shares and the Holder shall not be required to physically surrender this Warrant to the Company until the Holder has purchased all of the Warrant Shares available hereunder and this Warrant has been exercised in full, in which case, the Holder shall surrender this Warrant to the Company for cancellation within three Trading Days of the date on which the final Exercise Notice is delivered to the Company. On or before the first Trading Day following the date on which the Holder has delivered the applicable Exercise Notice, the Company shall transmit by electronic mail a duly executed and completed acknowledgment of confirmation of receipt of the Exercise Notice, in the form attached to the Exercise Notice, to the Holder and the Company’s transfer agent (the “**Transfer Agent**”). So long as the Holder delivers the Aggregate Exercise Price (or notice of a Cashless Exercise, if applicable) on or prior to the second Trading Day following the date on which the Exercise Notice has been delivered (or deemed to have been delivered) to the Company, then on or prior to the earlier of (i) the second Trading Day and (ii) the number of Trading Days comprising the Standard Settlement Period, in each case following the date on which the Exercise Notice has been delivered (or deemed to have been delivered) to the Company, or, if the Holder does not deliver the Aggregate Exercise Price (or notice of a Cashless Exercise, if applicable) on or prior to the second Trading Day following the date on which the Exercise Notice has been delivered (or deemed to have been delivered) to the Company, then on or prior to the first Trading Day following the date on which the Aggregate Exercise Price (or notice of a Cashless Exercise, if applicable) is delivered (such earlier date, or if later, the earliest day on which the Company is required to deliver Warrant Shares pursuant to this Section 1(a), the “**Share Delivery Date**”), the Company shall (X) provided that the Transfer Agent is participating in The Depository Trust Company (“**DTC**”) Fast Automated Securities Transfer Program (“**FAST**”), credit such aggregate number of Warrant Shares to which the Holder is entitled pursuant to such exercise to the Holder’s or its designee’s balance account with DTC through its Deposit / Withdrawal At Custodian system, or (Y) if the Transfer Agent is not participating in FAST, issue and dispatch by overnight courier to the physical address or email address as specified in the Exercise Notice, a certificate or evidence of a credit of book-entry shares, registered in the name of the Holder or its designee, for the number of Warrant Shares to which the Holder is entitled pursuant to such exercise. The Company shall be responsible for all fees and expenses of the Transfer Agent and all fees and expenses with respect to the issuance of Warrant Shares via DTC, if any, including without limitation for same day processing. Upon delivery (or deemed delivery) of the Exercise Notice, the Holder shall be deemed for all corporate purposes to have become the holder of record and beneficial owner of the Warrant Shares with respect to which this Warrant has been exercised, irrespective of the date such Warrant Shares are credited to the Holder’s DTC account or the date of delivery of the certificates evidencing such Warrant Shares, as the case may be. If this Warrant is physically delivered to the Company in connection with any exercise pursuant to this Section 1(a) and the number of Warrant Shares represented by this Warrant submitted for exercise is greater than the number of Warrant Shares being acquired upon an exercise, then the Company shall as soon as practicable and in no event later than three Trading Days after any exercise and at its own expense, issue and deliver to the Holder (or its designee) a new Warrant (in accordance with Section 7(d)) representing the right to purchase the number of Warrant Shares issuable immediately prior to such exercise under this Warrant, less the number of Warrant Shares with respect to which this Warrant is exercised. No fractional Warrant Shares are to be issued upon the exercise of this Warrant, but rather the number of Warrant Shares to be issued shall be rounded to the nearest whole number. The Company shall pay any and all transfer, stamp, issuance and similar taxes, costs and expenses (including, without limitation, fees and expenses of the Transfer Agent) which may be payable with respect to the issuance and delivery of Warrant Shares upon exercise of this Warrant; provided, that the Company shall not be required to pay any tax or governmental charge that may be imposed with respect to any applicable withholding or the issuance or delivery of the Warrant Shares to any Person other than the Holder, and no such issuance or delivery shall be made unless and until the Person requesting such issuance has paid to the Company the amount of any such tax or governmental charge, or has established to the satisfaction of the Company that such tax or governmental charge has been paid. The Company’s obligations to issue and deliver Warrant Shares in accordance with the terms and subject to the conditions hereof are absolute and unconditional, irrespective of any action or inaction by the Holder to enforce the same, any waiver or consent with respect to any provision hereof (except for consents and waivers provided pursuant to Section 9), the recovery of any judgment against any Person or any action to enforce the same, or any setoff, counterclaim, recoupment, limitation or termination; provided, however, that the Company shall not be required to deliver Warrant Shares with respect to an exercise prior to the Holder’s delivery of the Aggregate Exercise Price (or notice of a Cashless Exercise) with respect to such exercise.

(b) Exercise Price. For purposes of this Warrant, “**Exercise Price**” means \$3.1855 per share, subject to adjustment as provided herein.

(c) Company’s Failure to Timely Deliver Securities. If the Company shall fail for any reason or for no reason on or prior to the applicable Share Delivery Date, if (x) the Transfer Agent is not participating in FAST, to issue to the Holder a certificate or evidence of a book-entry credit for the number of Warrant Shares to which the Holder is entitled and register such Common Stock on the Company’s share register or (y) the Transfer Agent is participating in FAST, to credit the Holder’s balance account with DTC, for such number of Warrant Shares to which the Holder is entitled upon the Holder’s exercise of this Warrant (such shares to which Holder is entitled being, the “**Exercise Notice Warrant Shares**”), then, in addition to all other remedies available to the Holder, if on or prior to the applicable Share Delivery Date the Holder is required by its broker to purchase (in an open market transaction or otherwise) or the Holder’s brokerage firm otherwise purchases, shares of Common Stock to deliver in satisfaction of a sale by the Holder of the Warrant Shares which the Holder anticipated receiving upon such exercise (a “**Buy-In**”), then the Company shall, within five Trading Days after the Holder’s request, (A) pay in cash to the Holder the amount, if any, by which (x) the Holder’s total purchase price (including brokerage commissions, if any) for the shares of Common Stock so purchased exceeds (y) the amount obtained by multiplying (1) the number of Warrant Shares that the Company was required to deliver to the Holder in connection with the exercise at issue by (2) the price at which the sell order giving rise to such purchase obligation was executed, and (B) at the option of the Holder, either reinstate the portion of the Warrant and equivalent number of Warrant Shares for which such exercise was not honored (in which case such exercise shall be deemed rescinded) or deliver to the Holder the number of shares of Common Stock that would have been issued had the Company timely complied with its exercise and delivery obligations hereunder. For example, if the Holder purchases Common Stock having a total purchase price of \$11,000 to cover a Buy-In with respect to an attempted exercise of the Warrant with an aggregate sale price giving rise to such purchase obligation of \$10,000, under clause (A) of the immediately preceding sentence the Company shall be required to pay the Holder \$1,000. The Holder shall provide the Company written notice indicating the amounts payable to the Holder in respect of the Buy-In and, upon request of the Company, written evidence of the amount of such loss. Nothing herein shall limit a Holder’s right to pursue any other remedies available to it hereunder, at law or in equity including, without limitation, a decree of specific performance and/or injunctive relief with respect to the Company’s failure to timely deliver shares of Common Stock upon exercise of the Warrant as required pursuant to the terms hereof. As of the Issuance Date, the Company’s current transfer agent participates in FAST. In the event that the Company changes transfer agents while this Warrant is outstanding, the Company shall use commercially reasonable efforts to select a transfer agent that participates in FAST. While this Warrant is outstanding, the Company shall request its transfer agent to participate in FAST with respect to this Warrant. In addition to the foregoing rights, (i) if the Company fails to deliver the applicable number of Warrant Shares upon an exercise pursuant to Section 1 by the applicable Share Delivery Date, then the Holder shall have the right to rescind such exercise in whole or in part and retain and/or have the Company return, as the case may be, any portion of this Warrant that has not been exercised pursuant to such Exercise Notice; provided that the rescission of an exercise shall not affect the Company’s obligation to make any payments that have accrued prior to the date of such notice pursuant to this Section 1(c) or otherwise, and (ii) if a registration statement (which may be the Company’s Registration Statement on Form S-3, as amended (File number 333-270459 (the “**Registration Statement**”))) covering the issuance or resale of the Warrant Shares that are subject to an Exercise Notice is not available for the issuance or resale, as applicable of such Exercise Notice Warrant Shares and the Holder has submitted an Exercise Notice prior to receiving notice of the non-availability of such registration statement and the Company has not already delivered the Warrant Shares underlying such Exercise Notice electronically without any restrictive legend by crediting such aggregate number of Warrant Shares to which the Holder is entitled pursuant to such exercise to the Holder’s or its designee’s balance account with DTC through its Deposit / Withdrawal At Custodian system, the Holder shall have the option, by delivery of notice to the Company, to (x) rescind such Exercise Notice in whole or in part and retain or have returned, as the case may be, any portion of this Warrant that has not been exercised pursuant to such Exercise Notice; provided that the rescission of an Exercise Notice shall not affect the Company’s obligation to make any payments that have accrued prior to the date of such notice pursuant to this Section 1(c) or otherwise, and/or (y) modify the Exercise Notice to provide for Cashless Exercise of some or all of the portion of the Warrant exercised. In addition to the foregoing, if the Company fails for any reason to deliver to the Holder the Warrant Shares subject to an Exercise Notice by the second Trading Day following the Share Delivery Date, the Company shall pay to the Holder, in cash, as liquidated damages and not as a penalty, for each \$1,000 of Warrant Shares subject to such exercise (based on the Weighted Average Price of the Common Stock on the date of the applicable Exercise Notice), \$10 per Trading Day (increasing to \$20 per Trading Day on the fifth Trading Day after such liquidated damages begin to accrue) for each Trading Day after the Share Delivery Date until such Warrant Shares are delivered or Holder rescinds such exercise.

(d) **Cashless Exercise.** Notwithstanding anything contained herein to the contrary, at any time when a registration statement (which may be the Registration Statement) covering the issuance or resale of the applicable Exercise Notice Warrant Shares is not available for the issuance or resale, as applicable of such Exercise Notice Warrant Shares, then in lieu of making the cash payment otherwise contemplated to be made to the Company upon such exercise in payment of the Aggregate Exercise Price, the Holder may elect to receive upon such exercise the “Net Number” of shares of Common Stock determined according to the following formula (a “**Cashless Exercise**”):

$$\text{Net Number} = \frac{(A \times B) - (A \times C)}{B}$$

For purposes of the foregoing formula:

A= the total number of shares with respect to which this Warrant is then being exercised.

B= as applicable: (i) the Closing Sale Price of the Common Stock on the Trading Day immediately preceding the date of the applicable Exercise Notice if such Exercise Notice is (1) both executed and delivered pursuant to Section 1(a) hereof on a day that is not a Trading Day or (2) both executed and delivered pursuant to Section 1(a) hereof on a Trading Day prior to the opening of “regular trading hours” (as defined in Rule 600(b)(77) of Regulation NMS promulgated under the federal securities laws) on such Trading Day, (ii) at the option of the Holder, either (y) the Weighted Average Price on the Trading Day immediately preceding the date of the applicable Exercise Notice or (z) the Bid Price of the Common Stock as of the time of the Holder’s execution of the applicable Exercise Notice if such Exercise Notice is executed during “regular trading hours” on a Trading Day and is delivered within two hours thereafter (including until two hours after the close of “regular trading hours” on a Trading Day) pursuant to Section 1(a) hereof or (iii) the Closing Sale Price of the Common Stock on the date of the applicable Exercise Notice if the date of such Exercise Notice is a Trading Day and such Exercise Notice is both executed and delivered pursuant to Section 1(a) hereof after the close of “regular trading hours” on such Trading Day.

C= the Exercise Price then in effect for the applicable Warrant Shares at the time of such exercise.

If Warrant Shares are issued in such a cashless exercise, the Company acknowledges and agrees that in accordance with Section 3(a)(9) of the Securities Act of 1933, as amended, the Warrant Shares shall take on the registered characteristics of the Warrants being exercised, and the holding period of the Warrants being exercised (and any prior securities that were exchanged for the Warrants in accordance with Section 3(a)(9) of the Securities Act) may be tacked on to the holding period of the Warrant Shares. The Company agrees not to take any position contrary to this Section 1(d). Without limiting the rights of a Holder to receive Warrant Shares on a “cashless exercise,” and to receive the cash payments contemplated pursuant to Sections 1(c) and 4(b), in no event will the Company be required to net cash settle a Warrant exercise. Any Cashless Exercise of this Warrant shall have the effect of lowering the outstanding number of Warrant Shares purchasable hereunder by an amount equal to the number of Warrant Shares that would be issuable upon exercise of this Warrant in accordance with the terms of this Warrant if such exercise were by means of a cash exercise rather than a Cashless Exercise and not the number of Warrant Shares actually received by the Holder.

(e) Disputes. In the case of a dispute as to the determination of the Exercise Price or the arithmetic calculation of the Warrant Shares, the Company shall promptly issue to the Holder the number of Warrant Shares that are not disputed and resolve such dispute in accordance with Section 11.

(f) Beneficial Ownership Limitation. Notwithstanding anything to the contrary contained herein, the Company shall not effect the exercise of any portion of this Warrant, and the Holder shall not have the right to exercise any portion of this Warrant, pursuant to the terms and conditions of this Warrant and any such exercise shall be null and void and treated as if never made, to the extent that after giving effect to such exercise, the Holder together with the other Attribution Parties collectively would beneficially own in the aggregate in excess of 4.99% (the “**Maximum Percentage**”) of the number of shares of Common Stock outstanding immediately after giving effect to such exercise. For purposes of the foregoing sentence, the aggregate number of shares of Common Stock beneficially owned by the Holder and the other Attribution Parties shall include the number of shares of Common Stock held by the Holder and all other Attribution Parties plus the number of shares of Common Stock issuable upon exercise of this Warrant with respect to which the determination of such sentence is being made, but shall exclude the number of shares of Common Stock which would be issuable upon (A) exercise of the remaining, unexercised portion of this Warrant beneficially owned by the Holder or any of the other Attribution Parties and (B) exercise or conversion of the unexercised or unconverted portion of any other securities of the Company (including, without limitation, any convertible notes or convertible preferred stock or warrants, including any other Warrants) beneficially owned by the Holder or any other Attribution Party subject to a limitation on conversion or exercise analogous to the limitation contained in this Section 1(f). For purposes of this Section 1(f), beneficial ownership shall be calculated in accordance with Section 13(d) of the Securities Exchange Act of 1934, as amended (the “**1934 Act**”). For purposes of this Warrant, in determining the number of outstanding shares of Common Stock the Holder may acquire upon the exercise of this Warrant without exceeding the Maximum Percentage, the Holder may rely on the number of outstanding shares of Common Stock as reflected in (x) the Company’s most recent Annual Report on Form 10-K, Quarterly Report on Form 10-Q, Current Reports on Form 8-K or other public filing with the Securities and Exchange Commission (the “**SEC**”), as the case may be, (y) a more recent public announcement by the Company or (z) any other written notice by the Company or the Transfer Agent setting forth the number of shares of Common Stock outstanding (the “**Reported Outstanding Share Number**”). If the Company receives an Exercise Notice from the Holder at a time when the actual number of outstanding shares of Common Stock is less than the Reported Outstanding Share Number, the Company shall (i) notify the Holder in writing of the number of shares of Common Stock then outstanding and, to the extent that such Exercise Notice would otherwise cause the Holder’s beneficial ownership, as determined pursuant to this Section 1(f), to exceed the Maximum Percentage, the Holder must notify the Company of a reduced number of Warrant Shares to be purchased pursuant to such Exercise Notice (the number of shares by which such purchase is reduced, the “**Reduction Shares**”) and (ii) as soon as reasonably practicable, the Company shall return to the Holder any exercise price paid by the Holder for the Reduction Shares. For any reason at any time, upon the written or oral request of the Holder, the Company shall within one Business Day confirm in writing or by electronic mail to the Holder the number of shares of Common Stock then outstanding. In any case, the number of outstanding shares of Common Stock shall be determined after giving effect to the conversion or exercise of securities of the Company, including this Warrant, by the Holder and any other Attribution Party since the date as of which the Reported Outstanding Share Number was reported. In the event that the issuance of Common Stock to the Holder upon exercise of this Warrant results in the Holder and the other Attribution Parties being deemed to beneficially own, in the aggregate, more than the Maximum Percentage of the number of outstanding shares of Common Stock (as determined under Section 13(d) of the 1934 Act), the number of shares so issued by which the Holder’s and the other Attribution Parties’ aggregate beneficial ownership exceeds the Maximum Percentage (the “**Excess Shares**”) shall be deemed null and void and shall be cancelled ab initio, and the Holder shall not have the power to vote or to transfer the Excess Shares. As soon as reasonably practicable after the issuance of the Excess Shares has been deemed null and void, the Company shall return to the Holder the exercise price paid by the Holder for the Excess Shares. Upon delivery of a written notice to the Company, the Holder may from time to time increase or decrease the Maximum Percentage to any other percentage not in excess of 9.99% as specified in such notice; provided that (i) any such increase in the Maximum Percentage will not be effective until the 61st day after such notice is delivered to the Company and (ii) any such increase or decrease will apply only to the Holder and the other Attribution Parties and not to any other holder of Warrants that is not an Attribution Party of the Holder. For purposes of clarity, the shares of Common Stock issuable pursuant to the terms of this Warrant in excess of the Maximum Percentage shall not be deemed to be beneficially owned by the Holder for any purpose including for purposes of Section 13(d) or Rule 16a-1(a)(1) of the 1934 Act. No prior inability to exercise this Warrant pursuant to this paragraph shall have any effect on the applicability of the provisions of this paragraph with respect to any subsequent determination of exercisability. The provisions of this paragraph shall be construed and implemented in a manner otherwise than in strict conformity with the terms of this Section 1(f) to the extent necessary to correct this paragraph or any portion of this paragraph which may be defective or inconsistent with the intended beneficial ownership limitation contained in this Section 1(f) or to make changes or supplements necessary or desirable to properly give effect to such limitation. The limitation contained in this paragraph may not be waived and shall apply to a successor holder of this Warrant. The Holder hereby acknowledges and agrees that the Company shall be entitled to rely on the representations and other information set forth in any Exercise Notice and shall not be required to independently verify whether any exercise of this Warrant would cause the Holder (together with the other Attribution Parties) to collectively beneficially own in excess of the Maximum Percentage of the number of shares of Common Stock outstanding after giving effect to such exercise or otherwise trigger the provisions of this Section 1(f).

(g) Required Reserve Amount. So long as this Warrant remains outstanding, the Company shall at all times keep reserved for issuance under this Warrant a number of shares of Common Stock at least equal to 100% of the maximum number of shares of Common Stock as shall be necessary to satisfy the Company's obligation to issue shares of Common Stock under the Warrants then outstanding (without regard to any limitations on exercise) (the "**Required Reserve Amount**"); provided, that at no time shall the number of shares of Common Stock reserved pursuant to this Section 1(g) be reduced other than in connection with any exercise of Warrants or such other event covered by Section 2(b). The Required Reserve Amount (including, without limitation, each increase in the number of shares so reserved) shall be allocated pro rata among the holders of the Warrants based on the number of shares of Common Stock issuable upon exercise of Warrants held by each holder thereof on the Issuance Date (without regard to any limitations on exercise) (the "**Authorized Share Allocation**"). In the event that a Holder shall sell or otherwise transfer any of such holder's Warrants, each transferee shall be allocated a pro rata portion of such Holder's Authorized Share Allocation. Any shares of Common Stock reserved and allocated to any Person which ceases to hold any Warrants shall be allocated to the remaining holders of Warrants, pro rata based on the number of shares of Common Stock issuable upon exercise of the Warrants then held by such holders thereof (without regard to any limitations on exercise). Each Warrant Share delivered upon exercise of this Warrant will be a newly issued or treasury share and will be duly and validly issued, fully paid, non-assessable, free from preemptive rights and free of any lien or adverse claim (except to the extent of any lien or adverse claim created by the action or inaction of the Holder or the Person to whom such share will be delivered). If the Common Stock is then listed on any securities exchange, or quoted on any inter-dealer quotation system, then the Company will cause each Warrant Share, when delivered upon such exercise, to be admitted for listing on such exchange or quotation on such system.

(h) Insufficient Authorized Shares. If at any time while this Warrant remains outstanding the Company does not have a sufficient number of authorized and unreserved shares of Common Stock to satisfy its obligation to reserve for issuance the Required Reserve Amount (an “**Authorized Share Failure**”), then the Company shall promptly take all action reasonably necessary to increase the Company’s authorized shares of Common Stock to an amount sufficient to allow the Company to reserve the Required Reserve Amount for this Warrant then outstanding. Without limiting the generality of the foregoing sentence, as soon as practicable after the date of the occurrence of an Authorized Share Failure, but in no event later than 90 days after the occurrence of such Authorized Share Failure, the Company shall hold a meeting of its stockholders for the approval of an increase in the number of authorized shares of Common Stock. In connection with such meeting, the Company shall provide each stockholder with a proxy statement and shall use its reasonable best efforts to solicit its stockholders’ approval of such increase in authorized shares of Common Stock and the Company’s management shall recommend to the Company’s board of directors that it recommend to the stockholders that they approve such proposal. Notwithstanding the foregoing, if at any such time of an Authorized Share Failure, the Company is able to obtain the written consent of a majority of the shares of its issued and outstanding shares of Common Stock to approve the increase in the number of authorized shares of Common Stock, the Company may satisfy this obligation by obtaining such consent and submitting for filing with the SEC an Information Statement on Schedule 14C. In addition to the foregoing, in the event of any Authorized Share Failure that results in the failure of the Company to deliver any shares of Common Stock that would have otherwise been deliverable pursuant to an Exercise Notice (such shares the “**Authorized Shares Failure Shares**”), (1) the Company will promptly pay to the Holder, as liquidated damages and not as a penalty, cash in an amount equal (i) to the product of (x) the number of such Authorized Shares Failure Shares; and (y) the Daily VWAP per share of Common Stock on the date the Holder delivered the applicable Exercise Notice hereunder (or, if such date is not a VWAP Trading Day, the immediately preceding VWAP Trading Day), minus (ii) if such exercise is not a cashless exercise, the Aggregate Exercise Price applicable to such Authorized Shares Failure Shares, to the extent not previously paid; and (2) to the extent the Holder purchases (in an open market transaction or otherwise) shares of Common Stock to deliver in settlement of a sale by the Holder of such Authorized Shares Failure Shares, the Company will reimburse the Holder for (x) any brokerage commissions and other out-of-pocket expenses, if any, of the Holder incurred in connection with such purchases and (y) the excess, if any, of (A) the aggregate purchase price of such purchases over (B) an amount equal to (i) the product of (I) the number of such Authorized Shares Failure Shares purchased by the Holder; and (II) the Daily VWAP per share of Common Stock on the date the Holder delivered the applicable Exercise Notice hereunder (or, if such date is not a VWAP Trading Day, the immediately preceding VWAP Trading Day), minus (ii) if such exercise is not a cashless exercise the Aggregate Exercise Price applicable to such Authorized Shares Failure Shares, to the extent not previously paid. The Holder shall provide the Company written notice indicating the amounts payable to the Holder in respect of the Authorized Shares Failure Shares and, upon request of the Company, written evidence of the amount of such loss.

2. ADJUSTMENT OF EXERCISE PRICE AND NUMBER OF WARRANT SHARES. The Exercise Price and the number of Warrant Shares shall be adjusted from time to time as follows:

(a) Voluntary Adjustment by the Company. The Company may at any time during the term of this Warrant reduce the then-current Exercise Price to any amount and for any period of time deemed appropriate by the Board of Directors of the Company.

(b) Adjustment Upon Subdivision or Combination of Common Stock. If the Company at any time on or after the Subscription Date subdivides (by any stock split, stock dividend, recapitalization or otherwise) one or more classes of its outstanding shares of Common Stock into a greater number of shares, the Exercise Price in effect immediately prior to such subdivision will be proportionately reduced and the number of Warrant Shares will be proportionately increased. If the Company at any time on or after the Subscription Date combines (by combination, reverse stock split or otherwise) one or more classes of its outstanding shares of Common Stock into a smaller number of shares, the Exercise Price in effect immediately prior to such combination will be proportionately increased and the number of Warrant Shares will be proportionately decreased. Any adjustment under this Section 2(b) shall become effective at the close of business on the date the subdivision or combination becomes effective.

3. RIGHTS UPON DISTRIBUTION OF ASSETS. In addition to any adjustments pursuant to Section 2, if, on or after the Subscription Date and on or prior to the Expiration Date, the Company shall declare or make any dividend or other distribution of its assets (or rights to acquire its assets) to holders of shares of Common Stock, by way of return of capital or otherwise (including, without limitation, any distribution of cash, stock or other securities, property, options, evidence of indebtedness or any other assets by way of a dividend, spin-off, reclassification, corporate rearrangement, scheme of arrangement or other similar transaction) (a “**Distribution**”), at any time after the issuance of this Warrant, then, in each such case, the Holder shall be entitled to participate in such Distribution to the same extent that the Holder would have participated therein if the Holder had held the number of shares of Common Stock acquirable upon complete exercise of this Warrant (without regard to any limitations or restrictions on exercise of this Warrant, including without limitation, the Maximum Percentage) immediately before the date on which a record is taken for such Distribution, or, if no such record is taken, the date as of which the record holders of shares of Common Stock are to be determined for the participation in such Distribution (provided, however, that to the extent that the Holder’s right to participate in any such Distribution would result in the Holder and the other Attribution Parties exceeding the Maximum Percentage, then the Holder shall not be entitled to participate in such Distribution to such extent (and shall not be entitled to beneficial ownership of such shares of Common Stock as a result of such Distribution (and beneficial ownership) to such extent) and the portion of such Distribution shall be held in abeyance for the benefit of the Holder until such time or times as its right thereto would not result in the Holder and the other Attribution Parties exceeding the Maximum Percentage, at which time or times the Holder shall be granted such Distribution (and any Distributions declared or made on such initial Distribution or on any subsequent Distribution held similarly in abeyance) to the same extent as if there had been no such limitation). Notwithstanding the foregoing, to the extent a subsidiary of the Company makes a Distribution to the Company or a parent company that is a direct or indirect wholly owned subsidiary of the Company, then the Holder shall not be entitled to participate in such Distribution.

4. PURCHASE RIGHTS; FUNDAMENTAL TRANSACTIONS.

(a) Purchase Rights. In addition to any adjustments pursuant to Section 2, if at any time on or after the Subscription Date and on or prior to the Expiration Date the Company grants, issues or sells any Options, Convertible Securities or rights to purchase stock, warrants, securities or other property pro rata to the record holders of any class of Common Stock (the “**Purchase Rights**”), then the Holder will be entitled to acquire, upon the terms applicable to such Purchase Rights, the aggregate Purchase Rights which the Holder could have acquired if the Holder had held the number of shares of Common Stock acquirable upon complete exercise of this Warrant (without regard to any limitations or restrictions on exercise of this Warrant, including without limitation, the Maximum Percentage) immediately before the date on which a record is taken for the grant, issuance or sale of such Purchase Rights, or, if no such record is taken, the date as of which the record holders of Common Stock are to be determined for the grant, issuance or sale of such Purchase Rights (provided, however, that to the extent that the Holder’s right to participate in any such Purchase Right would result in the Holder and the other Attribution Parties exceeding the Maximum Percentage, then the Holder shall not be entitled to participate in such Purchase Right to such extent (and shall not be entitled to beneficial ownership of such Common Stock as a result of such Purchase Right (and beneficial ownership) to such extent) and such Purchase Right to such extent shall be held in abeyance for the benefit of the Holder until such time or times as its right thereto would not result in the Holder and the other Attribution Parties exceeding the Maximum Percentage, at which time or times the Holder shall be granted such right (and any Purchase Right granted, issued or sold on such initial Purchase Right or on any subsequent Purchase Right to be held similarly in abeyance) to the same extent as if there had been no such limitation).

(b) Fundamental Transaction. The Company shall not enter into or be party to a Fundamental Transaction unless the Successor Entity assumes in writing all of the obligations of the Company under this Warrant in accordance with the provisions of this Section 4(b), including agreements to deliver to the Holder in exchange for this Warrant a security of the Successor Entity evidenced by a written instrument substantially similar in form and substance to this Warrant, including, without limitation, which is exercisable for a corresponding number of shares of capital stock equivalent to the shares of Common Stock acquirable and receivable upon exercise of this Warrant (without regard to any limitations on the exercise of this Warrant) prior to such Fundamental Transaction, and with an exercise price which applies the exercise price hereunder to such shares of capital stock (but taking into account the relative value of the shares of Common Stock pursuant to such Fundamental Transaction and the value of such shares of capital stock, such adjustments to the number of shares of capital stock and such exercise price being for the purpose of protecting the economic value of this Warrant immediately prior to the consummation of such Fundamental Transaction). Upon the consummation of each Fundamental Transaction, the Successor Entity shall succeed to, and be substituted for the Company (so that from and after the date of the applicable Fundamental Transaction, the provisions of this Warrant and the other Transaction Documents referring to the “Company” shall refer instead to the Successor Entity), and may exercise every right and power of the Company and shall assume all of the obligations of the Company under this Warrant with the same effect as if such Successor Entity had been named as the Company herein. Upon consummation of each Fundamental Transaction, the Successor Entity shall deliver to the Holder confirmation that there shall be issued upon exercise of this Warrant at any time after the consummation of the applicable Fundamental Transaction, in lieu of the shares of Common Stock (or other securities, cash, assets or other property (except such items still issuable under Sections 3 and 4(a), which shall continue to be receivable thereafter)) issuable upon the exercise of this Warrant prior to the applicable Fundamental Transaction, such shares of common stock (or its equivalent) of the Successor Entity (including its Parent Entity) which the Holder would have been entitled to receive upon the happening of the applicable Fundamental Transaction had this Warrant been exercised immediately prior to the applicable Fundamental Transaction (without regard to any limitations on the exercise of this Warrant), as adjusted in accordance with the provisions of this Warrant. Notwithstanding the foregoing, and without limiting Section 1(f) hereof, the Holder may elect, at its sole option, by delivery of written notice to the Company to waive this Section 4(b) to permit the Fundamental Transaction without the assumption of this Warrant. In addition to and not in substitution for any other rights hereunder, prior to the consummation of each Fundamental Transaction pursuant to which holders of shares of Common Stock are entitled to receive securities or other assets with respect to or in exchange for shares of Common Stock (a “**Corporate Event**”), the Company shall make appropriate provision to insure that the Holder will thereafter have the right to receive upon an exercise of this Warrant at any time after the consummation of the applicable Fundamental Transaction but prior to the Expiration Date, in lieu of the shares of the Common Stock (or other securities, cash, assets or other property (except such items still issuable under Sections 3 and 4(a), which shall continue to be receivable thereafter)) issuable upon the exercise of the Warrant prior to such Fundamental Transaction, such shares of stock, securities, cash, assets or any other property whatsoever (including warrants or other purchase or subscription rights) which the Holder would have been entitled to receive upon the happening of the applicable Fundamental Transaction had this Warrant been exercised immediately prior to the applicable Fundamental Transaction (without regard to any limitations on the exercise of this Warrant). The provision made pursuant to the preceding sentence shall be in a form and substance reasonably satisfactory to the Holder. The provisions of this Section 4(b) shall apply similarly and equally to successive Fundamental Transactions and Corporate Events. Notwithstanding the foregoing, in the event of a Change of Control, at the request of the Holder delivered before the 30th day after such Change of Control, the Company (or the Successor Entity) shall purchase this Warrant from the Holder by paying to the Holder, within five (5) Business Days after such request (or, if later, on the effective date of the Change of Control), an amount equal to the Black Scholes Value of the remaining unexercised portion of this Warrant on the effective date of such Change of Control, payable in cash; provided, however, that, if the Change of Control is not within the Company’s control, including not approved by the Company’s Board of Directors, Holder shall only be entitled to receive from the Company or any Successor Entity, as of the date of consummation of such Change of Control, the same type or form of consideration (and in the same proportion), at the Black Scholes Value of the unexercised portion of this Warrant, that is being offered and paid to the holders of Common Stock of the Company in connection with the Change of Control, whether that consideration be in the form of cash, stock or any combination thereof, or whether the holders of Common Stock are given the choice to receive from among alternative forms of consideration in connection with the Change of Control; provided, further, that if holders of Common Stock are not offered or paid any consideration in such Change of Control, such holders of Common Stock will be deemed to have received common stock of the Successor Entity (which entity may be the Company following such Change of Control) in such Change of Control.

5. NONCIRCUMVENTION. The Company hereby covenants and agrees that the Company will not, by amendment of its Certificate of Incorporation or Bylaws, or through any reorganization, transfer of assets, consolidation, merger, scheme of arrangement, dissolution, issuance or sale of securities, or any other voluntary action, avoid or seek to avoid the observance or performance of any of the terms of this Warrant, and will at all times in good faith carry out all of the provisions of this Warrant and take all action as may be required to protect the rights of the Holder. Without limiting the generality of the foregoing, the Company (i) shall not increase the par value of any shares of Common Stock receivable upon the exercise of this Warrant above the Exercise Price then in effect, (ii) shall take all such actions as may be necessary or appropriate in order that the Company may validly and legally issue fully paid and nonassessable shares of Common Stock upon the exercise of this Warrant, and (iii) shall, so long as any of the Warrants are outstanding, take all action necessary to reserve and keep available out of its authorized and unissued shares of Common Stock, solely for the purpose of effecting the exercise of the Warrants, the number of shares of Common Stock as shall from time to time be necessary to effect the exercise of the Warrants then outstanding (without regard to any limitations on exercise).

6. WARRANT HOLDER NOT DEEMED A STOCKHOLDER. Except as otherwise specifically provided herein, the Holder, solely in such Person's capacity as a holder of this Warrant, shall not be entitled to vote or receive dividends or be deemed the holder of capital stock of the Company for any purpose, nor shall anything contained in this Warrant be construed to confer upon the Holder, solely in such Person's capacity as the Holder of this Warrant, any of the rights of a stockholder of the Company or any right to vote, give or withhold consent to any corporate action (whether any reorganization, issue of stock, reclassification of stock, consolidation, merger, conveyance or otherwise), receive notice of meetings, receive dividends or subscription rights, or otherwise, prior to the issuance to the Holder of the Warrant Shares which such Person is then entitled to receive upon the due exercise of this Warrant. In addition, nothing contained in this Warrant shall be construed as imposing any liabilities on the Holder to purchase any securities (upon exercise of this Warrant or otherwise) or as a stockholder of the Company, whether such liabilities are asserted by the Company or by creditors of the Company. Notwithstanding this Section 6, the Company shall provide the Holder with copies of the same notices and other information given to the stockholders of the Company generally, contemporaneously with the giving thereof to the stockholders.

(a) Transfer of Warrant. If this Warrant is to be transferred, the Holder shall notify the Company in writing and surrender this Warrant to the Company, whereupon the Company will forthwith issue and deliver upon the order of the Holder a new Warrant (in accordance with Section 7(d)), registered as the Holder may request, representing the right to purchase the number of Warrant Shares being transferred by the Holder and, if less than the total number of Warrant Shares then underlying this Warrant is being transferred, a new Warrant (in accordance with Section 7(d)) to the Holder representing the right to purchase the number of Warrant Shares not being transferred. The Company shall not be obligated to pay any tax or governmental charge which may be payable with respect to any transfer (or deemed transfer) arising in connection with the registration of any certificates for Warrant Shares or Warrants in the name of any Person other than the Holder.

(b) Lost, Stolen or Mutilated Warrant. Upon receipt by the Company of evidence reasonably satisfactory to the Company of the loss, theft, destruction or mutilation of this Warrant, and, in the case of loss, theft or destruction, of any indemnification undertaking by the Holder to the Company in customary form (but without the obligation to post a bond) and, in the case of mutilation, upon surrender and cancellation of this Warrant, the Company shall execute and deliver to the Holder a new Warrant (in accordance with Section 7(d)) representing the right to purchase the Warrant Shares then underlying this Warrant.

(c) Exchangeable for Multiple Warrants. This Warrant is exchangeable, upon the surrender hereof by the Holder at the principal office of the Company, for a new Warrant or Warrants (in accordance with Section 7(d)) representing in the aggregate the right to purchase the number of Warrant Shares then underlying this Warrant, and each such new Warrant will represent the right to purchase such portion of such Warrant Shares as is designated by the Holder at the time of such surrender.

(d) Issuance of New Warrants. Whenever the Company is required to issue a new Warrant pursuant to the terms of this Warrant, such new Warrant (i) shall be of like tenor with this Warrant, (ii) shall represent, as indicated on the face of such new Warrant, the right to purchase the Warrant Shares then underlying this Warrant (or in the case of a new Warrant being issued pursuant to Section 7(a) or Section 7(c), the Warrant Shares designated by the Holder which, when added to the number of shares of Common Stock underlying the other new Warrants issued in connection with such issuance, does not exceed the number of Warrant Shares then underlying this Warrant), (iii) shall have an issuance date, as indicated on the face of such new Warrant which is the same as the Issuance Date, and (iv) shall have the same rights and conditions as this Warrant.

8. NOTICES. Whenever notice is required to be given under this Warrant, including, without limitation, an Exercise Notice, unless otherwise provided herein, such notice shall be given in writing, (i) if delivered (a) from within the domestic United States, by first-class registered or certified airmail (return receipt requested), or nationally recognized overnight express courier, postage prepaid or electronic mail (including e-mail) or (b) from outside the United States, by International Federal Express or electronic mail, and (ii) will be deemed given (A) if delivered by first-class registered or certified mail domestic, three Business Days after so mailed, (B) if delivered by nationally recognized overnight carrier, one Business Day after so mailed, (C) if delivered by International Federal Express, two Business Days after so mailed and (D) at the time of transmission, if delivered by electronic mail to each of the email addresses specified in this Section 8 prior to 5:00 p.m. (New York time) on a Trading Day and (E) the next Trading Day after the date of transmission, if delivered by electronic mail to each of the email addresses specified in this Section 8 on a day that is not a Trading Day or later than 5:00 p.m. (New York time) on any Trading Day, and will be delivered and addressed as follows:

(i) if to the Company, to:

Bionano Genomics, Inc.
9540 Towne Centre Drive, Suite 100
San Diego, CA 92121
Telephone: [***]
Attention: R. Erik Holmlin, President and Chief Executive Officer
E-mail: [***]

With a copy (for informational purposes only) to:

Cooley LLP
10265 Science Center Drive
San Diego, CA 92121
Attention: Thomas Coll
E-mail: [***]

(ii) if to the Holder, at such address or other contact information delivered by the Holder to Company or as is on the books and records of the Company (provided that, with respect to the Holder, such notice may only be delivered via electronic mail),

With a copy (for informational purposes only) to:

Latham & Watkins LLP
12670 High Bluff Drive
San Diego, CA 92130
Telephone: [***]
Attention: Michael E. Sullivan
Email: [***]

The Company shall provide the Holder with prompt written notice of all actions taken pursuant to this Warrant, including in reasonable detail a description of such action and the reason therefor. Without limiting the generality of the foregoing, the Company will give written notice to the Holder (i) promptly upon any adjustment of the Exercise Price, setting forth in reasonable detail, and certifying, the calculation of such adjustment, (ii) at least fifteen days prior to the date on which the Company closes its books or takes a record (A) with respect to any dividend or distribution upon the shares of Common Stock, (B) with respect to any grants, issuances or sales of any Options, Convertible Securities or rights to purchase stock, warrants, securities or other property pro rata to holders of shares of Common Stock or (C) for determining rights to vote with respect to any Fundamental Transaction, dissolution or liquidation and (iii) ten Business Days (or such shorter period as is reasonably practicable under the circumstances if the Company does not have 10 Business Days' prior notice) prior to the consummation of any Fundamental Transaction; provided in each case that such information shall be made known to the public prior to or in conjunction with such notice being provided to the Holder but only to the extent the information in such notice constitutes material non-public information regarding the Company. It is expressly understood and agreed that the time of exercise specified by the Holder in each Exercise Notice shall be definitive and may not be disputed or challenged by the Company.

9. AMENDMENT AND WAIVER. Except as otherwise provided herein, the provisions of this Warrant may be amended or waived and the Company may take any action herein prohibited, or omit to perform any act herein required to be performed by it, only if the Company has obtained the written consent of the Holder. No waiver by any party shall operate or be construed as a waiver in respect of any failure, breach or default not expressly identified by such written waiver, whether of a similar or different character, and whether occurring before or after that waiver. No failure to exercise, or delay in exercising, any rights, remedy, power or privilege arising from this Warrant shall operate or be construed as a waiver thereof; nor shall any single or partial exercise of any right, remedy, power or privilege hereunder preclude any other or further exercise thereof or the exercise of any other right, remedy, power or privilege.

10. GOVERNING LAW; JURISDICTION; JURY TRIAL. This Warrant shall be governed by and construed and enforced in accordance with, and all questions concerning the construction, validity, interpretation and performance of this Warrant shall be governed by, the internal laws of the State of Delaware, without giving effect to any choice of law or conflict of law provision or rule (whether of the State of Delaware or any other jurisdictions) that would cause the application of the laws of any jurisdictions other than the State of Delaware. Each party hereto hereby irrevocably submits to the exclusive jurisdiction of the Court of Chancery of the State of Delaware, provided that if the Court of Chancery of the State of Delaware does not have jurisdiction, then to the other courts of the State of Delaware, for the adjudication of any dispute hereunder or in connection herewith or with any transaction contemplated hereby or discussed herein, and hereby irrevocably waives, and agrees not to assert in any suit, action or proceeding, any claim that such party is not personally subject to the jurisdiction of such court, that such suit, action or proceeding is brought in an inconvenient forum or that the venue of such suit, action or proceeding is improper. Each party hereby irrevocably waives personal service of process and consents to process being served in any such suit, action or proceeding by mailing a copy thereof to such party at the address set forth with respect to such party in Section 8 or such other address as such party subsequently delivers to the other party and agrees that such service shall constitute good and sufficient service of process and notice thereof. Nothing contained herein shall be deemed to limit in any way any right to serve process in any manner permitted by law. Nothing contained herein shall be deemed or operate to preclude a party hereto from bringing suit or taking other legal action against the other party in any other jurisdiction to collect on its obligations to the other party, to realize on any collateral or any other security for such obligations, or to enforce a judgment or other court ruling in favor of the other party. If either party shall commence an action, suit or proceeding to enforce any provisions of this Warrant, the prevailing party in such action, suit or proceeding shall be reimbursed by the other party for their reasonable attorneys' fees and other costs and expenses incurred with the investigation, preparation and prosecution of such action or proceeding. **EACH PARTY HERETO HEREBY IRREVOCABLY WAIVES ANY RIGHT IT MAY HAVE, AND AGREES NOT TO REQUEST, A JURY TRIAL FOR THE ADJUDICATION OF ANY DISPUTE HEREUNDER OR IN CONNECTION WITH OR ARISING OUT OF THIS WARRANT OR ANY TRANSACTION CONTEMPLATED HEREBY.**

11. DISPUTE RESOLUTION. In the case of a dispute as to the determination of the Exercise Price or the arithmetic calculation of the Warrant Shares, the Company shall submit the disputed determinations or arithmetic calculations via electronic mail within two Business Days of receipt of the Exercise Notice or other event giving rise to such dispute, as the case may be, to the Holder. If the Holder and the Company are unable to agree upon such determination or calculation of the Exercise Price or the Warrant Shares within three Business Days of such disputed determination or arithmetic calculation being submitted to the Holder, then the Company shall, within two Business Days submit via electronic mail (a) the disputed determination of the Exercise Price to an independent, reputable investment bank selected by the Company and approved by the Holder or (b) the disputed arithmetic calculation of the Warrant Shares to the Company's independent, outside accountant. The Company shall cause, at its expense, the investment bank or the accountant, as the case may be, to perform the determinations or calculations and notify the Company and the Holder of the results no later than ten Business Days from the time it receives the disputed determinations or calculations. Such investment bank's or accountant's determination or calculation, as the case may be, shall be binding upon all parties absent demonstrable error.

12. REMEDIES, OTHER OBLIGATIONS, BREACHES AND INJUNCTIVE RELIEF. The remedies provided in this Warrant shall be cumulative and in addition to all other remedies available under this Warrant and any other Transaction Documents, at law or in equity (including a decree of specific performance and/or other injunctive relief), and nothing herein shall limit the right of the Holder or the Company to pursue actual damages for any failure by the other party to comply with the terms of this Warrant. Each of the Company and the Holder acknowledges that a breach by such party of its obligations hereunder will cause irreparable harm to the other party and that the remedy at law for any such breach may be inadequate. The Company and the Holder therefore agree that, in the event of any such breach or threatened breach, the other party shall be entitled, in addition to all other available remedies, to an injunction restraining any breach, without the necessity of showing economic loss and without any bond or other security being required.

13. TRANSFER. This Warrant and the Warrant Shares may be offered for sale, sold, transferred, pledged or assigned without the consent of the Company.

14. SEVERABILITY; CONSTRUCTION; HEADINGS. If any provision of this Warrant is prohibited by law or otherwise determined to be invalid or unenforceable by a court of competent jurisdiction, the provision that would otherwise be prohibited, invalid or unenforceable shall be deemed amended to apply to the broadest extent that it would be valid and enforceable, and the invalidity or unenforceability of such provision shall not affect the validity of the remaining provisions of this Warrant so long as this Warrant as so modified continues to express, without material change, the original intentions of the parties as to the subject matter hereof and the prohibited nature, invalidity or unenforceability of the provision(s) in question does not substantially impair the respective expectations or reciprocal obligations of the parties or the practical realization of the benefits that would otherwise be conferred upon the parties. The parties will endeavor in good faith negotiations to replace the prohibited, invalid or unenforceable provision(s) with a valid provision(s), the effect of which comes as close as possible to that of the prohibited, invalid or unenforceable provision(s). This Warrant shall be deemed to be jointly drafted by the Company and the Holder and shall not be construed against any Person as the drafter hereof. The headings of this Warrant are for convenience of reference and shall not form part of, or affect the interpretation of, this Warrant.

15. DISCLOSURE. Upon delivery by the Company to the Holder (or receipt by the Company from the Holder) of any notice in accordance with the terms of this Warrant, unless the Company has in good faith determined that the matters relating to such notice do not constitute material, non-public information relating to the Company or any of its subsidiaries, the Company shall on or prior to 9:00 am, New York City time on the Business Day immediately following such notice delivery date, publicly disclose such material, non-public information on a Current Report on Form 8-K or otherwise. In the event that the Company believes that a notice contains material, non-public information relating to the Company or any of its subsidiaries, the Company so shall indicate to the Holder explicitly in writing in such notice (or immediately upon receipt of notice from the Holder, as applicable), and in the absence of any such written indication in such notice (or notification from the Company immediately upon receipt of notice from the Holder), the Holder shall be entitled to presume that information contained in the notice does not constitute material, non-public information relating to the Company or any of its subsidiaries. Nothing contained in this Section 15 shall limit any obligations of the Company, or any rights of the Holder, under any other agreement by and between the Company and the Holder.

16 ABSENCE OF TRADING AND DISCLOSURE RESTRICTIONS. The Company acknowledges and agrees that the Holder is not a fiduciary or agent of the Company, the Holder will not have any obligations hereunder except those obligations expressly set forth herein (and in the Securities Purchase Agreement) and the Holder is acting solely in the capacity of an arm's length contractual counterparty to the Company with respect to this Warrant and not as a fiduciary or agent of the Company. The Company agrees that it will not assert any claim against the Holder based on an alleged breach of fiduciary duty by the Holder in connection with this Warrant. The Company acknowledges that the Holder shall have no obligation to (a) maintain the confidentiality of any information provided by the Company or (b) refrain from trading any securities while in possession of such information in the absence of a written non-disclosure agreement signed by an officer of the Holder that explicitly provides for such confidentiality and trading restrictions. In the absence of such an executed, written non-disclosure agreement, the Company acknowledges that the Holder may freely trade in any securities issued by the Company, may possess and use any information provided by the Company in connection with such trading activity, and may disclose any such information to any third party.

17. COUNTERPARTS; ELECTRONIC SIGNATURES. This Warrant may be executed in counterparts, each of which shall be deemed an original, but all of which together shall be deemed to be one and the same agreement. A signed copy of this Warrant delivered by facsimile, e-mail or other means of electronic transmission shall be deemed to have the same legal effect as delivery of an original signed copy of this Warrant. A party's electronic signature (complying with the Electronic Signatures in Global and National Commerce Act of 2000 (15 U.S.C. §§ 7001-7006), the New York Electronic Signatures and Records Act (N.Y. State Tech. §§ 301-309), as amended from time to time, or other applicable law) of this Agreement shall have the same validity and effect as a signature affixed by the party's hand.

18. CERTAIN DEFINITIONS. For purposes of this Warrant, the following terms shall have the following meanings:

(a) **"Affiliate"** means, with respect to any Person, any other Person that directly or indirectly controls, is controlled by, or is under common control with, such Person, it being understood for purposes of this definition that "control" of a Person means the power directly or indirectly either to vote 10% or more of the stock having ordinary voting power for the election of directors of such Person or direct or cause the direction of the management and policies of such Person whether by contract or otherwise.

(b) **"Attribution Parties"** means, collectively, the following Persons and entities: (i) any investment vehicle, including, any funds, feeder funds or managed accounts, currently, or from time to time after the Subscription Date, directly or indirectly managed or advised by the Holder's investment manager or any of its Affiliates or principals, (ii) any direct or indirect Affiliates of the Holder or any of the foregoing, (iii) any Person acting or who could be deemed to be acting as a Group together with the Holder or any of the foregoing and (iv) any other Persons whose beneficial ownership of the Company's Common Stock would or could be aggregated with the Holder's and the other Attribution Parties for purposes of Section 13(d) of the 1934 Act. For clarity, the purpose of the foregoing is to subject collectively the Holder and all other Attribution Parties to the Maximum Percentage.

(c) **“Bid Price”** means, for any security as of the particular time of determination, the bid price for such security on the Principal Market as reported by Bloomberg as of such time of determination, or, if the Principal Market is not the principal securities exchange or trading market for such security, the bid price of such security on the principal securities exchange or trading market where such security is listed or traded as reported by Bloomberg as of such time of determination, or if the foregoing does not apply, the bid price of such security in the over-the-counter market on the electronic bulletin board for such security as reported by Bloomberg as of such time of determination, or, if no bid price is reported for such security by Bloomberg as of such time of determination, the average of the bid prices of any market makers for such security as reported in the “pink sheets” by OTC Markets Group Inc. (formerly Pink Sheets LLC) as of such time of determination. If the Bid Price cannot be calculated for a security as of the particular time of determination on any of the foregoing bases, the Bid Price of such security as of such time of determination shall be the fair market value as mutually determined by the Company and the Holder. If the Company and the Holder are unable to agree upon the fair market value of such security, then such dispute shall be resolved in accordance with the procedures in [Section 11](#). All such determinations shall be appropriately adjusted for any stock dividend, stock split, stock combination or other similar transaction during such period.

(d) **“Black Scholes Value”** means the value of this Warrant based on the Black-Scholes Option Pricing Model obtained from the “OV” function on Bloomberg determined as of the day immediately following the first public announcement of the applicable Change of Control, or, if the Change of Control is not publicly announced, the date the Change of Control is consummated, for pricing purposes and reflecting (i) a risk-free interest rate corresponding to the U.S. Treasury rate for a period equal to the remaining term of this Warrant as of such date of request, (ii) an expected volatility equal to the greater of (a) 60% and (b) the 100-day volatility obtained from the HVT function on Bloomberg (determined utilizing a 365-day annualization factor) as of the Trading Day immediately following the public announcement of the applicable Change of Control, or, if the Change of Control is not publicly announced, the date the Change of Control is consummated, (iii) the underlying price per share used in such calculation shall be the greater of (a) the sum of the price per share being offered in cash, if any, plus the value of any non-cash consideration, if any, being offered in such Change of Control and (b) the greater of (1) the last Weighted Average Price immediately prior to the announcement of such Change of Control, (2) the Weighted Average Price immediately after the announcement of such Change of Control and (3) the last Weighted Average Price immediately prior to the consummation of such Change of Control, (iv) a remaining option time equal to the time between the date of the public announcement of the applicable Change of Control and the Expiration Date and (v) a zero cost of borrow.

(e) **“Bloomberg”** means Bloomberg Financial Markets.

(f) **“Business Day”** means any day other than Saturday, Sunday or other day on which commercial banks in The City of New York are authorized or required by law to remain closed.

(g) **“Change of Control”** means any Fundamental Transaction other than (i) any reorganization, recapitalization or reclassification of the Common Stock in which holders of the Company’s voting power immediately prior to such reorganization, recapitalization or reclassification continue after such reorganization, recapitalization or reclassification to hold publicly traded securities and, directly or indirectly, are, in all material respects, the holders of the voting power of the surviving entity (or entities with the authority or voting power to elect the members of the board of directors (or their equivalent if other than a corporation) of such entity or entities) after such reorganization, recapitalization or reclassification, (ii) pursuant to a migratory merger effected solely for the purpose of changing the jurisdiction of incorporation of the Company or (iii) a merger in connection with a bona fide acquisition by the Company of any Person in which (x) the gross consideration paid, directly or indirectly, by the Company in such acquisition is not equal to or greater than 50% of the Company’s market capitalization as calculated on the date of the announcement of such merger and the date of the consummation of such merger and (y) such merger does not contemplate a change to the identity of a majority of the board of directors of the Company. Notwithstanding anything herein to the contrary, any transaction or series of transactions that, directly or indirectly, results in the Company or the Successor Entity not having Common Stock or common stock, as applicable, registered under the 1934 Act and listed on an Eligible Market shall be deemed a Change of Control.

(h) **“Closing Sale Price”** means, for any security as of any date, the last closing trade price, respectively, for such security on the Principal Market, as reported by Bloomberg, or, if the Principal Market begins to operate on an extended hours basis and does not designate the closing trade price then the last trade price, of such security prior to 4:00:00 p.m., New York time, as reported by Bloomberg, or, if the Principal Market is not the principal securities exchange or trading market for such security, the last trade price of such security on the principal securities exchange or trading market where such security is listed or traded as reported by Bloomberg, or if the foregoing do not apply, the last trade price of such security in the over-the-counter market on the electronic bulletin board for such security as reported by Bloomberg, or, if no last trade price is reported for such security by Bloomberg, the average of the bid prices, or the ask prices, respectively, of any market makers for such security as reported in the OTC Link or on the “pink sheets” by OTC Markets Group Inc. (formerly Pink Sheets LLC). If the Closing Sale Price cannot be calculated for a security on a particular date on any of the foregoing bases, the Closing Sale Price of such security on such date shall be the fair market value as mutually determined by the Company and the Holder. If the Company and the Holder are unable to agree upon the fair market value of such security, then such dispute shall be resolved pursuant to Section 11. All such determinations to be appropriately adjusted for any stock dividend, stock split, stock combination, reclassification or other similar transaction during the applicable calculation period.

(i) **“Common Stock”** means (i) the Company’s Common Stock, par value \$0.0001 per share, and (ii) any capital stock into which such Common Stock shall have been changed or any capital stock resulting from a reclassification of such Common Stock.

(j) **“Convertible Securities”** means any capital stock or other security of the Company or any of its subsidiaries (other than Options) that is at any time and under any circumstances directly or indirectly convertible into, exercisable or exchangeable for, or which otherwise entitles the holder thereof to acquire, any capital stock or other security of the Company (including, without limitation, shares of Common Stock) or any of its subsidiaries.

(k) **“Daily VWAP”** means, for any VWAP Trading Day, the per share volume-weighted average price of the Common Stock on the Principal Market as displayed under the heading “Bloomberg VWAP” on Bloomberg page “BNGO <EQUITY> VAP” (or, if such page is not available, its equivalent successor page) in respect of the period from the scheduled open of trading until the scheduled close of trading of the primary trading session on such VWAP Trading Day (or, if such volume-weighted average price is unavailable, the market value of one share of Common Stock on such VWAP Trading Day, determined, using a volume-weighted average price method, by a nationally recognized independent investment banking firm selected by the Company). The Daily VWAP will be determined without regard to after-hours trading or any other trading outside of the regular trading session.

(l) **“Eligible Market”** means The Nasdaq Capital Market, the NYSE American LLC, The Nasdaq Global Select Market, The Nasdaq Global Market or The New York Stock Exchange, Inc.

(m) **“Expiration Date”** means the date that is five years after the Issuance Date or, if such date falls on a day other than a Business Day or on which trading does not take place on the Principal Market (a **“Holiday”**), the next day that is not a Holiday.

(n) **“Fundamental Transaction”** means (A) that the Company shall, directly or indirectly, including through subsidiaries, Affiliates or otherwise, in one or more related transactions, (i) consolidate or merge with or into (whether or not the Company is the surviving corporation) another Subject Entity, (ii) sell, assign, transfer, convey or otherwise dispose of all or substantially all of the properties or assets of the Company or any of its “significant subsidiaries” (as defined in Rule 1-02 of Regulation S-X) to one or more Subject Entities, (iii) make, or allow one or more Subject Entities to make, or allow the Company to be subject to or have its shares of Common Stock be subject to or party to one or more Subject Entities making, a purchase, tender or exchange offer that is accepted by the holders of at least either (x) 50% of the outstanding shares of Common Stock, (y) 50% of the outstanding shares of Common Stock calculated as if any shares of Common Stock held by all Subject Entities making or party to, or Affiliated with any Subject Entities making or party to, such purchase, tender or exchange offer were not outstanding, or (z) such number of shares of Common Stock such that all Subject Entities making or party to, or Affiliated with any Subject Entity making or party to, such purchase, tender or exchange offer, become collectively the beneficial owners (as defined in Rule 13d-3 under the 1934 Act) of more than 50% of the outstanding shares of Common Stock, (iv) consummate a stock purchase agreement or other business combination (including, without limitation, a reorganization, recapitalization, spin-off or scheme of arrangement) with one or more Subject Entities whereby all such Subject Entities, individually or in the aggregate, acquire, either (x) more than 50% of the outstanding shares of Common Stock, (y) more than 50% of the outstanding shares of Common Stock calculated as if any shares of Common Stock held by all the Subject Entities making or party to, or Affiliated with any Subject Entity making or party to, such stock purchase agreement or other business combination were not outstanding, or (z) such number of shares of Common Stock such that the Subject Entities become collectively the beneficial owners (as defined in Rule 13d-3 under the 1934 Act) of more than 50% of the outstanding shares of Common Stock, or (v) reorganize, recapitalize or reclassify its shares of Common Stock, (B) that the Company shall, directly or indirectly, including through subsidiaries, Affiliates or otherwise, in one or more related transactions, allow any Subject Entity individually or the Subject Entities in the aggregate to be or become the “beneficial owner” (as defined in Rule 13d-3 under the 1934 Act), directly or indirectly, whether through acquisition, purchase, assignment, conveyance, tender, tender offer, exchange, reduction in outstanding shares of Common Stock, merger, consolidation, business combination, reorganization, recapitalization, spin-off, scheme of arrangement, reorganization, recapitalization or reclassification or otherwise in any manner whatsoever, of either (x) more than 50% of the aggregate ordinary voting power represented by issued and outstanding shares of Common Stock, (y) more than 50% of the aggregate ordinary voting power represented by issued and outstanding shares of Common Stock not held by all such Subject Entities as of the Subscription Date calculated as if any shares of Common Stock held by all such Subject Entities were not outstanding, or (z) a percentage of the aggregate ordinary voting power represented by issued and outstanding shares of Common Stock or other equity securities of the Company sufficient to allow such Subject Entities to effect a statutory short form merger or other transaction requiring other stockholders of the Company to surrender their Common Stock without approval of the stockholders of the Company, or (C) directly or indirectly, including through subsidiaries, Affiliates or otherwise, in one or more related transactions, the issuance of or the entering into any other instrument or transaction structured in a manner to circumvent, or that circumvents, the intent of this definition in which case this definition shall be construed and implemented in a manner otherwise than in strict conformity with the terms of this definition to the extent necessary to correct this definition or any portion of this definition which may be defective or inconsistent with the intended treatment of such instrument or transaction.

thereunder. (o) **“Group”** means a “group” as that term is used in Section 13(d) of the 1934 Act and as defined in Rule 13d-5

(p) **“Options”** means any rights, warrants or options to subscribe for or purchase shares of Common Stock or Convertible Securities.

(q) **“Parent Entity”** of a Person means an entity that, directly or indirectly, controls the applicable Person, including such entity whose common stock or equivalent equity security is quoted or listed on an Eligible Market (or, if so elected by the Holder, any other market, exchange or quotation system), or, if there is more than one such Person or such entity, the Person or such entity designated by the Holder or in the absence of such designation, such Person or entity with the largest public market capitalization as of the date of consummation of the Fundamental Transaction or Change of Control.

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

(s) **“Principal Market”** means the principal securities exchange or securities market, including an over-the-counter market (in terms of volume), on which the Common Stock is then traded in the United States.

(t) **“Standard Settlement Period”** means the standard settlement period, expressed in a number of Trading Days, for the Company’s primary trading market or quotation system with respect to the Common Stock that is in effect on the date of receipt of an applicable Exercise Notice.

(u) **“Subject Entity”** means any Person, Persons or Group or any Affiliate or associate of any such Person, Persons or Group.

(v) **“Successor Entity”** means one or more Person or Persons (or, if so elected by the Holder, the Company or Parent Entity) formed by, resulting from or surviving any Fundamental Transaction or Change of Control or one or more Person or Persons (or, if so elected by the Holder, the Company or the Parent Entity) with which such Fundamental Transaction or Change of Control shall have been entered into.

(w) **“Trading Day”** means any day on which the Common Stock is traded on the Principal Market, or, if the Principal Market is not the principal trading market for the Common Stock, then on the principal securities exchange or securities market on which the Common Stock is then traded.

(x) **“Transaction Documents”** means any agreement entered into by and between the Company and the Holder, as applicable, in connection with or pursuant to this Warrant.

(y) **“VWAP Market Disruption Event”** means, with respect to any date, (A) the failure by the Principal Market, or, if the Common Stock is not then listed on a U.S. national or regional securities exchange, the principal other market on which the Common Stock is then traded, to open for trading during its regular trading session on such date; or (B) the occurrence or existence, for more than one half hour period in the aggregate, of any suspension or limitation imposed on trading (by reason of movements in price exceeding limits permitted by the relevant exchange or otherwise) in the Common Stock or in any options contracts or futures contracts relating to the Common Stock, and such suspension or limitation occurs or exists at any time before 1:00 p.m., New York City time, on such date.

(z) **“VWAP Trading Day”** means a day on which (A) there is no VWAP Market Disruption Event; provided that the Holder, by notice to the Company, may waive any such VWAP Market Disruption Event; and (B) trading in the Common Stock generally occurs on the principal U.S. national or regional securities exchange on which the Common Stock is then listed or, if the Common Stock is not then listed on a U.S. national or regional securities exchange, on the principal other market on which the Common Stock is then traded. If the Common Stock is not so listed or traded, then “VWAP Trading Day” means a Business Day.

(aa) **“Weighted Average Price”** means, for any security as of any date, the dollar volume-weighted average price for such security on the Principal Market during the period beginning at 9:30:01 a.m., New York time (or such other time as the Principal Market publicly announces is the official open of trading), and ending at 4:00:00 p.m., New York time (or such other time as the Principal Market publicly announces is the official close of trading), as reported by Bloomberg through its “Volume at Price” function or, if the foregoing does not apply, the dollar volume-weighted average price of such security in the over-the-counter market on the electronic bulletin board for such security during the period beginning at 9:30:01 a.m., New York time (or such other time as such market publicly announces is the official open of trading), and ending at 4:00:00 p.m., New York time (or such other time as such market publicly announces is the official close of trading), as reported by Bloomberg, or, if no dollar volume-weighted average price is reported for such security by Bloomberg for such hours, the average of the highest closing bid price and the lowest closing ask price of any of the market makers for such security as reported in the OTC Link or “pink sheets” by OTC Markets Group Inc. (formerly Pink OTC Markets Inc.). If the Weighted Average Price cannot be calculated for a security on a particular date on any of the foregoing bases, the Weighted Average Price of such security on such date shall be the fair market value as mutually determined by the Company and the Holder. If the Company and the Holder are unable to agree upon the fair market value of such security, then such dispute shall be resolved pursuant to Section 11 with the term “Weighted Average Price” being substituted for the term “Exercise Price.” All such determinations shall be appropriately adjusted for any stock dividend, stock split, stock combination, reclassification or other similar transaction during the applicable calculation period.

[Signature Page Follows]

IN WITNESS WHEREOF, the Company has caused this Warrant to Purchase Common Stock to be duly executed as of the Issuance Date set out above.

BIONANO GENOMICS, INC.

By: _____
Name:
Title:

EXERCISE NOTICE

**TO BE EXECUTED BY THE REGISTERED HOLDER TO EXERCISE THIS
WARRANT TO PURCHASE COMMON STOCK**

BIONANO GENOMICS, INC.

The undersigned holder hereby exercises the right to purchase _____ shares of Common Stock ("**Warrant Shares**") of Bionano Genomics, Inc., a corporation organized under the laws of Delaware (the "**Company**"), evidenced by the attached Warrant to Purchase Common Stock (the "**Warrant**"). Capitalized terms used herein and not otherwise defined shall have the respective meanings set forth in the Warrant.

1. Form of Exercise Price. The Holder intends that payment of the Exercise Price shall be made as:

_____ a "Cash Exercise" with respect to _____ Warrant Shares; and/or

_____ a "Cashless Exercise" with respect to _____ Warrant Shares.

2. Payment of Exercise Price. In the event that the holder has elected a Cash Exercise with respect to some or all of the Warrant Shares to be issued pursuant hereto, the holder shall pay the Aggregate Exercise Price in the sum of \$_____ to the Company in accordance with the terms of the Warrant.

3. Delivery of Warrant Shares. The Company shall deliver to the holder _____ Warrant Shares in accordance with the terms of the Warrant.

4. Maximum Percentage Representation. Notwithstanding anything to the contrary contained herein, this Exercise Notice shall constitute a representation by the Holder of the Warrant submitting this Exercise Notice that, after giving effect to the exercise provided for in this Exercise Notice, such Holder (together with the other Attribution Parties) will not have beneficial ownership of a number of shares of Common Stock in excess of the Maximum Percentage of the total outstanding shares of Common Stock of the Company as determined pursuant to the provisions of Section 1(f) of the Warrant.

Date: _____, _____

Name of Registered Holder

By: _____

Name:

Title:

ACKNOWLEDGMENT

The Company hereby acknowledges this Exercise Notice and hereby directs Equiniti Trust Company, LLC to issue the above indicated number of shares of Common Stock on or prior to the applicable Share Delivery Date.

BIONANO GENOMICS, INC.

By: _____
Name:
Title:

MORRIS, NICHOLS, ARSHT & TUNNELL LLP

1201 NORTH MARKET STREET
P.O. BOX 1347
WILMINGTON, DELAWARE 19899-1347

(302) 658-9200
(302) 658-3989 FAX

October 26, 2023

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

Re: Bionano Genomics, Inc.

Ladies and Gentlemen:

We have acted as special Delaware counsel to Bionano Genomics, Inc., a Delaware corporation (the "Company"), in connection with certain matters of Delaware law relating to the filing of a Registration Statement on Form S-3 (the "Registration Statement") by the Company filed with the Securities and Exchange Commission (the "Commission") under the Securities Act of 1933, as amended (the "Securities Act"), covering the resale by a certain selling securityholder of up to \$35,000,000 aggregate principal amount of that certain Senior Secured Convertible Note (the "Note") payable by the Company and convertible into 12,221,738 shares (the "Conversion Shares") of the Company's common stock, par value \$0.0001 per share (the "Common Stock"), issued pursuant to that certain Securities Purchase Agreement, dated October 11, 2023, by and between the Company and High Trail Special Situations LLC (the "Securities Purchase Agreement").

In giving this opinion, we have examined and relied upon the following documents in the forms provided to us: (i) the Note; (ii) the Action by Unanimous Written Consent of the Board of Directors of the Company (the "Board") dated March 8, 2023; (iii) resolutions of the Board of Directors of the Company adopted at a meeting of the Board held on August 1, 2023; (iv) the Action by Unanimous Written Consent of the Pricing Committee of the Board dated October 10, 2023; (v) a certificate of an officer of the Company dated October 26, 2023; (vi) a copy of the Certificate of Conversion of the Company (then named BioNanomatrix LLC) as filed with the Secretary of State of the State of Delaware (the "State Office") on August 16, 2007; (vii) the Certificate of Incorporation of the Company (then named Bionanomarix, Inc.) as filed with the State Office on August 16, 2007; (viii) the Amended and Restated Certificate of Incorporation of the Company as filed with the State Office on August 23, 2018, as amended by the Certificates of Amendment of the Amended and Restated Certificate of Incorporation of the Company as filed with the State Office on October 2, 2020 and August 4, 2023; (ix) the Amended and Restated Bylaws of the Company, as amended by the Amendment thereto dated April 13, 2023; (x) the Registration Statement and related prospectus; (xi) the Securities Purchase Agreement; and (xii) a certificate of good standing of the Company issued by the State Office as of a recent date.

In such examinations, we have assumed the genuineness of all signatures, the authenticity of all documents submitted to us as originals, the conformity to original documents of all documents submitted to us as copies and the legal capacity of natural persons to complete the execution of documents. We have also assumed for purposes of this opinion: (i) except to the extent addressed by our opinion in paragraph 1 below, the due formation or organization, the valid existence and good standing of each entity that is a signatory to any of the documents examined by us under the laws of the jurisdiction of its respective formation or organization; (ii) except to the extent addressed by our opinion in paragraph 2 below, the due authorization, authentication, adoption, approval, certification, acknowledgement, execution, filing, indexing and delivery, as applicable, of each of the documents referenced herein; (iii) that each of the documents examined by us is in full force and effect, sets forth the entire understanding of the parties thereto with respect to the subject matter thereof and has not been amended, supplemented or otherwise modified, except as herein referenced; (iv) that there are no other documents (other than those referenced herein), facts or circumstances contrary to or inconsistent with the opinions expressed herein; (v) that each party has complied, and will comply, as applicable, with the terms and conditions set forth in the Note; (vi) that upon the conversion of the Note, in whole or in part, there will be a sufficient number of authorized and unissued shares of Common Stock that were not previously subscribed for, reserved or otherwise committed to be issued available for issuance upon any such conversion; and (vii) that the consideration received by the Company as a result of any conversion of the Note will have a value at least equal to the aggregate par value of the shares of Common Stock issued in connection with such conversion and (viii) solely with respect to the Company, that the entry into and the consummation of the transactions contemplated by the Note and the Securities Purchase Agreement do not, and will not, constitute a "business combination" (as defined in Section 203 of the Delaware General Corporation Law (the "DGCL")) with an "interested stockholder" (as defined in Section 203 of the DGCL).

We have not reviewed any documents other than those identified above in connection with this opinion. As to any facts material to our opinion, other than those assumed, we have relied, without independent investigation, on the above-referenced documents and certifications and the accuracy, as of the date hereof, of the matters therein contained. We are not regular counsel to the Company or any other party to the Note and are not generally informed as to their respective business affairs.

Based upon and subject to the foregoing and to the further assumptions and qualifications set forth below, and limited in all respects to matters of Delaware law, it is our opinion that:

1. The Company is duly incorporated, validly existing and in good standing under the laws of the State of Delaware.
 2. (i) The Note has been duly authorized, executed and delivered and constitutes a legally binding obligation of the Company, enforceable against the Company in accordance with its terms, and (ii) the Conversion Shares have been duly authorized and, when issued and delivered in accordance with the terms of the Note, will be validly issued, fully paid and nonassessable.
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Our opinion is limited to the laws of the State of Delaware, and we have not considered and express no opinion on the effect of the laws of any other state or jurisdiction, including state or federal laws relating to securities or other federal laws, or the rules and regulations of stock exchanges or of any other regulatory body. In addition, we have not considered and express no opinion as to the applicability of or any compliance with any federal or state securities or blue sky laws, including, without limitation, the Delaware Securities Act, 6 *Del. C.* § 7301 *et seq.*, or any rules or regulations promulgated thereunder.

Our opinion is subject to: (a) bankruptcy, insolvency, reorganization, receivership, fraudulent conveyance, moratorium or other laws of general application relating to or affecting the enforcement of creditors' rights and remedies, as from time to time in effect; (b) application of equitable principles, including applicable law relating to fiduciary duties (regardless of whether considered in a proceeding in equity or at law); (c) considerations of public policy or the effect of applicable law relating to fiduciary duties; (d) principles of course of dealing or course of performance and standards of good faith, fair dealing, materiality and reasonableness that may be applied by a court to the exercise of rights and remedies and the possible unavailability of specific performance or injunctive relief; and (e) the discretion of the court before which any proceeding in respect of the Note may be brought; provided that we express no opinion with respect to the enforceability of (i) any document referenced or incorporated by reference in the Note, (ii) any purported waiver or consent granted by any party to the Note except to the extent such party may so waive or consent and has effectively so waived or consented in accordance with applicable law, (iii) the Note against or with respect to any person who or which is not a party thereto, (iv) any provisions of the Note providing for payment of attorneys' fees to the extent such fees are in excess of those permitted by applicable law, and (v) any provision of the Note requiring the Company to distribute or pay cash or other property (other than Common Stock of the Company) to the extent the Company does not have funds legally available therefor.

We hereby consent to the filing of a copy of this opinion with the Commission as an exhibit to the Registration Statement and the use of our name in the Registration Statement under the caption "Legal Matters." In giving this consent, we do not hereby admit that we come within the category of persons whose consent is required under Section 7 of the Securities Act or the rules and regulations of the Commission thereunder.

This opinion letter speaks only as of the date hereof and is based on our understandings and assumptions as to present facts and our review of the above-referenced documents. The above opinions are based solely upon laws, rulings and regulations in effect on the date hereof, and are subject to modification to the extent that such laws, rulings and regulations may be changed in the future. We undertake no obligation to update or supplement this opinion after the date hereof for the benefit of any person or entity with respect to any facts or circumstances that may hereafter come to our attention or any changes in facts or law that may hereafter occur or take effect.

Very truly yours,

/s/ R. Jason Russell

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We hereby consent to the incorporation by reference in the Prospectus constituting a part of this Registration Statement of our report dated March 9, 2023, relating to the consolidated financial statements of Bionano Genomics, Inc.'s (the "Company"), appearing in the Company's Annual Report on Form 10-K for the year ended December 31, 2022. Our report contains an explanatory paragraph regarding the Company's ability to continue as a going concern.

We also consent to the reference to us under the caption "Experts" in the Prospectus.

/s/ BDO USA, P.C.

San Diego, California
October 26, 2023

Calculation of Filing Fee Table

Form S-3
(Form Type)

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

Table 1: Newly Registered Securities

Security Type	Security Class Title	Fee Calculation Rule	Amount Registered	Proposed Maximum Offering Price Per Unit	Maximum Aggregate Offering Price(1)	Fee Rate	Amount of Registration Fee
Equity	Common Stock, par value \$0.0001 per share	Other	12,221,737(2)(3)	—	—	.00014760	— (X)
Debt Convertible into Equity	Senior Secured Convertible Notes due 2025	Other	\$35,000,000.00	100%	\$35,000,000.00	.00014760	\$5,166.00
Total Offering Amounts				—	\$35,000,000.00	—	\$5,166.00
Total Fee Offsets				—	—	—	—
Net Fee Due				—	—	—	\$5,166.00

- (1) Estimated solely for the purpose of calculating the registration fee pursuant to Rule 457 under the Securities Act of 1933, as amended (the “Securities Act”), based on 100% of the aggregate principal amount of the Senior Secured Convertible Notes due 2025 (the “Notes”).
- (2) Represents the greatest number of shares of our common stock, par value \$0.0001 (“common stock”), issuable upon conversion of the Notes, subject to adjustment in certain circumstances. Pursuant to Rule 416(a) under the Securities Act, we are also registering an indeterminate amount of shares of common stock as may be issuable from time to time upon conversion of the Notes as a result of stock splits, stock dividends or the other anti-dilution provisions of the Notes.
- (3) Pursuant to Rule 457(i) under the Securities Act, there is no additional filing fee with respect to the shares of common stock issuable upon conversion of the Notes because no additional consideration will be received by the registrant.